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Spacetime gaps and the persistence of objects through time

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SPACETIME GAPS AND
THE PERSISTENCE OF OBJECTS THROUGH TIME

by

Thomas K. Javoroski

An Abstract

Of a thesis submitted in partial fulfillment of the
requirements for the Doctor of Philosophy degree
in Philosophy in the Graduate College
of The University of Iowa

December 2009

Thesis Supervisor: Professor Richard Fumerton

ABSTRACT

When we begin to investigate the persistence of objects through time, we find immediately that the sort of concerns embodied in Leibniz's Law cause philosophers to divide themselves into the two major camps of Purdurantists and Endurantists. What is required according to each for a given object at a given time to be identified with a given object at another time is held to be dramatically different, even while both often look to the same general sort of indicators for their answers to identity questions: identity or similarity of physical properties, including relational properties like spatial location.

I believe, however, that logically prior to the problem of the persistence of objects through time will be questions regarding the composition of objects—we must have coherent notions of what an object is, what it means for parts to compose an object, and what is required for an object to be considered to exist at a *single* time before we can discuss the continued existence of objects at other times. I believe that posing the problem of *temporal gaps* for both the Perdurantist and Endurantist to solve can help us uncover reasonable answers to these more basic questions, and thereby help us judge the comparative coherence of the parent theories.

Towards this goal, we investigate here some of the assumptions of persistence theories—that Perdurantists are four-dimensionalists and Endurantists are Presentists, for example—before moving on to find reasonable explanations of the composition of objects from within each theory. Important at this stage is clarifying such concepts as parthood and the present.

When we at length turn our attention to the problem of gaps, it becomes useful to distinguish two sorts of gaps, each with their own difficulties: a 'gap' as a length of time during which the proper parts of an object are scattered through space, and a 'gap' as a length of time during which the proper parts of an object do not exist in space at all.

My contention here is that Perdurantism, paired with four-dimensional spacetime, provides the most coherent answers to the challenges presented throughout.

Abstract Approved: _____

Thesis Supervisor

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Title and Department

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Date

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CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

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To Shauna,
who did it first, and better,
and who I always lean on

Our imagination is stretched to the utmost, not, as in fiction, to imagine things which are not really there, but just to comprehend those things which are there.

Richard Feynman, The Character of Physical Law

"The time has come," the walrus said, "to talk of many things: of shoes and ships - and sealing wax - of cabbages and kings."

Lewis Carroll, Through The Looking-Glass

Have no respect whatsoever for authority; forget who said it and instead look what he starts with, where he ends up, and ask yourself, "Is it reasonable?"

Richard Feynman, What Do You Care What Other People Think?

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CHAPTER 1 — INTRODUCTION

1.1. Introduction

1.   Consider the following set of questions, with an eye for both the similarities and differences in both the questions and the entities being referred to: A) Is this the same rock that broke my windshield yesterday? B) Is that the same tree I planted all those years ago? C) Is this man the same man I once called my friend? D) Is this book, appearing in a flash of light on my desk, the same book that had been placed into that so-called 'teleportation' machine across the room mere moments ago? E) What sense can we make out of the claim that I, or you, or your dog or your physical body, can exist in some fashion after 'death' (or more specifically some significant level of physical destruction)? F) Can anything 'begin' to exist in any sense of the phrase *after* it has 'ceased' to exist, in some sense of that phrase?

2.   Immediately it can be pointed out that this series of questions runs from questions about the commonplace—and common sense, or 'prephilosophical'—to the philosophical, technical, and/or uncommon. Each is a question regarding what philosophers call numerical identity, rather than questions of qualitative identity—a pen being the 'same pen' (qualitatively) as another by virtue of its color and shape…but yet being acknowledged simultaneously as a *different* pen (numerically). A charge of equivocation when discussing matters in this way is legitimate in philosophy, but unenforceable (and of little concern) when using normal language in this way. For discussions of philosophy, then, we must simply stipulate that we are concerned with numerical identity—with picking out distinct *objects*, rather than merely similar objects.

Chapter 1 will be an introduction to the investigation, including a discussion of the language to be used, the objects to be discussed, and the general limits to the investigation.

3.   What is of prime importance to my project is that all of the questions above, regardless of level of philosophical complexity, involve not identity *at a given time*, but identity *through time*. It is one question, and not an easy one at that, to ask what exactly individuates one rock from the rock sitting next to it. Is it the intrinsic, non-relational properties that each rock has (and presumably of most importance the properties that they do *not* have in common)? Or perhaps the relational properties each rock bears to the rest of the world—being so-and-so feet from a cactus, being such-and-such centimeters above sea level, etc? Perhaps there are essential essences involved, or underlying substances that do the work 'behind the scenes', so to speak. Any and all of these, and perhaps more, have been thought to be plausible candidates for identity requirements throughout the years.

4.   But it is a different question that is important to this project: in virtue of what do we pick out 'the same' object over a period of time? Or perhaps, what does it mean for an object to continue to exist over a duration of time? I don't mean to imply by this distinction between questions that the individuators (whatever does the work of establishing 'sameness') might not be one or more of the candidates above—properties (relational or non-relational), essences, substances—or indeed might not be the *same* candidate doing the work in both cases. But this is a point that cannot be glossed over, and will have to be argued for: a thing's being identical to itself *at a time* is not necessarily the same property (relational or otherwise) as a thing's being identical to itself *through time*. To put it another way, A's being identical to B at time T may very well be quite a different matter from A at time T being identical to A at time T+1. *Synchronic identity* (identity of objects at the same time) may not be the same property (relation) as *diachronic identity* (identity of objects at different times). It is diachronic

identity that we will be concerned with herein, and thus we will be concerned with synchronic identity only insofar as it impacts diachronic identity.[1]

1.2. Objects Considered and Unconsidered

5.   But what are we concerned about the diachronic identity *of*? There are a great many things we may ask these questions about—as many things as there are things that count as 'things'. Here we will concern ourselves with those things which are *commonly* referred to as objects—tables, chairs, paperweights, human bodies, and the like…anything that 'drags its parts around with it', to borrow a phrase from Laird Addis. Objects of this sort would also seem at first blush to include many *parts* of objects of this sort—a table leg is an object, given that a table is an object. The 'objectness' of that table leg does not seem to be affected by its removal or reattachment to the table. If we use screws or glue to attach one object—a table leg—to another object—a collection of wood pieces consisting of three other similar table legs and a table top—what we have is of course an object of the sort we are concern with, namely a table.

6.   But is the table leg still an object all its own? Many things now said of the table leg after the attachment are also now said of the table, of course. If the table leg sustains a scratch, it is true that the table sustains a scratch. This is a feature of parthood, and the relationship is not symmetrical. The table sustaining a scratch does not imply that the table leg sustains a scratch. But more importantly, things can still be said of the table leg that cannot be said of the table—the table leg weighs exactly 5 pounds, for instance, while the table weighs exactly 30 pounds. Having mass and weight is not necessarily

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[1] I acknowledge immediately that this distinction itself will indeed be a point of further discussion. Claims made by Peter van Inwagen, for instance, indicate that he only accepts the existence of synchronic identity, and that diachronic identity just is synchronic identity—the same property. This will be discussed further when we look at the details of Endurantism.

indicative of a thing's being an object in the sense we are concerned with, but it strikes me as unintuitive to claim that the table leg loses its status as an object when joined with the other three legs and the table top. Can we not imagine scavenging five different *objects* from a landfill and crafting them into a table? Are the *objects* we used now no longer objects, or were they never objects *then* because they are only *parts* of an object *now*? Affirmative answers to these sorts of questions may baffle the listening, and yet such claims exist in one form or another.

7.   Peter van Inwagen, for example, in his rejection of the 'Doctrine of Arbitrary Undetached Parts'[2], is willing to grant that the position he takes there leads to the conclusion that there never was any such object as 'Descartes' left leg'. Neither, according to the van Inwagen position, would there be objects such as 'the table with the exception of the leg nearest the oven', or 'me except for my head'. Descartes still *had* a left leg, of course; the table still has four legs; I still have my head. But the legs and my head are, for van Inwagen, not objects in the sense that Descartes, the table, and my body are objects. So are the table legs only objects when they are detached from the table, or were they not objects to begin with? This matter is certainly one of interest for this investigation. Given that we are concerning ourselves with the identity of commonplace objects, we must investigate as we proceed any claims that result in something like a table leg, or a human leg—what might be considered commonplace objects—not qualifying as an object.

8.   What we will be rejecting outright for consideration are the less intuitive sort of things that have garnered the title of 'object' over the years. So-called 'abstract objects', for example—the letter T, *Moby Dick*, the number 2, the proposition "My dog has fleas", the concept of an atom, Microsoft Word™—will not be the subjects of our investigation. Certainly there exist a number of T's on this page—at least 2 up to this

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[2] Van Inwagen, Peter. 1981. The Doctrine of Arbitrary Undetached Parts. *Pacific Philosophical Quarterly* 62:123-137.

point. And a copy of *Moby Dick* sits on my bookshelf across the room. My chair is made

of uncountable atoms, and I am staring at a screen presented to me by Microsoft Word™.

But these are concrete objects—perhaps 'instances' or 'instantiations' of abstract objects,

tokens of types, etc. *The letter T* does not exist on this page in the same way the particular

instances of T exist in this sentence. *Moby Dick*, the piece of classic literature, does not

sit on my shelf in the same way that a *copy* of the novel sits on my shelf. I own a *copy* of

Microsoft Word™…but I do not own Microsoft Word™ (much to my financial

detriment).

9.   All of this is certainly a topic of much debate, and my statements in this

last paragraph regarding the 'ways' of existing may be causing a given reader's blood to

boil; but this will not be the focus of this paper, and thus I will refrain from finding more

neutral ways of stating these ideas. Abstract objects, if such things exist, will be treated as

different in kind from concrete, common sense objects. Thus, mention of such abstract

objects will only occur when necessitated by a theory or claim under discussion. I will

not direct the investigation towards them. Objects that Frege might have relegated to the

'third realm', or objects that are non-spatial, or not causally efficacious, will not concern

us.

10.   Neither will we entertain in the course of the investigation the existence of

objects such as, say, the single object made up of my right eyeball, the frame of the *Mona

Lisa*, Dick Cavett's hair, and the moon. While discussions of the possible arbitrary nature

of how we delineate 'common sense' objects are interesting, and an acceptance of the

limits of such objects as arbitrary does seem to lead to a possibly unlimited number of

non-spatially-contiguous objects as in the example above, we are simply not going to pay

attention to such objects in any direct way as the investigation proceeds. It follows, of

course, that for the same reasons we will not concern ourselves with such objects when

the parts are scattered across time as well as space—the object made of my right eyeball

today, the frame of the *Mona Lisa* in 1801, Dick Cavett's hair tomorrow, and the moon

from Tuesday until 2021. An investigation into the identity of objects can only be complicated by a diversion into the possible existence of such non-intuitive objects. Let us first discover what interesting claims can be made here regarding common sense objects; at a later time, it may be interesting to apply those claims to objects of the sort I have above rejected.[3]

11.   There remains, however, one possible sort of object that is somewhat similar to the eyeball-frame-hair-moon object above, and one which will be of interest to us: the sort of possible object that consists, if one does, of the parts left over from the disassembling of a watch. This may be considered to be the complimentary sort of object to the sort of object exemplified by Descartes' left leg. Those aligned with Van Inwagen deny that an object picked out by 'Descartes' left leg' ever existed, in the main because such an object would have to have existed in the same place (overlapping, at least) and time as (all of) Descartes himself—and this leads certainly to confusion and possibly to contradiction, as we will see later in detail.[4] Similarly, if we take a watch apart and lay the resulting pieces across the top of the table, we will be faced with a challenge should we want to claim that the object called 'the watch' still exists—for if it exists, it A) exists in a number of non-contiguous places, and B) exists in the same place and time as a number of other distinct objects—that silver cog wheel, this nickel spring, those two gold hands, etc. As with Descartes and his leg, we have multiple objects—the cog wheel and the watch—existing in the same place and time. This strikes many as immediately unintuitive, and as van Inwagen has attempted to show, strikes others as contradictory.

12.   However, given that a watch *is* a common sense object, and given that a silver cog wheel, a nickel spring, and gold watch hands—taken alone—are common

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[3] I will note here that we *will* be interested in the continued (or not) existence of 'ordinary' objects that become in the course of their existence scattered through space—disassembled watches, for instance, as the next few paragraphs allude to. But importantly, the objects that we will discuss as 'scattered' will have been common sense objects in the first place.

[4] This will be addressed in more detail as we progress.

sense objects, we must leave room at present for a discussion of the comings and goings of such objects, and the possibility that an object made of previously distinct parts—the watch—might survive the dispersal of those parts. Can I not correctly say, for instance, that "my watch is at the repair shop", even when the watch is currently in pieces on the repair shop table? Surely this manner of discussing my watch is far less confusing than saying "my watch is not currently in existence, but the pieces that formerly made up my watch are all at the repair shop"…but which is an accurate description of the state of my watch?

13.	In short, whether or not we accept the various physical portions of physical objects as objects in their own right, and whether or not we accept the collection of such objects as a non-spatially-contiguous object in its own right, it remains that the sort of things we have in mind are all still of the same sort—physical, causally efficacious things—causally efficacious at least in the sense that they 'drag their parts around with them'. In as much as Descartes' five left toes were dragged around by the movement of Descartes' left leg, and in as much as the location of my watch, if it still exists, is determined by the location of the parts, left legs and watches fall under the domain of the common sense objects that we will be discussing.

14.	Finally, then, something must be said regarding persons. I am confident in claiming that a majority of philosophers believe that there may be a significant difference, either metaphysically or only intuitively, between the identity requirements for objects and the identity requirements for *conscious* objects—persons. It is my belief that a theory of persistence for the latter is required before one can develop a theory for the former. Thus, here I will be treating humans, when they come up at all, as merely physical bodies. In doing so, I am not intending to commit myself to any particular theory regarding persons—eliminative materialism, reductive materialism, etc. I am merely claiming that we must discuss the identity of the physical body *before* we discuss the identity of anything that might come along with the physical body.

1.3. The Intuitions of Persistence

15.   We will take as given for this investigation the fact that objects persist through time—that the chair I am sitting on now is the same—in the numerical sense— chair I was sitting on an hour ago, and is the same chair that was here when I was not sitting on it two days ago. Chairs are rather stable things. Their parts, what constitutes them, do not change radically over time. A given chair may lose a few ions every time someone sits down in it or gets up from it, the paint may peel, the stain may fade in the sunlight over the years, a dog may chew off a chunk or two from a leg, but most of what makes up the chair remains. This is the intuitive position, and without this assumption it would be geometrically more difficult to find a point at which we could even begin an investigation—nor would I even be sure what it would make sense to discuss at all without this assumption. Thus we will hold that the chair unproblematically remains the same chair through time.

16.   In claiming this, we will be stipulating that the loss of a single ion, or a few thousand ions, or a splinter from a leg, does not leave us with a new chair. We *can* step into the same river twice, we can sit on the same chair twice, we can *correctly* identify people and pictures and penguins after significant amounts of time have passed. We may make mistakes, of course, and we may be fooled. This is only a general rule I am speaking of. Holding this as true is not only essential to communication among humans and to a rational conception of the world (and hence to survival), but is also of course the basis for any meaningful discussion of persistence over time. Mere steps away from these claims we are taking as given are a sizeable number of more controversial claims—is the reassembled watch the same watch as the watch pre-disassembly? If a part or two was replaced in the process, what then? What about less stable things than chairs, such as living organisms? Living bodies, unlike chairs, are constantly growing and dying

in ways both continuous and dramatic—a human body at the age of 60 contains none of the same cells that it contained at age was 6, we are told. How easily then can we say that 'it' is the same body at 60 as at 6? Even pinning down a single 'it' at a given age becomes difficult, given that the growth/death of parts is constant.

17.　　　　Much has been said already about the existence and persistence through time of objects in these ways, and thus we will focus on one particular challenge to theories of persistence, one which I believe is problematically burdened by conflicting intuitions—namely, the persistence of objects through 'gaps' in either space, or time, or both. The intuitive line, I will claim, is that objects do (or would) persist through (or 'across') gaps—both in time and in space. A waffle iron that exists from time T1 to time T2 *and does not exist between T2 andT4* will be assumed to be the same waffle iron as one that exists from T4 to T5, given the same level of similarity as we would find in examining a waffle iron that had no such 'gap'.

18.　　　　This I claim is intuitive, but has not always been a central tenet of metaphysics. We find represented quite clearly in Locke, for example, the opposite claim:

> For we never finding, nor conceiving it possible, that two things of the same kind should exist in the same place at the same time, we rightly conclude, that, whatever exists anywhere at any time, excludes all of the same kind, and is there itself alone. When therefore we demand whether anything be the same or no, it refers always to something that existed such a time in such a place, which it was certain at that instant was the same with itself, and no other. From whence it follows, that *one thing cannot have two beginnings of existence, nor two things one beginning* [my emphasis—TKJ]; it being impossible for two things of the same kind to be or exist in the same instant, in the very same place, or one and the same thing in different places. That, therefore, that had one beginning, is the same thing; and *that which had a different beginning in time and place from that, is not the same, but diverse* [again, my emphasis—TKJ].[5]

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[5] Locke, John. 1849. *An Essay Concerning Human Understanding*. 30 ed. London: William Tegg and Co. Chapter 27.

John Perry echoes a similar sentiment in his *Dialogue on Personal Identity and Immortality*, when his Gretchen Weirob rejects outright that a Kleenex box, once burned, could possibly exist at a later time:

> Suppose I took this box of Kleenex and lit fire to it. It is reduced to ashes and I smash the ashes and flush them down the john. Then I say to you, go home and on the shelf will be *that very box of Kleenex*. It has survived! Wouldn't that be absurd? What sense could you make of it? And yet that is just what you say to me. I will rot away. And then, a thousand years later, there I will be. What sense does that make?[6]

19.   There is more to Weirob's objection than the 'beginning to exist' of an object and another beginning of a later, possibly identical, object—there is also described a *destruction* of the earlier object, and it is the combination of both of these that Weirob specifically rejects. I strongly suspect, however, that a Weirob-like objection will remain intuitive to some even had the obvious destruction of the Kleenex box not been part of the story. Had the first Kleenex box simply popped out of existence, and the Kleenex box on the shelf popped into existence at a later time, some may not be convinced by mere qualitative identity that this is the very same Kleenex box.

20.   There are any number of other examples of this intuition finding its way into our philosophies. John Hick has attempted to defend a theory of the afterlife which allows people to exist again in a bodily form, after their original physical bodies have been destroyed[7]. In his reply to Hick, Robert Audi has relied on this intuition in stating, parallel to Perry's Weirob, that any body that exists after our original bodies have ceased to exist can only be duplicates of our original bodies[8]—that, in other words, our original bodies cannot exist after ceasing to exist. But even more telling is that Hick himself admits prior to Audi's reply that the body that exists in the afterlife is not numerically

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[6] Perry, John. 1978. *A Dialogue on Personal Identity and Immortality*. Indianapolis: Hackett. p. 5
[7] Hick, John H. 1976. Death and Eternal Life. NY: HARPER & ROW.
[8] Audi, Robert. 1976. Eschatological Verification and Personal Identity. *International Journal for Philosophy of Religion* 7:391-408.

identical to the body that existed prior to death. Of course there are complex issues involving *personal* identity at play, and Hick claims that we must accept non-numerically identical bodies as part of our personal identity; but in terms of the identity of the objects that are the bodies in question, the agreement is that they are obviously not numerically identical—the intuition is held on both sides of this argument. Even Schopenhauer, for whom individuation was ultimately an illusion—the veil of Maya[9]—held that (presumably within that illusion) a single object cannot begin to exist twice.[10]

21.   It is this intuition that I will be directly challenging. Given the criteria of identity for the two preeminent theories of persistence through time—perdurance and endurance—can we make any sense out of a single object's existing on either side of a gap in space and/or time? Are we *led* by either theory to admit to such a condition of identity? Under what circumstances might we find our intuitions reversed regarding the identity of objects in such conditions, and if our intuitions do waver, does that spell trouble for our theories?

1.4. The Language of Persistence

22.   As stated above, we are assuming that objects survive through time—the loss of at least some parts or properties does not necessitate the existence of a brand new, non-identical object. In this way, the theories we will be discussing all qualify as 'common sense theories', for it is by far the more commonly held belief that objects continue to exist through time, as opposed to the belief that changes in objects via the

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[9] Atwell, John E. 1995. *Schopenhauer on the character of the world : the metaphysics of will / John E. Atwell*. Berkeley :: University of California Press. p. 156.
[10] Ansell-Pearson, Keith. 2006. *A Companion to Nietzsche*. Oxford: Blackwell. p. 77, and Nabais, Nuno. 2007. *Nietzsche and the Metaphysics of the Tragic*. Translated by M. Earl. London: Continuum Publishing Group. p. 39.

passage of time must leave us with brand new objects—that I own for example a different (non-numerically identical) car now from when I purchased it, due to the large dent in the fender.

23.   Thus, physical changes do not typically threaten the identity of an object through time, but they are still terribly important to the question of *how* an object persists through time. Whether or not Leibniz himself ever actually stated anything like what has become known as Leibniz's Law (a question at the middle of some dispute), it's enough that a great many philosophers hold one if not both claims that make up Leibniz's Law to be true[11]:

> The Identity of Indiscernibles: $(x)(y)[(F)(Fx \equiv Fy) \supset x=y]$[12]
>
> and
>
> The Indiscernibility of Identicals: $(x)(y)[x=y \supset (F)(Fx \equiv Fy)]$[13]

Taken together, these two claims result in an equivalence relationship between the identity of x and y and the sharing between x and y of all properties. More importantly at the moment, the Indiscernibility of Identicals taken by itself implies the diversity (the non-identity) of x and y when x and y *do not* share all the same properties. And this is what motivates the important distinctions made regarding persistence through time.

24.   Let x stand for the chair in my living room, prior to our having owned a dog, and let y stand for the chair now in my living room—very nearly qualitatively identical to x—after my wife and I have owned our dog for six years. If y is closely inspected and compared with pictures of x, a keen observer will discover that the wooden legs of y have suffered some damage in the form of bite marks. The pictures of x, and our

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[11] Because of the lengthy dispute in the literature over what Leibniz himself did state, should have stated, or intended to state, my use of the name 'Leibniz's Law' herein does not imply anything about what Leibniz himself claimed. When possible, I will endeavor to use instead the name of one or the other of the laws I have indicated constitute what has become popularly known as Leibniz's Law.

[12] To be read as follows: for all entities x and y, if x and y have all the same properties, then x and y are identical (numerically).

[13] To be read as follows: for all entities x and y, if x and y are identical (numerically), then x and y have all the same properties.

memories of x, reveal no such damage to the legs of x. If x and y being identical implies the sharing of all properties between x and y, then the negation of the consequent—x and y obviously not sharing all properties—implies the negation of the antecedent—the diversity of x and y.

25.   But aren't we talking about identity when we state that my wife and I have owned the *same* chair for over six years? Don't I mean to indicate by pointing at the dent in my fender that *one car* that previously did not have a dent now does have a dent? To reconcile our intuitions of identity with Leibniz's Law (or more specifically it seems with the Indiscernibility of Identicals), we have distinguished the theories of Endurance and Perdurance. It is to these theories that we will turn in the next chapter for competing theories regarding how we might justify identity claims in the face of an apparent violation of some or all of Leibniz's Law.

CHAPTER 2 — THEORIES OF SPACE AND TIME

2.1. Space and Time Theories of Primary Importance to the Investigation

2.1.1. Four-Dimensional Space-Time As Intuitive

26.   I begin this chapter with an examination of the theory that is the newer of

the competing theories, and may still be the less intuitive of the two where the uninitiated

are involved. In a very general way of speaking, accepting a four-dimensional space-time

involves accepting more than what is apparent to our senses. We see, hear, and touch the

things around us that are *here*, that are *present*. Intuitively, the events of the world around

us proceed in an order, an order that we accept as shared by everyone, and also as *present*

to everyone at the same time—even though this last notion is deceptively difficult to

make sense of in any way that is not redundant or trivial[14]. The things that exist are those

that exist *now*; existence in a collective sense is made up of the things that exist, thus

existence is the existence of the present.

27.   But the last century of scientific investigation has led many away from

such claims. The General and Special Theories of Relativity, together serving as perhaps

the most widely accepted physical theories to date, present the standard view of time and

existence with several difficult problems. Of primary importance is the damage done to

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 Chapter Two will be an in-depth investigation of the connections between the competing theories of persistence and their typically corresponding theories of space and time—I intend to go beyond an explanation of why the theories are associated, and ask as well whether or not either persistence theory could function if the alternate theory of space and time were assumed, and what implications this might have for both theories. From this investigation, I hope to be able to lay out more clearly what claims the Perdurantist and Endurantist are necessarily committed to, and which claims may be contingent.

[14] The concept of comparing 'presents' seems to involve nonsense, extreme relativity of the sort many would not wish to adopt, or the existence of 'supertimes'—how else may we answer whether what I observe as happening 'now' is the same event you observe as happening 'now'? The core of this problem is explained succinctly in Lango, John W. 2000. Time and Strict Partial Order. *American Philosophical Quarterly* 37 (4):373-387—relativity seems to do away with an objective, or even shareable, present by establishing all events as simultaneous only to a frame of reference…and comparing the 'now-ness' of our frame of reference can only be done from inside a frame of reference.

the notion of 'the present' which was accepted as primitive in preceding theories. What I see happening around me—as opposed to what I *saw* happening around me—is what is happening *now*, in *the present*. But once I accept that the same two events can be correctly observed by me as occurring three minutes apart while also correctly observed by you as occurring five minutes apart, I am led (goes the standard progression) to accept that there is no objective present at (or during) which events happen.

28.		But why are we led to this conclusion? Why can we not say for example that we both experience both events during the same 'present', but that time runs *faster* for me in the span between events than it does for you? Would something like this allow us to preserve an objective present? Admittedly, issues arising from the theories of relativity are rather complicated matters, often best answered with equation rather than locution. But a reasonable answer can be obtained with the following dilemma:

> a. An event, A, occurs and is observed by two people, X and Y.
>
> b. Both X and Y observe A as occurring both 'at 5:31' and 'right now', or 'during the present' (5:31 being the present time as seen on each person's watch).

So far, this seems uncontroversial. Can you observe something happening in the past or future? We can observe the presently occurring evidence of past events, but the evidence is still occurring in the present—light reaching my eyes *now* from the explosion of a star in the past.

29.		But we now face the two horns of the dilemma. Consider that, when we observe an event, our brains are processing electrical signals delivered by our sensory apparatus, themselves stimulated by the external influence of light or contact with objects. All of this, of course, takes time, and so our perception of events must necessarily lag behind the occurrence of the events themselves. So the first dilemma is this: when we identify 'the present', are we identifying when we *observe* events as

occurring, or are we identifying when the events *actually occur*—the phenomenal present, or an objective present? Let us assume:

> c. We are identifying the present as the duration of time wherein we observe (perceive) the events as occurring (the phenomenal present)— the moment when the light from an event reaches our eyes and/or is interpreted by our brains[15].
>
> d. But it's obviously true that light will take longer to reach the eyes of someone who is farther away.
>
> e. So if the present is the time when the light reaches the eyes/brains of X and Y, then Y (who is farther away from A than X is) will experience his present later than X will.

E is shown to be possible according to relativity. As speeds of objects approach the speed of light, *time dilation* occurs (which will be discussed in more detail later). Relativistic physics allows for the possibility of X and Y both observing an event when their previously synchronized watches both show 5:31, and yet for Y to observe that event *after* X. How is this possible?

30.   When we state that Y's present is 'later' than X's present, we are assuming some reference from which we establish one event as 'later' than the other— either an objective present (which we have expressly denied with this horn of the dilemma), or a third frame of reference—Z, for example, who is watching all of this happen. The light from the event that is 'the light from A reaching Y' reaches Z at a later time than the light from the event that is 'the light from A reaching X' reaches Z. This at least seems internally consistent, and while we might be led to claim that these are objective facts—that the light from various events is reaching other locations at later or earlier times—we seem to find that we must always couch such further observations from

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[15] We do not have to be terribly specific here regarding the question of what constitutes the beginning of my act of seeing.

another frame of reference. We must speak of these 2nd generation events from the perspective of someone else watching all of this happen, which is in turn watched by someone else, and etc.

31.   There is thus no objective present if we grasp that horn of the dilemma, only a regress[16] of subjective presents. The alternative is to say:

> A. We are identifying the present as the duration of time wherein the event *actually occurred*—a *so-called* objective present. Again, given the recognition that the observation of an event must occur after the event in any timeline, we will simply accept that we never really observe 'the present state' of an object, but only a state of the object that is perhaps milliseconds into the past—the object is in a different state simultaneous to my observation, and the light from those now-present events is currently (i.e. in the phenomenal present) racing towards my eyes.

> B. But when X observes two events A and B as separated by five minutes and Y (as relativistic physics admits is possible) observes those two events as separated by three minutes, we must determine what measurements we will use to determine when A and B 'actually' happened.

Should we use the measurement given by X's watch? Or by Y's? Or by a third watch, on the wrist of an observer watching this all develop? Importantly, relativistic physics implies that neither X's nor Y's measurements are wrong. Neither X nor Y has any sort of privileged status where the determination of reality is concerned. Both X and Y observe an event to have occurred at 5:31, and yet while X's measurements place the event as having occurred at 5:01, Y's measurements place the event as having occurred at

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[16] It is an interesting but not currently relevant question whether the regress is vicious or not.

5:03. Relativistic physics allows for this result, and specifies that neither measurement is 'the right one'.

32.   Our determination of the time when an observed event actually happened is made by extrapolating backwards, across a perceived distance, from the moment when the light reaches us. So the light from an event taking two different durations to reach two observers who are the same distance away from the event, along with the rejection of a privileged status of either observer, leads us to the conclusion that there are no objectively correct durations between events, and certainly no objective present. Thus there is no reference-independent means of locating A and B in time, regardless of which horn of the dilemma we confront, and thus no reference-independent simultaneity of events. Steven Hales and Timothy Johnson have rather eloquently stated the issue in no uncertain terms:

> It is the failure of simultaneity which is significant [among other consequences of relativity theory] for the metaphysics of persistence. It is essential to be clear about this point: the failure of simultaneity is not an effect dependent upon the observer, nor is it a function of the delay between an event and the light from that event reaching [a] hypothetical observer. There is an intrinsic connection between time and space…"[17]

Furthermore, and of relevance to the current and later discussions here, they add that "this intrinsic connection…recommends the rejection of any ontology such as Endurantism that fails to accommodate the co-existence of temporal parts."[18]

33.   An important note before continuing: I do not believe that a rejection of an objective present carries with it a rejection of any notion of *absolute chronological precedence*—of the possibility that two events might be ordered in an earlier than/later than relationship *regardless* of what frame of reference one takes ones measurements from. The first second following the Big Bang may occur prior to Kennedy's

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[17] Hales, Steven D., and Timothy A. Johnson. 2003. Endurantism, Perdurantism and Special Relativity. *Philosophical Quarterly* 53 (213): p 527
[18] ibid

assassination in *every* frame of reference, and we may believe this without abandoning our claims made so far regarding relative spacetime.[19]

34.   The relativity of the present leads to the conclusion that a four-dimensional picture of space and time is a more accurate picture than the theory that is more often considered to be intuitive, which is a three-dimensional view of the universe. In brief, the four-dimensional theory of spacetime is the theory that the past, present, and future all exist as much as any one of them exists. This will involve much more explanation, of course. The three-dimensional view of the universe is typically taken to be the theory that only the present exists—a view also known as *Presentism*. And a subjective present would tend to suggest a four-dimensional spacetime. If the present is entirely subjective, relative only to frames of reference, we could conceivably continue to accept that only the present exists. In this case, it seems that we must accept that either conscious observation (or something akin to it) establishes a 'present' wherein things may exist, or that existence itself is not objective—that only events that are present exist, and an event being present is entirely subjective to a frame of reference. This route leads us to a wildly radical metaphysics wherein the contents of the world vary from person to person—for not only is it impossible to confirm whether two individual's 'presents' coincide, but it is impossible for two presents to coincide *at all*. The notion is perhaps incoherent. If the present is relative to a frame of reference, two frames of reference would have to be identical for them to share an identical present—two subjective experiences of the world would have to be identical. But even to suggest this starts to sound suspiciously ridiculous, and for good reason.

35.   There is something problematic with treating 'a present' as something that could be shared or not, even only hypothetically. What would it mean for X and Y to experience 'the same' present—that X and Y both experience the present at, say, 5pm?

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[19] Such facts would seem, however, to be contingent matters, perhaps dependant on the size of the universe itself.

Obviously, if X and Y are both alive at 5pm, then both X and Y experience 5pm as 'present', meaning that both of them if awake and alert will have an experience of events presently happening when it is 5pm—when the time-telling devices around them indicate 5pm. But it seems like nonsense to ask whether they are both experiencing '5pm as present' *at the same time*. The problem is that to ask this question, we reveal that we are treating the present as an ontologically important entity—as the three-dimensionalists do—*from within* a four-dimensional space-time framework. The problem here lies in the four-dimensionalist's treatment of consciousness.

2.1.2. The Importance of Consciousness

36.   In the preceding discussion I stated the claim that the four-dimensional view includes the claim that the present has no unique ontological status. I am 'presently' watching words appear on a screen as my fingers move, but this series of events is no more ontologically 'real' than the movie I was watching on my television two nights earlier (or than the series of events occurring 'now' as I edit these previously written passages). A series of events exists at these particular spacetime coordinates, and those events include my concurrent (although slightly off-set, as discussed above in paragraph 6) subjective experiences of those events—the 'presentness' of those events—*and* another series of events exists at another set of spacetime coordinates (in the 'past' or 'future')…and *those* events also include my concurrent subjective experiences of *those* events. In simpler—and thus less accurate—terms, there is a 'me' at that time that is also experiencing 'the present'. And *this* me has no stronger or weaker claim to being 'actually' present than *that* me does. In more dramatic words, there is no 'present', unless all we mean to point out is that my conscious experiences of the world are always concurrent—from the point of view of my conscious experience—with certain other events in the world, and perhaps that all of those conscious experiences do not occur concurrent with each other. I do not observe every event I observe as 'happening at the

same time', and in fact I have distinct conscious experiences with every new set of observations I have. There is no 'present' that travels with me through my experiences, and leaves my previous experiences behind.

37.   But this is not the only alternative open to the four-dimensionalist. Consider Hermann Weyl's claim regarding our experiences of the world around us: "The objective world simply *is*, it does not *happen*. Only to the gaze of my consciousness, crawling along the lifeline of my body, does a section of this world come to life as a fleeting image in space which continuously changes in time."[20] Weyl, echoing something like Kant's transcendentalism, can be read as pointing to an ontological status granted to certain times only when they are experienced by a definite entity or phenomenon that is consciousness—as opposed to the prior interpretation, if we follow Weyl we are to say that I, the person spread across a range of x,y,z,t spacetime coordinates, has only one distinct and temporally brief consciousness—and it *moves* through these points in spacetime. This view is cousin to later theories in quantum physics, following the work of Niels Bohr, Arthur Schopenhauer, and others[21]—consciousness is given a special role to play in the ontology of space and time, collapsing wave functions and determining reality, for example. Whether this view is superior or inferior to the view above, wherein consciousness is simply a conjunction of awareness with other events, will remain to be seen.

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[20] Weyl, Hermann. 1949. *Philosophy of Mathematics and Natural Science*. PRINCETON: PRINCETON UNIV PR. p 116.

[21] More can be found regarding the relation of consciousness to the physical world in the four-volume Bohr, Niels. 1987. *The Philosophical Writings of Niels Bohr*. Woodbridge, Conn: Ox Bow Press; Heisenberg, Werner. 1958. *Physics and Philosophy: The Revolution in Modern Science*. New York: Harper and Brothers Publishing; Whitaker, Andrew. 2006. *Einstein, Bohr, and the quantum dilemma : from quantum theory to quantum information / Andrew Whitaker*. Cambridge ; New York :: Cambridge University Press; and notably in Rosenblum, Bruce, and Fred Kuttner. 2006. *Quantum Enigma: Physics Encounters Consciousness*. New York: Oxford..

2.1.3. Minkowski Space-Time

38.　　　　From either of the above pictures of the present follows the four-dimensional view of spacetime, often referred to as 'Minkowski spacetime'. We want to reject talk of simple points located in time for a more complete language of points located in space *and* time—'5pm on Thursday, March 5th, 2009' is no longer a very meaningful coordinate in the world. Rather, we need to supply a three-point set of spatial locations to go along with that temporal location if we are to place anything fully in the world—'5pm on March 5th, 2009, in this particular room' is a more accurate sort of location, although even 'this room' can be divided into further three-point coordinates. As Hermann Minkowski clarified in 1908, "Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality."[22] Minkowski calls a set of x,y,z,t coordinates—locating a point in both space and time—a *world-point*. The collection of all possible world-points he labels *the world*.[23] In the general language of relativistic physics then, an *event* is an occurrence at a particular world-point, and is the fundamental observational entity in the theory. As each world-point is truly unique, each event is therefore similarly unique, and as a result quite often the two terms are used interchangeably.

39.　　　　This radically different view of the structure of the world (differing from the old 3D view) is taken by its strongest supporters not to be a mere mathematical model of an actually three-dimensional world, but a picture of reality as it is—or at least as close as we can come given our observational equipment (see the early chapters of Kuhn's classic *The Structure of Scientific Revolutions*[24] for more on this issue). The three-dimensional view is only an incomplete representation of the world. Albert Einstein

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[22] Minkowski, Hermann. 1952. Space and Time. In *The Principle of Relativity: A Collection of Original Memoirs on the Special and General Theroy of Relativity*, edited by H. Lorentz, A. Einstein, H. Minkowski and H. Weyl. Mineola, NY: Dover. p. 75.

[23] Ibid, p. 76.

[24] Kuhn, Thomas. 1996. *The Structure of Scientific Revolutions*. 3rd ed. Chicago: University of Chicago Press.

remarked after the death of his lifelong friend Michael Besso in a letter to Besso's sister and son, "Now he has departed from this strange world a little ahead of me. That means nothing. People like us, who believe in physics, know that the distinction between past, present, and future is only a stubbornly persistent illusion."[25] Besso, the conclusion is, is in fact alive—just not at these particular world-points (or likely at any that follow from those Einstein was writing in).

40.   This 4D view of the world seems to lend itself naturally to the perdurance view of persistence through time. If the world is a collection of co-existing world-points, then for a thing to exist through time is for it to exist in a multitude of world-points. To 'co-exist' as applied to world-points does not, of course, indicate mutual existence *at the same time*, as we typically take 'co-exist' to mean—for it is inherent in the concept of a world-point that its time of existence is specified. Instead, world-points co-exist in a tenseless sense. For a thing to *exist* in a 4D world, it need not exist *now*. No time, even a time indicated by uttering the word 'now', has any kind of ontological superiority over other times—all world-points exist equally, each at the time and place specified by its defining x,y,z,t coordinates. Thus, all of the events (phenomena or occurrences) at those world-points also exist. That some exist with the same t coordinate as my utterance of the word 'now' lends them no special ontological status. From this, it seems reasonable to conclude that objects—rocks, trees, chick peas, and etc.—also exist across a number of world-points. Thus an *object* is a thing existing at a number of times and places—at a number of place-times/world-points.

41.   Just as my right hand is not located at the same world-point as my left foot (for any t coordinate, the locations of my right hand and left foot will differ in at least one of the x.y.z spatial coordinates), my right hand with the scar on the middle knuckle is not located at the same world-point as my right hand that does not have that scar—the

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[25] Dyson, Freeman J. 1979. *Disturbing the universe / Freeman Dyson*. New York :: Harper & Row. p. 193.

version of my hand that we would say is 'in the past', existing at t coordinates prior to those where (when) I received the scar. While I might arrange for my hand-with-scar to be in the same x,y,z coordinates as my hand-without-scar, I certainly cannot arrange for the two to share t coordinates. But neither of the world-points we would be observing exist in any other way than the rest exist. Thus the language of parts is adopted for Perdurantism, with all parts as ontologically important as the rest.

42.　　　　I must note, however, that in this sense there is now a dramatic difference between what the Perdurantist means by 'parts' and what I have taken that word to mean in the previous chapter, when I defined 'object' as a thing that 'drags its parts around with it.' When I walk from room to room, I certainly take my hands and feet along with me. But I do not take with me the 'parts' of me (in the Perdurantist sense) that are located at other t coordinates. The hand-without-scar located at a t coordinate fifteen years ago stays put at its x,y,z,t coordinates as I walk from room to room. And so we find ourselves in need of clearer terminology. Although 'part' has likely been used to indicate the cotemporaneous three-dimensional undetached (or perhaps detached, as we will see later) pieces of an object for longer than it has been used in the Perdurantist sense, I believe it will be less confusing while working within the persistence sphere of metaphysics to allow the Perdurantists their spatio-temporally scattered parts. I will instead use '3D-pieces' to refer to the parts of a thing located at the same t coordinate—when I write here of 'objects', I am restricting myself to things that 'drag their 3D-pieces around with them'. 'Pieces' often has the connotation of *detached* parts, but we need not carry such a bias through this paper. My hand is a *piece* of me as much as it is a *part* of me.

43.　　　　We must note also that what we will mean by '3D-pieces' is exactly what the Endurantist must mean by 'parts'. If an object is located entirely at every time it exists, as we will see in more detail shortly, then there are no other non-cotemporaneous parts lying around at other times—largely because there are no other times at which such parts could exist. Thus 'parts' for the Endurantist will either refer to nonexistent

temporally scattered slices of an object, or to the cotemporaneous bits we have dubbed '3D-pieces'. Again, in the pursuit of clarity, we will allow the Perdurantist their parts, and force Endurantism to accept for this investigation the language of 3D-pieces. I do not foresee any difficulty in this.

2.2. Of Points, Events, and Extension in 4D Space

44.   Of further importance to our understanding of the connections between the pairs of perdurance and four dimensionalism and endurance and three dimensionalism is an analysis of concepts that have been up to now used but not properly defined: point, event, and occurrence. Specifically, it will be useful to clarify whether the way that physicists and those approaching space and time from a scientific perspective use these terms is compatible with the way that we must use these terms if we are to talk reasonably about objects and changes to objects.

2.2.1. Events

45.   'Event' was defined loosely above as an occurrence at a world-point, the fundamental observable entity in relativistic physics—but what is contained within this definition? 'Occurrence' implies something ongoing, something that *happens*—in more universal terms (applying to both space and time), we seem to be referring to something *extended*. To define 'occurrence' by synonym as 'happening' seems reasonable. What sort of things are occurring right now? A man is walking by the window, a song is playing from the room's sound system, two people behind me are talking. What sort of occurrences am I aware of at the moment? An instance of walking, a sample of music, a conversation—and it is important to note that these things all require a duration of time in which to occur. A man frozen with one foot off the ground is not *walking*. Music, while a

rather complex entity to analyze, seems to require at the minimum sounds that are able to be heard, and *hearing* is a process involving perceptual mechanisms…and a duration of time. Someone frozen with their mouth open is not *talking*.

46.   So in everyday usage, 'event' implies duration, an extended and therefore measurable unit of time. Can we make sense of events that do not have a duration, or places in space, locations where something might exist, that do not have spatial extension? Let us turn to an examination of points for the answers.

2.2.2. Points

47.   In mathematical terms, when we place a point on a line, we say that we are indicating a *location* on that line. In physically performing the act, we of course must use a pencil or a line on a screen to indicate the mathematical line—even while recognizing that the line we are representing in two dimensions[26] really only has one dimension—and we must use the same methods to place the point on the line—making a two dimensional mark[27] on the page to represent what we recognize is something with *no extension* in any dimension. A mathematical point has no length.

48.   Given that a line is a length, and that a point has no length, a point is not a *part* of a line in any way we normally use the word 'part'—if we are to use our previously established convention in this investigation, we would say that a point is not a 3D-piece of the line. But that does not seem to get at the true importance of what we are attempting to recognize. A point is not a part of a line in any way that will be meaningful to us—start with an unextended point, keep adding nothing but unextended points anywhere in the vicinity that you care to, and you will never arrive at an extended line. And normal language mirrors this. For example, someone tells you to "pick a point on

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[26] Technically speaking, a line drawn on paper by a pencil is a three dimensional object given that the material left on the paper has thickness, but for practical purposes it can be discussed a two dimensional object, as the line on the computer screen is.
[27] Again, technically three-dimensional, but two for our purposes.

your arm". In response, you touch your arm with a finger from your other hand. You are indicating part of your arm—the part of your arm that the point is *on*. You are not, I would claim, indicating a mathematical point. A mathematical point is the demarcation of the meeting of two chosen lengths of a line—it is a *location* on a line, not part of the line itself. Consider:

Figure 2-A: Line ACB

The line (line segment) AB is bounded by the points A and B. A and B have no width (again distinguishing the representation of the lines and points from the lines and points themselves). Line AB does not start somewhere *within* A and continue on to somewhere *within* B, for there is no 'within' A or B. Line AC is a part of line AB, as is line CB. AB is made up of, constituted by, AC and CB—there is nothing to AB that is not part of AC or CB.

49.   So if C is a part of line AB, is it a part of AC or CB? The reasonable answer, if we were to maintain C's standing as a *part* of AB, is to claim that C is part of *both* AC and CB, just as A would be a part of both AB and AC, and B would be a part of both AB and CB. But consider:

Figure 2-B: Line ACB Again

The point C is now indicated by the color change in line AB, rather than by the use of a large black dot. Line AB is indicated by a line that is partly black and partly grey. Line AC, every part of the line, is indicated in black. Similarly, every part of line CB is

indicated in grey. There is nothing to AB that is not indicated in either black or grey. But clearly, point C is indicated neither by black nor grey, nor is it indicated by both black and grey. For it to be indicated by either black or grey, it could not serve as the meeting point of the two lines. For it to be indicated by both colors (or a single color), it would have to be extended. And there is no extension between what is indicated in black and what is indicated in grey. A point on a line is a division between two parts of the line, and not a part itself. The same is true of lines and planes:

Figure 2-C: Line DE

Every part of the square is either black or grey—but line DE is neither black nor grey, thus line DE is not part of the square. It is the one-dimensional division between, the meeting point of, the black part of the square and the grey part of the square. In this sense, line DE is visible, although unextended.

50.   It may be argued that, while we might say line DE is visible, I have not here managed to draw a truly unextended line. What appears to be a straight line is not truly even straight. When viewed on the computer screen and magnified, line DE can be seen to be made up of pixels, closely packed colored areas, the edges of which do not (or at least may not) align themselves into a straight line. When viewed on the printed page, there may be some bleeding of the ink into the paper that presents similar issues. This, I think, is no real difficulty. It is not necessary that I be able to demonstrate an actual one-dimensional line for the distinction between the line and the plane it exists on to be

understood. That the figures *appear* to the eye to have the dimensions, or lack of them, indicated is enough to literally illustrate the point.

51.	It can therefore be noted that the same conclusion follows for temporal points—12:00 can be defined as the entire minute between 11:59 and 12:01, but we can also use 12:00 to indicate the moment after 11:59:59 and 12:00:01, or between 11:59:599 and 12:00:001, and etc. The exact moment of 12:00 (and no seconds or parts of seconds) is the division between two durations of time. When I am told that I must perform an action "exactly at 12:00", I must conclude (if the speaker is rational) that it is acceptable if my action occurs over the course of a certain duration 'containing' 12:00 (containing in the same way a plane contains a line)—12:00.01 is not 12:00.00, but most actions I can take will occur over both of those times. Neither is 12:00.001 the same time as 12:00.00, nor 12:00.0001, and etc. Our normal language accommodates these distinctions, rather than eliminating or replacing them. 12:00, precisely speaking, is a division between durations, not a duration itself.

52.	If mathematical points are not parts of lines or planes (and by extension not parts of areas) but represent divisions between the parts of lines or planes (or areas), if instants are not parts of durations but are contained in durations, then we come to the apparent conclusion that world-points—the locations for events or occurrences—cannot be mathematical points. This seems to follow because world-points are where *events* are located, and there can be *nothing happening at* mathematical, extensionless points—no occurrence or phenomenon can be *contained in* a mathematical point. We can talk more loosely about what occurs *at* a mathematical point in the sense that we can discuss what is going on *around* a given point. But the point itself is a part of nothing, and has no room to contain anything: no object, no event, no occurrence. An event is the fundamental *measurable* entity, and non-extension cannot be measured.

2.2.3. Duration

53.   If then we are to talk of world-points that are locations for measureable events, we must talk of world-points that are *areas*, world-points that have extension. But how much extension is necessary for an event? Does it follow as well that world-points must have extension both in the x,y,z spatial coordinates and in the t temporal coordinate? It still makes sense to speak of non-extended 'mathematical world-points'—it makes sense because x.y.z.t coordinates defined as mathematical points can be located in the world. We can also have a set of coordinates that delineate extended areas with the spatial coordinates but include an unextended temporal coordinate, and vice versa.

54.   It seems reasonable on the surface to claim that the contents of an extended spatial area at an unextended temporal point could be measured—the diameter of a ball existing at a certain place, it seems at first glance, could be measured at exactly 12:00 (the point, not the minute- or second-long duration). Now of course the measurement could not be taken at that extensionless point, for measurement is an action, and as such is necessarily extended in time. The area we are concerned with is an area the ball is in during the durations on either side of the temporal point, and thus we can allow ourselves the room to say that the ball is there *at* that time without causing undue confusion. Likewise, the concept of *instantaneous velocity* is of use in the study of physics, and is considered to be the speed that an object is traveling *at* a durationless instant of time. It is important to note, however, that the instantaneous velocity of an object is defined as a *function of* the velocity of the object during the durations leading up to or surrounding the durationless instant in question.[28] So the practically useful quantity considered to be the velocity of an object *at* an unextended temporal point is defined only in terms of the velocities of the object during extended durations—which themselves are measurable.

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[28] More precisely, instantaneous velocity is the limit of the average velocities of the object during the increasingly smaller durations leading up to the instant in question.

55.　　　　For our purposes, we could consider for the moment only that a world-point as concerns the sort of objects we are discussing must be extended *in space*. But for those who wish to support the idea of temporal parts of objects, *temporal* extension is just as important. Perdurantists and four-dimensionalists claim that objects are made up of, composed of, a succession of temporal parts—but does it make sense to talk of a durationless temporal point as *part* of a whole that has a duration, any more than attempting to include an unextended spatial point as a *part* of an extended three-dimensional whole?

56.　　　　We could define 'part'—or another similar word, maybe instant-part—to include unextended divisions between the extended parts of an object or an area. We could even discuss the attributes of an object that exists 'at that point', where we take 'at that point' to mean that the area the object exists in contains the unextended temporal or spatial point. But any attributes of an object 'at' that point would seemingly only be able to be defined in terms of the properties of the object in the extended areas around that point—just as instantaneous velocity is defined in terms of velocity in the durations surrounding the durationless instant. Therefore we are really only talking about the properties of objects in extended areas, not in points.

57.　　　　Thus a world-point, for our purposes, will be restricted to x,y,x,t coordinates only in such instances that all four coordinates describe extended distances in each dimension. The world-point that includes 'this table' and five feet in every direction around it for a specific duration of 30 seconds can be described, as can the objects at that world-point. The contents of a smaller world-point consisting of three square centimeters inside that five foot diameter for a duration of 10 seconds during those 30 seconds can also be described. It is the contents of these sort of world-points that make up the sort of objects that we are discussing—the common sense objects that 'drag their parts (3D-pieces) around with them'.

58.   It is for these reasons as well that I will limit my investigation to exclude what have come to be called *stage theory* and *Exdurantism*. The former is the claim that the parts of ordinary objects are "instantaneous stages rather than temporally extended perduring 'worms'."[29] Such objects persist through time by *exduring*, which amounts roughly to being a collection of non-modal counterparts, analogous to counterpart theory's modal counterparts together counting as a single thing. I do not plan to spend much time discussing stage theory and Exdurantism because of my belief, explained above, that an object considered to have a duration simply cannot be *made up of* parts that have no duration. In fact, as I have also indicated, it is my belief that any properties that could be said to be 'of' anything considered to be a durationless part of an object must be derivative of the properties of things with duration. Stage theory and Exdurantism may receive a more considered treatment in other places, but not here.

2.3. Three-Dimensional Spacetime Explored

59.   What we are now presented with are two theories of persistence through time, and two theories of the makeup of space and time—and as partially indicated above, the competing pairs seem to match up quite naturally with what are usually taken to be their corresponding partners. Perdurantism seems to fit quite well with the four-dimensionalist Minkowski theory of space-time, while Endurantism appears to fit just as well with the previously[30] more intuitive three-dimensional view. But is this the case? Is there anything contradictory in an Endurantist holding a four-dimensional theory of space time, or a Perdurantist holding a three-dimensional view? Such a set of questions requires

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[29] Balashov, Yuri. 2007. Defining 'Exdurance'. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 133 (1): p 143
[30] Prior to the advent of relativistic physics, that is.

the clarification of some questions regarding three-dimensional spacetime, as opposed to the explanation given of four-dimensional spacetime.

60.   If four-dimensional spacetime is characterized by the claim that all world-points have equal ontological status—that all of them 'exist' in a tenseless notion of the word—what do three-dimensionalists believe to the contrary? Although some may argue with the claim[31], I will claim that three-dimensionalism is exemplified in the theory of Presentism, and so we shall start there.

2.3.1. Presentism

61.   The standard definition of Presentism is a very simple one: Presentism is the theory that only the temporally present exists, or perhaps that the only existing objects are temporally present objects. The past and the future do not exist, nor presumably do the objects and events in the past and future, unless those objects or events also currently exist in the present. A variant of this basic theory, often called the 'growing block theory' or 'growing universe theory', includes the claim that the present *and past* exist, but that the future does not—thus existence is a 'block' of time and space that continually grows, at least in duration. This view is exemplified by C.D. Broad, who reifies the present as something to be "tacked on" to the past. The present according to Broad is:

> …the last thin slice that has joined up to my life-history. When it ceases to be present and becomes past this does not mean that it has changed its relations to anything to which it was related when it was present. It will simply mean that other slices have been tacked on to my life-history.[32]

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[31] I am pointing here to eternalist theories, or so-called 'growing universe theories'.

[32] Broad, C. D. 1923. *Scientific thought, by C. D. Broad, International library of psychology, philosophy, and scientific method*. New York: Harcourt, Brace. p. 87. Michael Tooley has made more recent contributions to this theory in Tooley, Michael. 1997. *Time, Tense, and Causation*. Oxford: Oxford University Press.

The future is "simply nothing at all"[33], but regarding the past and present, the claim is that "the sum of existence is always increasing."[34] Broad and others claim that this theory more closely tracks our intuitions, and perhaps it may also save us from worries about determinism, although there will be accompanying worries regarding the truth of future conditionals. We are for the moment, however, concerned about the basic claim: only the present exists. I believe much of what is said critically of Presentism will apply also to the growing block theory.

62.   Before continuing to investigate Presentism, we should note that there is quite a bit of confusion regarding the classification of theories of time/spacetime, and objects in time/spacetime. Not only do we have the 4D vs. 3D dispute, and the Perdurantism vs. Endurantism dispute, but also the A Theory vs. B Theory dispute. While all of these theories are defined in terms that make them and the disputes they are involved in very distinct from each other, there is often little thought given to conflating both theories and disputes. All too often one will find trailing after Perdurantism an "i.e. four-dimensionalism", and other similar examples of confusion. And it may indeed be a contingent fact that all Perdurantists are four-dimensionalists—but that should not warrant a conflation of the theories themselves, if that is indeed what is happening in these moments of confusion.

63.   It is granted that there is a significant amount of overlap between theories, however. Consider the *eternalist*, opposed to the Presentist, who will claim that non-present objects *exist right now*, even if they might not be in this region of spacetime, or are not *present*. At first blush, eternalism seems to entail four-dimensionalism, if not simply reduce to the latter theory. Such beliefs might lead the unwary to believe that accordingly Presentism simply reduces to three-dimensionalism. But that way lay dragons, for there seems to be at least *logical* space for combinations of these views that

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[33] Broad, 1923. p. 87
[34] Ibid.

perhaps are not held by any actual people. This will be discussed in more detail at a later time. For now let us return to Presentism as a very standard case of a three-dimensionalist theory.

64.　　　　If we are to risk possibly being less than ideally charitable, we might start by asking the Presentist what exactly is meant by the claim that only the present exists. 'Exists', it seems at first glance, is a present-tense verb. Should we read this as "only the present exists now", or "the past and future do not exist right now"? I have trouble believing that anyone could deny the truth of these statements, regardless of which theory of space and time one might hold. 'Now' or 'right now', of course, seem likely to translate to 'in the present', which leaves us with the trivially true (and thus hopefully universally accepted) claim that only the present exists in the present—the past and future do not exist in the present (do not presently exist).

65.　　　　This, then, can't be what the Presentist means by the claim that only the present exists, leastwise not if this claim is what is supposed to set the theory apart from four-dimensionalist theories. Perhaps we can attempt a definition by contrast with the previously addressed four-dimensionalism. There is a sense of 'exist' which is taken to be untensed—objects or events 'exist' in this untensed notion, and we may then specify *when* they exist by using indexicals like 'now' or 'earlier' or 'later'. The Presentist claim could be interpreted as the claim that the only objects or events to which even this untensed notion of 'exist' applies are those objects or events which exist *now*. The four-dimensionalist, by contrast, would apply this untensed 'exists' to the objects or events of all times—to the contents of every world-point. The past and future 'exist' (untensed), just not *now*. Napoleon's armies at Waterloo exist, just not *now*. We can reasonably say that this is the sort of sense Einstein was making of existing, or living, when he attempted

to comfort Besso's family by claiming that Besso was still alive—Besso lives, just not *now*.[35]

66.   But have we escaped the tense trap? "The only objects or events to which this untensed notion of 'exist' applies are those objects or events which exist *now*." How do we treat the apparently tensed 'applies' in this claim? The only objects or events to which this untensed notion of 'exist' applies *now* are those objects or events which exist *now*? This would leave open the possibility that, at a future 'now', other objects or events might exist in both the tensed and untensed senses. Or is it that the only objects or events to which the tenseless sense of 'exist' ever applies—at any time—are those objects or events which exist *now*? If by 'now' we are indicating just this very 'now', then the latter seems to indicate that, when another time that is currently in the future 'becomes the now', the objects and events of that time would not tenselessly exist, as they are not the objects or events that exist at the time indicated by our specific utterance of 'now'. But is tenseless existence more fundamental than tensed existence—i.e. must an object or event tenselessly exist before or in order to exist in a tensed sense? If so, all other times would be empty of events and objects, which is absurd, and at least convincingly disproven by simply waiting until one has finished reading the end of this sentence.

67.   Therefore, we might be led to the claim that the only objects or events to which this untensed notion of 'exist' applies *now* are those objects or events which exist *now*. It might still appeal to the Presentist to abandon and untensed meaning of 'exist', and to state that his claim is none of the above, but is rather is simply that there *is* no tenseless sense of 'exist'. Things can only exist in the tensed, and *present*-tensed, sense of the word. But we seem there to have returned to the initial and seemingly circular statement. Is there another explanation?

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[35] See ¶38 above.

68.　　　　As Ned Markosian has stated it, "more precisely, [Presentism] is the view that, necessarily, it is always true that only present objects exist."[36] In order to avoid circularity, I take him here to mean both the trivial tensed 'exist' and the non-trivial untensed 'exist'. At the present moment, no non-present objects or events exist in any way, tensed or untensed. Wait five seconds…at the present moment, no non-present objects or events exist in any way, tensed or untensed. Wait one second, and the same claim holds—the claim is of course dependent upon being indexed to the utterance. Markosian's Presentist may be compared to the four-dimensionalist, who will be able to claim at any moment that all events and objects—past, present, and future—tenselessly exist, regardless of what is present at any given time.

69.　　　　We might be served by yet another explanation of the difference between the two theories. We may consider ourselves as beings able to observe, in some as-yet unexplained way, a given duration of time as 'the present'. My typing appears present to me. Specifically, while my typing of this entire sentence does not appear present to me— my experience of typing the end of a sentence does not appear to coincide with my experience of typing the beginning of the sentence[37]—my pressing of a single key, the entire act, if performed quickly enough, does appear present from start to finish. Can I break down the pressing of a key such that the end of the action does indeed appear to me to be after the beginning of the pressing? Perhaps I might, if I pay close enough attention. One might suppose that the duration we describe as 'the present' would have to be large enough to contain at the least my observation that it in fact *is* the present, but not large enough for me to be disposed to dividing the duration in giving my usual amount of attention to the world. William James classically described what he termed the 'specious

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[36] Markosian, Ned. 2004. *A Defense of Presentism, Oxford Studies in Metaphysics, Volume 1, Zimmerman, Dean W (ed); Zimmerman, Dean W*. pp. 47-82.

[37] If the typing of a particular sentence does appear entirely present to the reader, simply consider that some sentences take inordinate amounts of time to get down in a coherent form.

present' to be "varying from a few seconds to probably not more than a minute."[38] But

my perceptual abilities are limited—at some smaller duration of time, even when I am

paying very close attention, I will no longer be able to distinguish a beginning and an end

of a given event. Similarly, there will be a maximum length of time after which we will

begin to observe, without abnormal attention to the issue, that something very recent is in

fact no longer present.[39]

70.   Consider, then, a being whose perceptual abilities are *wider* in some way

than ours…a being who is able to consider a wide range of time as 'present', or at least a

wider range of time than the average human may consider. This may be due to different

speeds of the operating of perceptual hardware, or even differing conceptual frameworks

through which the world is observed. Our question then may be posed in this manner: is

there anything more for this being to perceive? The four-dimensionalist might be at ease

claiming that this being can perceive along a wider duration of the 't' coordinate—more

time would be present for this being than for a human. But is there more for this being to

perceive on the Presentist conception than we can perceive? Presumably not, if what the

Presentist contends is that we perceive the present, and there is nothing other than the

present to be perceived. Either it would be impossible for this being to perceive a *wider*

present, or this being's present is the *actual* present, and what we perceive is

incomplete—i.e. there is something of the past and/or future outside of what we perceive.

71.   But do we perceive the present—exactly and all of the present? If we

accept at least a conceptual distinction between the phenomenal present and the actual

(metaphysical) present, it becomes at least conceptually possibly that we perceive less

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[38] James, William. 1890. *The Principles of Psychology*. New York: Henry Holt and Co. p. 603.
[39] The notion of the 'phenomenal present' or 'specious present'—as discussed in cognitive psychology under the general heading of *process theory*—can inform philosophers further about such matters. Whitehead also gave some significant attention to these matters, as is pointed out in Leclerc, Ivor. 1975. *Whitehead's metaphysics : an introductory exposition / Ivor Leclerc*. Bloomington :: Indiana University Press.

than the present, or more. To shed more light on this possibility, we will examine the

following dilemma for the Presentist:

> A. The present is unextended in time (i.e. is durationless)

> B. The present is extended in time (i.e. has duration)

The second horn of the dilemma will bring with it the further question of the length of the

duration of the present, but whether this is important or not remains to be seen. What then

can we say about the available options?

72.   On the hypothesis that the present is unextended, the present would be the

temporal equivalent of a point on a line, or of a line on a plane—it is a division,

separating the past from the present. Neil McKinnon places the beginning of this view in

the hands of Augustine, in the eleventh chapter of the *Confessions*.[40] In 11.15.19,

attributing the ability to "feel" and measure time to humans, Augustine begins by asking

whether the span of one hundred years can be present—and of course it cannot, for "if the

first year of the series is current, it is present, but ninety-nine are future, and so do not yet

exist. If the second year is current, one is already past, the second is present, the

remainder lie in the future."[41] In similar short fashion Augustine proceeds to whittle

down the present to an unextended instant—years to months to days to hours, until the

inevitable conclusion is reached: "If we can think of some bit of time which cannot be

divided into even the smallest instantaneous moment, that alone is what we can call

'present'," and ultimately, because any time with duration may be so divided, the claim is

that, "The present occupies no space."[42]

73.   Augustine's claim is that any duration will include non-simultaneous

parts, themselves durations, which will be in 'earlier than/later than' relationships. And

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[40] McKinnon, Neil. 2003. Presentism and Consciousness. *Australasian Journal of Philosophy* 81 (3):305-323.

[41] Augustine. 1998. *Confessions*. Translated by H. Chadwick. New York: Oxford University Press. p. 232. Book 11, Section 15, Paragraph 19.

[42] Ibid, Paragraph 20.

thus when one of these parts is present, the other(s) will be either in the future or past, which leads to a durationless present.

74.   What we are left to consider is whether Augustine intended to refer to a phenomenal present or a metaphysical present in this argument—or if he even intended to make such a distinction at all. As I indicated above, it may be that the phenomenal present is not infinitely divisible in the way Augustine relies on—I cannot find within myself the ability to experience the first half of the tick of a watch while waiting for the second half, nor the ability to experience the second half of the tick while remembering the first half. If accepted, this evidence would stop Augustine's chain reaction at perhaps a measurable duration, which could then be identified as the phenomenal present.

75.   The metaphysical present, however, will require its own defense from Augustine. Any two concurrent durations will be in an 'earlier than/later than' relationship to each other, such that if one is present, the other will not be. And *if* any duration is divisible into a succession of durations, the present dwindles away to non-extension. One option if an unextended present is unsatisfactory is to deny the infinite divisibility of time, thus stopping the chain reaction in the same manner as the apparent discrete, non-divisible phenomenal present. Otherwise, unless there is a non-arbitrary reason to choose a potentially divisible duration as 'the present', here we sit with a durationless *actual* (as distinguished from a phenomenal) present.

76.   But is this so bad? What must the Presentist accept as a result of accepting a durationless present? McKinnon's claim is that a durationless metaphysical present would necessitate a durationless conscious experience for the Presentist—because we have to observe *something* if we are in fact observing, and all that exists to observe is the present—and furthermore that conscious experience cannot be durationless[43]. This would seem to be good reason to reject either a durationless present, or Presentism. But what

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[43] McKinnon, 2003.

about the existence of objects: rocks, trees, and coffee cups? Is there any problem inherent in the pairing of the claims that all that exists is what exists in the present, and that the present has no duration? Given the discussion above of unextended points and their status regarding lines—namely that points are not *parts* of lines—we might conclude that objects existing over durations would somehow need to be composed of parts that have no duration, which would be difficult to explain. But this may only be a problem for the Perdurantist, as the Endurantist, claimed here to be the more natural friend of three-dimensionalism, has no temporal *parts* of objects. The entire object exists, at any time we care to indicate. The Endurantist needn't waste eternity trying to add up zeros into a positive number.

77.   But the Endurantist who accepts Presentism *is* left claiming that all that exists, every object in existence, somehow exists across durations by existing in successive durationless instants. When faced with the problem of saying anything about what 'occurs' at durationless points in spacetime, the Perdurantist-as-four-dimensionalist, as presented above, resorted to accepting mathematical points as unextended, but restricting the usual sense of 'object', 'occurrence', and 'happening' to extended points. Do the consequences of durationless existence weigh as heavily on the Endurantist?

78.   It was claimed above that nothing can be 'happening' at a durationless point, as 'happening' seems to require duration. We can say intelligent things about the velocity of an object at a durationless point, or about what a person is doing at a durationless point, but only derivatively, in terms of the velocity of the object *around* that point, what the person is doing *around* that point. The Endurantist may have to accept this same derivative notion of action, or of occurrences happening to objects. The speed of a baseball at durationless instant T is defined by determining the speed of the baseball during the times before T, and after T. But when T is present, the durations before and after T are nonexistent. What sort of factual claims can we make regarding the *current* or *present* state of the baseball by referring to states of affairs and/or times that do not exist?

79.   What speed is the baseball traveling at right now? If we wish to claim that the baseball is in fact traveling right now—and it does seem funny to claim that it is not—we must give an answer: 80 mph, perhaps. But this cannot mean that the distance the baseball has traveled in a certain duration that exists *right now* projects to traveling 80 miles in one hour—for there is no duration *right now* that the baseball is traveling during. So '80 mph' must indicate that a distance the baseball *has traveled* across a measured duration of time prior to this particular 'now' projects to the baseball traveling 80 miles in one hour. I assume here that defining the instantaneous speed by a prior distance traveled will be preferable to using a future distance traveled, if just simply because we will be able to avoid questions about future conditional statements.

80.   What makes it true, right now, that the baseball traveled, say, 117 feet over the previous second? It's a popular belief that truthmakers of claims must exist in order to do their truthmaking—so what about the world, *now*, makes our claims about the speed of the baseball true? The position of the baseball? If we have located the baseball at a given point in three-dimensional space, and have chosen a durationless moment in which to do our business, we might well claim that any number of previous states of affairs might have led to the world being in this current state right now. The baseball might have been traveling 80 mph, it might have been traveling 1 mph. It might have been traveling in the opposite direction, and still have arrived 'right here', right *now*.[44] The ball is displacing air as it moves, of course. And perhaps there are people watching the ball as it travels, following the movement with movement of their eyes. But to attempt to make claims about the ball by way of making claims about the air or objects

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[44] I should note that there may very well be something about the baseball during that durationless instant if the baseball is not traveling at a constant speed. Acceleration, both positive and negative, are not relative, and indeed have very noticeable effects on objects. These effects—distortion of shape, for example—would presumably be measureable, as long as the object's physical properties are measureable. That said, we will restrict ourselves at the moment to the more problematic constant, and therefore relative, motion.

around the ball is just to push the problem away one step—we would be left with questions about the truthmakers of claims about the air, or about eyeballs.

81.   If we cannot look at the measureable states of the ball, or the world around the ball, to find the truthmakers for our claims, we must look elsewhere—else*when*. It *was* true, we might claim, that 1 second ago the baseball was 117 feet away. More properly, it *was* true 1 second ago—when one second ago was the *now*—that the ball was 117 feet away from where it is at *this* now. But can we rely on past facts to in some way make our present facts true? It is no longer true that the ball *is* 117 feet away, and we might say that what *is* true right now is that the ball *was* 117 feet away—but it's unclear how this is substantially different in meaning from our original claim about what *was* true about the ball at another time. It *is* true now that it *was* true then that the ball was (or 'is' relativized to that time) in such-and-such a location. And this is exactly the claim we want to locate the truthmakers for. We can't rely on a past state of affairs, for any such states of affairs no longer exist—we seemingly can't rely on relations between the current state of affairs and past states of affairs for the same reason (we typically want relata of relations to exist, after all).

82.   A conclusion we can draw from this matter is that Endurantism once again seems to be three-dimensionalist-friendly, perhaps even Presentism-friendly, or at least that the fates of the two theories are intertwined, because this very problem is one both must face. The problem is presented in this way: if an object is not made of temporal parts—is an object that exists entirely at every time it exists—then the object must have all of its properties all of the time. If it does not have all of its properties at every time it exists, then different, and even contradictory, statements about the same object are true at various times. The danger here is in running afoul of Leibniz's Law, or one of the principles often called by that name. And the Endurantist certainly must explain what the truthmakers are for claims that an object has, for example, on Tuesday the property of being twice as large the following Monday.

2.3.2. Markosian's Defense of Presentism, Part 1—Paraphrasing

83.　　　　In "A Defense of Presentism", Ned Markosian acknowledges these very difficulties facing the theory. Because objects and events cease to exist, in every sense of the word, when they are no longer present, Markosian claims that there are no singular propositions about non-present objects or events—we may utter sentences such as "Socrates was a philosopher", but such sentences do not express the propositions we might normally associate with them, such as the obvious proposition that Socrates was a philosopher. Furthermore, given that the proposition does not exist, it is not possible for us to *believe* that Socrates was a philosopher while Socrates is not present. And, as alluded to above, we cannot stand in relationships like 'being the grandson of' people who have passed away, or 'being an admirer of' the similarly deceased Socrates.[45]

84.　　　　These should, and Markosian admits do, raise immediate red flags. A reader has good reason to be suspicious of a theory that does not allow her to claim to be her grandmother's grandchild the moment her grandmother dies, or does not allow her to admire that same deceased grandmother.

85.　　　　The same relativity of motion, space, time and perception that was explained above as leading to the four-dimensional view of spacetime is also suggested by Markosian as presenting Presentism with, at first glance, "untenable" consequences[46]. If two events are only simultaneous relative to a frame of reference (a claim which above resulted in the tenselessly existing world-points that compose the entire world of four-dimensional spacetime), then a given event is simultaneous to any event used to mark the time that first event is occurring—a time marked on a clock, or a calendar—only relative to a third and separate frame of reference. The same clock reading 5:00 may be simultaneous to two different events when those events are viewed from two different

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[45] Markosian, 2004, pp 3-4
[46] Ibid.

frames of reference—this is a consequence of a relativistic universe. Thus the present—
what is happening simultaneous to my conscious experience, or simultaneous to any
conscious experience—is only the present relative to a particular frame of reference.

86.   While this is presumably an acceptable consequence to the four-
dimensionalist, and likely to the Perdurantist, it presents an immediate problem for the
Endurantist. If all that exists are the objects and events that exist in the present, and the
present is relative to a frame of reference, then existence itself is relative to a frame of
reference. The objects and events that exist, that constitute the world, are no longer an
absolute. The propositions that exist about the world are no longer an absolute, and the
sentences about the existences of things are not objectively true or false. Granted,
Markosian has already suggested that the Presentist may have to accept an ever-changing
series of propositions about the world, but an absolute present would at least make that
ever-changing series of propositions the same for everyone.

87.   Markosian rightly rejects a possible reply, explained by Mark Hinchliff in
his dissertation and in other more recent articles[47],[48], known as *Unrestricted Presentism*,
in which the Presentist simply claims that nonexistent objects can have properties and
stand in relation to other things (presumably to both existent and other nonexistent
objects), even while those objects are nonexistent. His rejection of the position is on
purely intuitive grounds, and I admit to being entirely sympathetic to a metaphysics that
does not lead us so far off the twist—at least unless such a theory is the best of all
available theories. By my lights, competing theories (four-dimensionalism included)
would have to have some rather unsavory consequences in order to make nonexistent
objects having properties sound appealing.

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[47] Hinchliff, Mark. 1996. The Puzzle of Change. *Nous* 30 (, Supplement: Philosophical Perspectives, 10, Metaphysics, 1996):119-136.
[48] Hinchliff, Mark. 2000. A Defense of Presentism in a Relativistic Setting. *Philosophy of Science* 67 (3 Supplement):S575-S586.

88.   If we agree, for example, that Socrates—the famous fellow who is long since dead—stands in the relation of 'being shorter than' to me, we will immediately face some rather reasonable sounding questions. "So you are claiming," the objector will ask, "that Socrates *stands* in that relation to you…stands *right now* in that relation? Does he also walk slower than you?" Well, no, of course he can't walk slower…he can't walk at all. Socrates can have properties, we say, but he cannot *do* anything right now. *Doing* something still requires that one exist, right? "Does that mean that Socrates loves Xanthippe? Or is that false?" Well, we reply, Socrates can certainly *have the property of being in love*—'being in love' is not an action. It is a property. "So Socrates loves Xanthippe? *Right now*? Doesn't loving someone involve a rather complicated set of other mental states? Can you love someone without hoping for the best for them?" You'd better be able to if being in love is a property, we reply, because *hoping* is an action, something Socrates can no longer do.

89.   "Okay, I'm getting confused," says the objector, "and I'm reminded of a song I heard years ago on the radio. Some of the lyrics went like this: "Rudy Valentino doesn't look like me, I look better than him…because he's dead."[49] Now certainly in one sense, I am better looking than whatever is left of Rudy Valentino, or perhaps less controversially I am better looking than whatever remains of his corpse. But in another very accurate sense, when shown a picture of me and a picture of Rudy Valentino, most people who have opinions on the attractiveness of men will likely claim that I am not, in fact, better looking than Rudy Valentino. Is that what you mean?" Faced with such a question, what are we the Unrestricted Presentists to say? Presumably that Rudy Valentino, the living man who no longer exists, has the property of being better looking than me—we are not referring to his physical remains in whatever form they currently exist.

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[49] Langton, Chance. 2007. "I'm Better Than Them", *I'm Better Than Them*: Old Green Records. [The lyrics have been slightly modified to better fit the discussion.]

90.　　　　Our objector continues, "But when we take the public poll, certainly the things that are being held next to each other are the picture of me, and the picture of Rudy Valentino. And if we hold the picture of him up next to my face, the relata—at least of a physical spatial relation—are me and the picture. Is the actual (but no longer existing) Rudy Valentino entering into any relation at all? I am not as attractive as a picture of Rudy Valentino, but I *am* (though I take little pride in it) better looking than a corpse. I stand in a relation in the first case to a picture, and in the second to some remains buried in the ground, perhaps dug up for a similar poll." Okay, we say, that's not what we mean. We are not talking about properties of pictures or corpses. What we mean is that there is this man…no, that there *was* this man, a man who no longer exists, named Rudy Valentino. And he, although nonexistent, stands in a relation to me of being better looking. Forgive us the tensed form of 'being' in that relation, we add, as it is an unfortunate limitation of our language.

91.　　　　"Interesting," notes the objector. "Can you stand in contradictory relations to the same thing?" Well…I would rather not have to accept that as a consequence of the theory, we say. "But you must. For while you stand in a relation to Rudy Valentino, that is to say the collection of matter that used to exist in a certain arrangement that was called 'Rudy Valentino'—that no-longer-existent guy who *has* the property of being devilishly handsome—you also stand, at the same time, in a relation to the physical stuff that *is* the continued physical form of what used to be called (and may even still be called by his descendants) 'Rudy Valentino'. You stand in the relation of 'being less attractive than' *and* the relation of 'being more attractive than' the same hunk of physical stuff."

92.　　　　Hmmmm, we say boldly. And we see the point, of course. Will it help us to distinguish Rudy Valentino the man from the pile of physical stuff he used to inhabit? Can we make sense of this by distinguishing *personal identity* from regular identity? "It can help you with Rudy perhaps," says the objector. "But we can replace 'Rudy Valentino' with 'the Colossus of Rhodes'—or if you like 'the pile of matter that made up

the Colossus of Rhodes'—and 'more/less attractive than' with 'taller/shorter than', and preserve the dilemma.

93.   Aside from being intuitively uncomfortable, this is logically uncomfortable as well. It may be that the Unrestricted Presentist will have satisfactory replies to these objections—we might wish, for example, to speak about, instead of hunks of matter, *arrangements* of matter. The *arrangement* of matter that is my current physical appearance is not as attractive as the *arrangement* of matter that…is?...was?...Rudy Valentino in his prime. What has the properties, stands in the relations in this case, are arrangements or *patterns* rather than the matter that is so arranged. Microsoft Word® has properties, for example, but is not a collection of physical stuff. Microsoft Word® might in some ontologies be said to exist even when every physical instantiation of the program has been destroyed. It is *patterns* that are owned in the case of copyright and trademark, not physical stuff, and patterns that may be in such relations. Rudy Valentino no longer exists, but the arrangement of matter that he instantiated does still exist.

94.   This, however, has the unfortunate result of taking us away from our discussion of *objects* standing in relations to *objects*, and of *past* objects standing in relations at all. The Rudy Valentino or Microsoft Word® patterns exist *now*, I think we can comfortably say, and thereby avoid the discussion of past properties entirely. At this point, then, it seems instead of pursuing this route we can instead expend our efforts more efficiently by examining Markosian's defense of a more reasonable-seeming Presentism—what he calls Serious Presentism. This is the conjunction of the basic Presentist claim (only the present, and present objects, exist) with the claim that an object can have properties and stand in relations only when it exists.

95.   In order to deal with the problem of singular propositions that are apparently about nonexistent objects, Markosian attempts to clarify what propositions we are claiming to state or believe when we utter sentences like "I admire Socrates" or "Socrates was a philosopher". He (rightly, I believe) avoids a complete rejection of

singular propositions about concrete objects, once again appealing to the markedly unintuitive nature of the claim. He also rejects what he calls the "singular-propositions-with-blanks view"[50], according to which a statement about a nonexistent object—"I admire Socrates"—expresses the unusual proposition "I admire _____," where the blank remains unfilled. Such a view arises, according to David Braun, from problems with Direct Reference theories. The basic claim of these theories is that "a proper name has no semantic function other than referring to an individual."[51] Unfortunately, when the 'individual' does not exist, the proper name has no referent, and thus has no semantic function. It would follow, then, that sentences containing such empty names cannot express propositions. This is unfortunate given that those sentences certainly *seem* as if they express propositions. The solution, in short, is that such sentences express propositions containing a *blank*. "I am shorter than _____" indicates a claim of a height relationship with me as one relata, but it does not require there to be a second relata.

96.　　　　　The difficulty with this view according to Markosian is that *all* such sentences express *the same* such propositions. "I admire Socrates" and "I admire Pol Pot" both express the same proposition, "I admire _____." Many people, however, myself included, will want to claim upon uttering those two sentences that the first expresses a true proposition, and the second a false proposition. It also seems reasonable to accept that "I admire _____", as a proposition, cannot be both true and false at the same time. If anything, such a proposition would seem more likely to have no, or an indeterminate, truth value, given the mysterious nature of '_____'. But even if we are comfortable accepting indeterminate truth values for *some* propositions, I am less comfortable accepting an indeterminate truth value for my claim that I do admire Socrates and do *not* admire Pol Pot.

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[50] Markosian, 2004, p 9.
[51] Braun, David. 1993. Empty Names. *Nous* 27 (4): p. 450.

97.   Neither does Markosian wish to accept that our statements are about unexemplified haecceities—'thisnesses' or properties that individuate objects—that continue to exist after their unique exemplifying object has ceased to exist. Rather, he claims that a paraphrasing is a more reasonable approach. "I admire Socrates" is not to be taken at face value. Admiring Socrates is not like admiring my father. For one, I have never met Socrates, and thus only admire certain *traits*, while it may be argued that both admire traits my father has and *also* admire my father, the person. If I was claiming an admiration for someone I did know who was only recently deceased—my grandfather— my admiration is still not admiration *of the man*. Instead, the claim is that my admiration for Socrates or my deceased grandfather is like my admiration for Darth Vader. I admire, I stand in a relation of admiring or approving to, certain properties—sarcastic humor in the case of Socrates, kindness in the case of my grandfather, a commitment to family in the case of Darth Vader—and I associate those properties with the respective nonexistent individuals. Or, perhaps less problematically, I associate those properties with my *ideas* of the nonexistence individuals.

98.   But I question whether my admiration of Socrates is sufficiently like my admiration of my grandfather or Darth Vader. In fact, my admiration of Socrates and Darth Vader both seem, in the same way, unlike my admiration of my grandfather. I have never met the former two apparent 'targets' of my admiration, and perhaps I can accept without objection a translation of my claims of admiration for them to claims of admiration for traits that they are portrayed as having, or for actions they are portrayed as having done—dealing efficiently and viciously with Thrasymachus, or with violent rebels. But I knew my grandfather, and my 'admiration of him' while he was alive did not appear to me to only amount to admiration or appreciation for certain of his character traits. What strikes me as true is that, *in addition* to admiring certain of his character traits, I admired *the man*.

99.   In "Moral Luck", Thomas Nagel distinguishes between making moral judgments about actions (X is an action that should not have happened), making moral judgments about objects (the world would be better off without Y), and making moral judgments about *people*. The former judgments "may be present in addition to moral judgment, but when we blame someone for his actions we are not merely saying it is bad that they happened, or bad that he exists: we are judging *him* [Nagel's emphasis], saying *he is bad* [my emphasis], which is different from his being a bad thing."[52] We know *people*. We judge *people*. And, I will add, we love *people*. We admire *people*. All of this is *in addition to* knowing properties, judging properties, loving properties (which likely includes an equivocation on 'love'), and admiring properties. Markosian's paraphrasing of my claims of admiration leaves me with a bad taste in my mouth. To love or admire a person is quite different than to love or admire an abstract property, even an instantiated property, and the former is what my love of my deceased grandfather *appears* to be, and is what I at least want to say it is.

100.   Singular propositions are also in line for paraphrasing according to Markosian. "Socrates was a philosopher" is a paraphrasing of a more complex statement: $(\exists x)[x$ is the referent of 'Socrates' and $P(x$ is a philosopher$)]$[53], where the 'P' operator is a modal operator indicating something along the lines of 'at a past time' or 'it was true at a past time that', etc. A present claim that Socrates was a philosopher is understood as a claim that a particular man is the referent of the name 'Socrates', and that the claim "Socrates is a philosopher" was true at a past time.

101.   But this appears to be false, and Markosian recognizes it as such. As I understand the problem, the proffered translation leaves us with another instance of an apparently tensed verb—and a *present tense* verb at that—applying to Socrates: a

[52] Nagel, T. 1976. Moral Luck. *Aristotelian Society: Supplementary Volume (suppl.)* Suppl 50:137-152. p. 138
[53] Markosian, 2004, p 25.

particular man *is* the referent of the word 'Socrates'. From here, our options are either false, or viciously regressive. "A particular man is the referent of the word 'Socrates'" means either:

> A. There *is*, presently, a man who is the referent of Socrates, or
>
> B. ($\exists$x)[x is the referent of 'a particular man' and P(x is the referent of the word 'Socrates')].

A is false, and B leads us into the regress—what does "x *is* the referent of 'a particular man'" mean?—a regress we must eternally follow or abandon for a downstream claim as false as A.

102.   Markosian's solution is to accept that "Socrates was a philosopher" is false. This, he argues, should not be considered to be as absurd a consequence as it might appear, for although the *propositional content* of the sentence is in fact not what it appears to be, that *linguistic meaning* of the sentence remains the same.[54] Markosian is borrowing his notion of linguistic meaning from Fitch, for whom the phrase referred to the semantical rules that help us determine how to use these problematic expressions.[55] As I understand Markosian, he is melding Fitch's linguistic meaning with a variation of Sider's *quasi-truth*.[56] The sentence expresses something that *would* be true, if and only if certain conditions held in the world—it would be true that Socrates was a philosopher if Socrates existed—and furthermore, and importantly, we all understand the linguistic meaning *even if* we are of a mind to claim that Socrates in fact does not exist. The sentence is not true; Socrates does not exist and therefore cannot *be* anything at all. But the sentence is *quasi-true*—we understand the sentence to be attributing the condition of being a philosopher to a man who no longer exists, in the same way that "Landini is a philosopher" attributes a condition to a man who does exist. We accept, claims

[54] Markosian, 2004, pp. 22-24
[55] Fitch, G. W. 1993. Non Denoting (Volume 7: Language and Logic). *Nous-Supplement: Philosophical Perspectives* 7:461-484. p. 467.
[56] Sider, Theodore. 1999. Presentism and Ontological Commitment. *Journal of Philosophy* 96 (7):325-347.

Markosian, sentences with no propositional content like "Socrates was a philosopher"
because 1) people are occasionally not Presentists, 2) Presentists and non-Presentists
alike (and the undecided) can all agree that the sentence is at least *quasi-true*, and 3)
many people are simply confused about the truth conditions of sentences like this[57] (and,
I would add, are therefore confused about the truth conditions of a large number of
sentences they use every day). If I may be so bold by way of general summary, we
continue to say "Socrates was a philosopher" primarily because the effort of changing our
language patterns is not worth the benefit.

103.   As is often the case when a philosopher bites the bullet and accepts what
has formally been seen as an unfortunate consequence of the theory, there may be little
we can say by way of rejecting this position if we are of a mind to. I don't hesitate to
state that most philosophers are not going to be thrilled with accepting that our statements
about the past, much less the future, cannot be true—and that attitude will come before
we begin to consider that the truth values of our statements and beliefs can therefore
change in the blink of an eye. My belief about someone's occupation will change right
before my eyes from true to false as the plane they are riding in crashes. But is that so
strange? My claim that Fred *is* a philosopher is no longer true when Fred dies—in order
to maintain true beliefs I will have to believe that Fred *was* a philosopher. So the
linguistic meaning of my beliefs must change upon someone's death. Why do we reject
the changing of the propositional content?

2.3.3. Markosian's Defense of Presentism, Part II—Relativity

104.   Perhaps of more importance to the present project is the apparent conflict
between Presentism and relativistic physics. As explained above, the relativity of the
present, combined with Presentism, seems to lead us inescapably to the relativity of

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[57] Markosian, 2004, p 29.

existence, a conclusion that is perilously paradoxical, or perhaps mysteriously post-modern (pick your poison there). How do we establish existence relative to frames of reference if the experiences of the world from which we get our frames of reference may not exist from other frames of reference, themselves perhaps not existing from yet other, frames of reference? While Markosian devotes relatively little space in his article to this issue, I believe it may be of more importance to us due to our discussion of 4D versus 3D spacetime.

105.   Markosian is correct to point out that theoretical physics carries with it its own philosophical baggage[58]—indeed it is difficult to tell where theoretical physics leaves off and the philosophy of physics or science begins. Philosophers, 'Natural Philosophers', and physicists are on a continuum, both historical and methodological. As Markosian writes, "it very rarely happens that we are presented with a genuine case of science versus philosophy."[59] The question, then, becomes whether relativistic physics contains in it the metaphysical assumptions necessary to make robust claims about the absolute status of simultaneity.

106.   The Special Theory of Relativity (STR) either contains enough 'philosophical baggage' or empirical evidence to entail—or necessitate—a denial of absolute simultaneity, or it does not. If it does not, then it is either neutral as concerns the nature of simultaneity, or it entails—or necessitates—absolute simultaneity. Given that the assumption is generally that the theory *does* contain whatever is necessary to entail the denial of absolute simultaneity, we will follow Markosian and regard the question as presenting not a trichotomy but a dichotomy: STR either entails—or necessitates—the denial of absolute simultaneity, or STR is neutral regarding the matter.

107.   Markosian claims that this argument against Presentism seems to rely on the claim that relativity does entail or necessitate a denial of absolute simultaneity—a

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[58] Markosian, 2004, p 30.
[59] Ibid.

hypothesis Markosian labels 'STR+'. The other hypothesis—that STR is neutral regarding absolute simultaneity, or 'STR-'—does not lead to the problematic relative existence of objects and events, because the premises do not entail that simultaneity can only be absolute. According to STR-, what we are acknowledging is that we can only *observe* to events to be simultaneous relative to a frame of reference. This, of course, seems obvious. As soon as we build the notion of 'observing' into the claim, turning it into a claim about what we can observe as opposed to a claim about objective reality, it becomes trivial that we can only *observe* two events in any relationship from a point of *observation*. Thus, STR- does not allow us to deny absolute simultaneity.

108.   And STR+, claims Markosian, is false. The empirical evidence gathered to support STR, he writes, supports STR- as well as it supports STR+. There is no reason, judging only by the empirical evidence for relativistic physics, to suppose that STR+ is true and STR- is false, as opposed to the contradictory claim that STR+ is false and STR- is true. Combining this with the belief Markosian has that better *a priori* evidence exists for STR- than for STR+, and we arrive at the conclusion that, at least, absolute simultaneity is *possible*. If it is possible, then the absolute existence we need to satisfy our most basic intuitions is also possible, even if the *phenomenal present* is relative, as it must be, to observation.

109.   Markosian is silent at this point in the article regarding his evidence for the claim that STR- has more *a priori* evidence than STR+, so we must delve into the resources he provides for us among his footnotes. We may suspect, given the other intuitive notions Markosian has used to guide his discussion through the paper up to that point, that his *a priori* evidence may stem, at least in part, from his belief that the 'man on the street' belief about the nature of time squares with a Presentist theory. I, however, am not necessarily convinced of this claim. And while surveys and polls are to philosophy as cheese is to bicycle repair, claims regarding the 'man on the street's' apocryphal opinions regarding philosophical matters are usually given as support for the

more intuitive of multiple hypotheses. Is it more intuitive, pre-philosophically speaking, that as Hillary Putnam writes, "all (and only) things that exist *now* are real"?[60] Would the 'man on the street' really reply in the negative if we asked whether Einstein is real? Would the 'man on the street' truly reply with "well, he's not real *now*, but he was real in the past"? I strongly suspect that such a 'man on the street' view must be acknowledged to be a 'philosopher on the street' view, in that I suspect that we are trading in distinctions that are unfamiliar to many outside the field.

110.   Regardless of the accuracy of the label, we will look at what amounts to a frontal assault by Putnam on the 'man on the street' intuitions about time and 'reality'. Putnam assumes for his argument the following claims:

    I. I-now am real.

   II. At least one other observer is real, and it is possible for this other observer to be in motion relative to me.

 III. If it is the case that all and only the things that stand in a certain relation *R* to me-now are real, and you-now are also real, then it is also the case that all and only the things that stand in the relation *R* to you-now are real[61].

The first assumption makes use of the 'I-now' indexical: the question is whether he wishes to indicate the 'I' of the phenomenal present, or the 'I' of a metaphysical present. We might say that Putnam is using here simply the Cartesian-I, the thinking self assured of its own existence while thinking is occurring. The use of 'I' may lead us in this direction, but we should note that in the third assumption, he makes use of 'you-now'. If we believe that STR allows for subjective presents, we have to wonder whether we are to take this as the you-of-*my*-present, or the you-of-*your*-present.

[60] Putnam, Hilary. 1967. Time and Physical Geometry. *Journal of Philosophy* 64: p. 240.
[61] Ibid, p 240-1

111.　　　　It is tempting to read the second assumption as the claim that at least one other *mind* is real, or one other *person* is real. But Putnam is clear that he does not want to be so restrictive. While I have written previously of the temptation to believe that conscious observation has something to do with important facts regarding the state of the world (specifically as presented in relativistic and quantum physics), Putnam is taking another common position of allowing 'observer' here to range over "all physical systems (even electromagnetic fields, etc.)"[62]. We can therefore conclude that the present made use of in the 'I-now' and 'you-now' indexicals is not a phenomenal present, but rather a metaphysical present. It is a present designated not by the conscious experience of interpreted sensory data—electromagnetic fields have no conscious experience—but rather a present designated by the arrival of light at a point in spacetime. This is the only sort of present which would allow for an electromagnetic field to count as an 'observer' with its own frame of reference.

112.　　　　So I am a real thing, and we assume that I am not the only real thing—we reject solipsism, a rejection which almost always seems reasonable. Let's assume that the only real (read: existing) things are the things which exist *now*—the basic Presentist claim. If I am not to be a solipsist, I must admit that at least one other thing exists—one other physical system, whether it be person, plant, rock, electrical field, etc. This is the 'you-now' of Putnam's assumptions. I am in the present—I must be, for I am thinking, which means that I exist, and for the Presentist, if I exist, I must be in the present. If a second physical system exists, it must also be in the metaphysical (objective?) present. This is 'you', or 'you-now'.

113.　　　　The third assumption Putnam calls the "There Are No Privileged Observers" principle—there is nothing metaphysically special about any particular (existing) physical system. Reality does not depend on one physical system or observer

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[62] Ibid, p 246

any more than it does on any other physical system or observer. This, it turns out, is the key to his argument.

114.   If I exist, and Presentism is true, then I am in the present. If other things exist at all, then all and only the things in the present *with me* exist. Take one of those existing things—'you-now'—and make the same claims. If 'you-now' exist, and Presentism is true, then 'you-now' are in the present. If other things exist aside from 'I-now' and 'you-now', then all and only the things in the present with *you and I* exist. If all and only the things in the present with *you and I* exist, then all and only the things in the present with *you* exist. This last may seem like an illegitimate simplification—all of the movies that *you and I* want to see are PG rated, therefore all the movies that *you* want to see are PG rated. Is there an implied 'together' in the first 'you and I'? There is an implied 'together' when we discuss the present that 'I-now' and 'you-now' inhabit, but I do not believe we want to hold that you and I can inhabit one present together, while simultaneously inhabiting different presents individually—not without equivocating on 'present', as in a switch from 'metaphysical present' to 'phenomenal present'. In this argument, placing 'you-now' in the present was only done by first establishing the existence of 'you-now', which was designated as a thing that exists *in the now that I am currently inhabiting*.

115.   This, then, is the reductio Putnam presents for the Presentist to consider. By assuming Presentism, we have arrived at the following claims: all and only the things and events that are present relative to 'I-now' exist, and all and only the things and events that are present relative to 'you-now' exist. But, demands STR, the set of all things and events that are present relative to 'I-now' may not be the same set as the set of all things that are present relative to 'you-now'. What is 'future' relative to me-now might be 'present' relative to you-now—at least, that's the claim. From here we conclude that events that are *future* in my coordinate system (i.e. relative to me-now) are *real*, relative to me—because *you-now* are real, relative to me, and events that are future relative to

me-now are present relative to you-now...and if you-now are real, then events that are

present to you-now are also real. The argument would also appear to apply to *past*

events—some events that are past relative to me-now may be present relative to you-now,

and thus would be *real*, even though they are in *my* past.

116.   Thus, future events are *real*, and thus the claims of Presentism have been

disproven. But before we concede the point to Putnam, exploring the 'simultaneous'

relationship Putnam is using between 'me-now' and other observers seems proper. In

particular, what seems problematic, at least to me, is making sense of how 'my present'

and 'your present' can be said to be simultaneous.

117.   The Presentist will allow me to say that "I am real now", and will allow

me to say as well that you are also real 'now'. Is this a phenomenal present or a

metaphysical present that we are sharing? Is there a distinction between these for the

Presentist? We might think that the Presentist *must* embrace the metaphysical present as

the meaningful sort of present, if we assume an anti-solipsist position as Putnam has.

Tying existence to *my* phenomenal experience of the world brings all of existence 'into

my head', to speak loosely. Why not tie it to *your* experience, or the experience of any

person you passed on the street today? It's not a matter of our experiences being out of

synch—if we are assuming a Presentist position regarding existence and the present, all

of our experiences are simultaneous. It's more a matter of it being an arbitrary distinction

to claim that 'realness' comes from some sort of relationship with any single person's

experience of the world.

118.   In short, this is Putnam's "There Are No Privileged Observers"

assumption. The relationships I enter into with objects in the world are no more

metaphysically 'special' than the relationships that you enter into with objects in the

world. So when we are confronted with the STR claim that objects and events that are

future to you are *present* to me, we apparently are not being forced to accept the claim

that the object's *being present to me* is what makes the object or event real. I and my

experience of the world are nothing special in this regard. Likewise, if we are to claim that future things do not exist in a Presentist framework, we are not forced to accept the claim that an object's or event's *being in your future* is what results in the object or event not existing—perhaps we should say prevents it from existing. For the Presentist, objects or events exist simply because they *are present*, simpliciter. When an object or event is then experienced by me, is *phenomenally present* to me, it must be the case that its *presentness simpliciter* is a prior condition. It must be present in order for me to observe it as present.

119.　　　　Thus it is the rejection of so-called privileged observers that is the key to Putnam's rejection of Presentism. If I am real, then I am present. And if an object or event is *present to me*, then it is *present simpliciter*…and therefore it is real. And it does not become any less real if it is not *present to you* (phenomenally present to you), for its *present simpliciter* status has already been established. And yet, if it is not present to you, then it should not be present simpliciter, for your phenomenal present should be no different from the metaphysical present than mine is. If something is not *present to you*, initial Presentist intuitions might have us believe, then it is not *present simpliciter*, and thus does not exist.

120.　　　　But note that logic does not permit us to make that last claim. If being *present simpliciter* is required for, is a logically prior condition of, being *present to A*, we have said nothing about the rest of the relationship between the two properties. It is not necessarily the case that being present to an observer—any observer—is necessary for an object's or event's being *present simpliciter*. Given that Presentism typically allows for no other times at which my experiences can exist than the objective, metaphysical present, the Presentist might be tempted to conclude that the two properties are necessary and sufficient for each other. But this may be a mistake. We may be able to accept an event's being *present simpliciter* and yet not phenomenally present to a particular observer. This, however, does not save the theory from the force of the objection.

121.   Putnam's argument does its work by presenting the Presentist with a paradox of unacceptable conditions—accept that Presentism is false, or claim that STR does not in fact describe the world as it is. But what is included in either of these conditions? Can the Presentist claim that STR is flawed as a theory, that the claims of relative time and space resulting from observations about the constant speed of light are mistaken, or are mere modes of explaining a world which is in fact very different?

122.   Much has been said in the last century regarding the supposed objective status of science—and more specifically regarding what many view as an inescapable subjective perspective that such 'objective' science is done from. We must admit, goes the claim, that all of our science, all of our theories about 'how the world is', are simply the best explanations we have for the phenomena that we experience—and that our experiences either certainly or almost certainly cannot account for the world—for the whole of existence. We see in a limited spectrum, we hear in a limited range, but more importantly than that, we *see* and we *hear*, we *smell* and *touch* and *taste*…and that's all. To reject that there may be other methods of observing existence seems short-sighted to many. STR, then, at best can only represent the best explanations that human beings have for the observations that human beings can make about the world. It is not 'fact', if we take 'fact' to mean 'an objectively accurate description of the world', for it is not an objective description at all. The 'correctness' of scientific theories comes from their increasingly accurate correspondence with our observations, and nothing more. Science, as physicist and novelist Isaac Asimov stressed, is not the practice of being right, it is the practice of becoming less and less wrong.[63]

123.   The Presentist, however, should be wary of pursuing such a course. Unlike science, philosophy is not bound by our observations of the world—our speculative canvas can include the world as it is unobserved, or even unobservable, by us, and the

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[63] Asimov, Isaac. 1996. The Relativity of Wrong. *The Relativity of Wrong*: Kensington.. pp. 225-238

history of such endeavors is long—Kant, Leibniz, Schopenhauer, Berkeley, Plato, and others too numerable to mention. However, flags of caution should be raised when philosophy flies in the face of science. Philosophers should not drop their projects whenever a physicist shakes her head in dismay, but we should be uneasy about accepting metaphysical claims that do not seem to be supported—and in fact seem to be contradicted—by the scientist's best explanations of their best observations. We should be particularly uneasy when we have no reasonable alternative explanation for those observations, or evidence that the observations are faulty in some way.

124.　　　　What must the Presentist accept if not the inaccuracy of STR? Must the central claim that only the present exists be rejected? Consider instead the proposal that the present is not an unextended instant, a durationless point between nonexistent durations—that instead the present is extended. William Lane Craig writes, for example, that durationless instants "are not properly parts of time in that only instants are ever present; there is no such entity as "the present [durationless] instant.""[64] An extended present, a present with a duration, could perhaps accommodate both my phenomenal present and the objects that are present (in some duration shorter than the *entire* present) relative to me, *and* your phenomenal present and the objects that are present (in some shorter duration) relative to you.

2.3.4. A Durational Present, Part I—Big Intervals

125.　　　　According to Neil McKinnon[65], there are two options for the Presentist who wants to accept a durational present. The second, William Lane Craig's 'non-metrical present', can perhaps more accurately be called a 'multi-durational' account, to distinguish it from the first theory we will investigate. The first is a rather straightforward

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[64] Craig, William Lane. 2000. *The Tensed Theory of Time: a Critical Examination*. Norwell, MA: Kluwer Academic Publishers. p. 248
[65] McKinnon, 2003

theory of a present made up of smaller intervals of time—what McKinnon refers to as a *big interval* theory. Existence is composed of a set of intervals of time, each of which is a *proper part* of the *big interval*, which is the set of all and only the existing times, objects, and/or events. *Big intervals*, then, are not themselves indivisible. I will myself proceed immediately one step further and claim that, if the parts of *big intervals* are indeed *proper parts*, then those proper parts must themselves have duration. As discussed earlier, I do not understand any other use of 'proper part' which allows for the proper parts of an extended whole to not themselves be extended—as if you could construct a duration if only you added enough durationless instants together, or would arrive at a line by packing together enough extensionless points.

126.   With a distinction between intervals and *big intervals*, we naturally arrive at a distinction the Presentist must make—I would phrase the distinction in terms of how successive *big intervals* are distinguished from one another, but McKinnon prefers to consider the issue as a matter of describing how *big intervals* pass out of existence. It is, however, the same distinction that I have in mind. Consider *big interval* T1, which has the proper parts P1, P2, P3, P4, and P5, and is followed immediately by *big interval* T2. On the first possible account of *big intervals*, T2 would consist of proper parts P6, P7, P8, etc. As McKinnon states, a *big interval* going out of existence in this way "leaves nothing behind"[66] of itself—no proper parts of T1 still exist when T1 no longer exists, and no proper part of T1 will be a proper part of T2.

127.   The second account represents a more fluid transition from *big interval* to *big interval*. On this account, T2 would consist of proper parts P2, P3, P4, P5, and P6, T3 would consist of proper parts P3, P4, P5, P6, and P7, and etc. McKinnon, while finding fault with both accounts due to his theories of consciousness, claims that each account is able to be defended from Augustine's classic objection to a durational present. The

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[66] Ibid, p. 317

objection is that two distinct durations cannot both be in 'the present', for if both durations are present, then they are both 'simultaneous'. But if no parts of both distinct durations overlap, then they are in fact *not* 'simultaneous'. McKinnon's claim is that this objection turns on an equivocation on 'simultaneous'—or at least that the Presentist can claim on either account that there is an equivocation according to the *big interval* theory.

128.   To disambiguate, the Presentist needs to point out that proper parts of *big intervals* are both 'simultaneous' in that they are both part of the *big interval* that is 'the present', a.k.a. 'existence'. However, the proper parts are definitely *not* 'simultaneous' in another sense, in that one is clearly earlier than another. By defining two kinds of simultaneity, we escape Augustine's objection. But I am unconvinced that such a path is going to be appetizing to the Presentist. Presentists, as indicated by their very designation as Presentists, are typically very fond of the notion that the *tensed* relationship between times, events, and objects is at the root of all 'earlier than', 'later than', and 'simultaneous with' relations. In other words, all such relationships come down to 'past', 'present', and 'future' designations. But to make the sort of distinction that McKinnon suggests is to abandon this claim regarding the most basic temporal relations.

129.   Consider: the notion of 'simultaneous' that applies to *big intervals* or the events or objects designation by their inclusion in *big intervals* is a simultaneity that can be reduced to 'past/present/future' relations. Two events are 'simultaneous' in this sense if they are both *present*, and not if they are not. But the notion of simultaneity at use among the proper parts of a *big interval* does not come down to 'past/present/future' relations, but instead only 'earlier than/later than' relations. To accept this account of a durational present would be to accept a fundamental set of 'earlier than/later than' relations that are irreducible to the favored 'past/present/future' relations, a set of relations that would need to be explained in detail—in virtue of *what*, exactly, is one proper part 'earlier than' another proper part? And perhaps more importantly, why is

whatever makes a proper part, itself a duration of time, 'earlier than' another proper part not what also makes one *big interval* 'earlier than' another *big interval*?

130.   If I am correct in thinking that the Presentist will not be comfortable with such an account, what of the second account, according to which *big intervals* share some of their proper parts amongst each other? According to this account, we could say during *big interval* T1 that, for example, an event occurring during proper part P2 can easily be in a relation with an event taking place during proper part P3, given that both P2 and P3 are existing during *big interval* T1. And in fact this relation will still exist uncontroversially during *big interval* T2 (which consists of P2-P6). The difficulty is that, upon T2's demise and the beginning of T3, the relation would either also pass out of existence, or would require the same problematic description of relations between one or more non-existing objects or events as Presentism has always faced. Suddenly, while one event is still present, it would no longer hold the same relations to events that the event formally *was* present with (simultaneous to).

131.   This creates both metaphysical and epistemological difficulties. Say that, at a given proper part of a *big interval*, I make a claim regarding the temporal relation of two events—"the firecracker on the left exploded a fraction of a second before the firecracker on the right". We might construct the situation in such a manner: at proper part P1, firecracker 1 exploded. At proper part P2, firecracker 2 exploded. At proper part P3, I spoke. But now we face a question: what *big interval* is this occurring in? The account seems to quickly degenerate into incoherence if we are not careful. "Am I in *big interval* T1 when I say what I say?" "Or am I in another *big interval*?" The problem with these questions, of course, is that I cannot remain 'in P3' while I wait to pass from one *big interval* to the next. There is no P3 that is in T1, and a *later* P3 that is in T2. There is only *one* P3 on this account.

132.   What this leads to is the conclusion that each event exists in a *series* of *big intervals*. P3 exists in T1, and in T2, and in T3, and also exists in T0 and T-1. But T2 is *in*

the future in relation to T1…and it is strange to claim that a proper part of an interval (T3) that is *in the future* with respect to another interval (T2) is also a part of an interval (T1) *in the past* with respect to that same interval (T2). If we are not careful, P3 will enter into 'past/future' relationships with *itself*, a thought which is not terribly comforting to many at all, Presentist or not. We cannot of course say that the parts of any *big interval* are themselves past or present in relation to the parts of other *big intervals*—at least for nearby *big intervals*. If we define 'entirely distinct' as indicating when two *big intervals* share no proper parts with one another, then we might be able to say that the parts of those entirely distinct *big intervals* are in the past/future with respect to each other. And this seems like progress.

133.   But then it seems even stranger to claim that the proper parts of only *nearby big intervals* do not stand in such relations to each other. Consider: the proper parts of T5—P5, P6, P7, P8, and P9—are not past/present/future with respect to each other—this to avoid Augustine's objection. P5 is simultaneous, in the tensed notion, with P9. P5 is *not* in the past with respect to P9, for both are 'in the present' when T5 is present. The proper parts of T1—P1, P2, P3, P4, and P5—are simultaneous (tensed) with each other, for they are all present when T1 is present. P1 is simultaneous, not in the past or present, with respect to P5. The proper parts of T9—P9, P10, P11, P12, and P13—are simultaneous (tensed) with each other, P9 being simultaneous with P13. But of course if the tensed notion of 'simultaneous' is transitive, then the present is infinite on this more fluid account of a durational present. This would follow because P1 is simultaneous with P5, which is simultaneous with P9, which is simultaneous with P13…and etc.

134.   Is there a valid charge of equivocation to be brought against this objection? P1 is simultaneous with P5 when 'T1' describes the present. P5 is simultaneous with P9 when 'T5' describes the present. And T5, we may grant, is 'later than' T1—T1 is *past* when T5 is present. But does it even make sense to talk of T5, the whole *big interval*, as being 'later than' the whole of T1 when they share a common

proper part? I am typing now, we shall stipulate, in proper part P5—but which *big interval* am I in? P5 exists in many *big intervals*, so I at this moment must also exist in many *big intervals*. I exist during P5 in T5, where there is more of the present lying in what (only) *appears* to me to be the future (but is actually part of the extended present). I also exist during P5 in T1, when the rest of the extended present is 'behind' me, in what (only) *appears* to be the past. How are we supposed to make sense of this, given that the claim is that I at P5 am existing simultaneously in a number of non-cotemporaneous *big intervals*?

135.   By my own lights, I must confess that such a view of proper parts and *big intervals* only makes sense if I 'step back' as it were and view the series of durations from a four-dimensional conceptual framework, treating the present as the 'experienced present', or something to that effect. When I try to 'enter into' the present as an existing thing, I find that I cannot make sense of it. To avoid a conceptual regress, we must make the claim that during P5, the entire length of this stipulated duration of time, a number of *big intervals* exist, a consecutive series of them. If P5 is a proper part of T1, it seems reasonable to claim that T1 is present while P5 is present. But this leads to contrary claims once we also state that if P5 is a proper part of T5, then T5 is present while P5 is present. Perhaps this account is indeed coherent, but I cannot see how.

2.3.5. A Durational Present, Part II—Craig's Non-Metrical Present

136.   The second option available to the Presentist who wants a durational present, according to McKinnon[67], is Craig's 'non-metrical' present. What the Presentist can claim, writes Craig, is that:

> "…the extent of the present depends upon the extent of the entity
> described as present. To quote again Andros Loizou: "…no event or state
> of affairs is ever present *simpliciter*—it is present by implicit or explicit
> reference to a kind of events or states of affairs, as when we speak of the

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[67] Ibid, p. 320-321

present eclipse, or by reference to a time scale, as when we speak of the present hour or day, and so on.""[68]

It is common enough to consider time as analogous to space in many ways, and Craig does so in his theory. It makes just as little sense, he argues, to discuss the duration of the present as it does to discuss "the extent of here"[69]—the latter is ambiguous until the indexical 'here' is given a specific reference. "We are all here" might be taken to mean "we are all in the room," or "we are all in the house," or anything either more local or general. We cannot measure 'here' until we have that reference. Likewise with time, argues Craig—"There is no such thing as "the present" *simpliciter*: it is always "the present _____,""[70]. The claim is that we cannot measure 'the present' until we fill in the blank. What goes in the blank is presumably anything we might typically refer to as 'being present'…events (games, thunderstorms, etc.), objects, measured spans (days, years, etc.).

137.   For the Presentist, Craig stresses, 'the present' is synonymous with 'existence'—this is a view Craig attributes to Prior, who considers the 'present' to be reality when considered in relation to the unreality of past and future.[71] Thus "how long is the present" is synonymous with "how long is existence", which is not a well-formed question. "How long is the present volleyball game" is a well-formed question, synonymous with "until what time will this volleyball game exist?" The present is *primitive, ontologically prior* to any metrical concept or mathematical interpretation of it. We can attempt to divide it up, measure it, but our efforts make no sense unless we divide up or measure the *things* which are 'in the present'. And perhaps this is why the previous account of a durational present appeared to devolve into incoherence—the seemingly

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[68] Craig. 2000. p. 245
[69] Ibid.
[70] Ibid.
[71] Ibid, 245-6.

insurmountable problems came when we tried to compare the *presentness* of one or more *times*, not objects or events.

138.   But does this theory fare any better at accounting for the non-Newtonian observations regarding the occurrence of events in STR? Let us consider a test case[72].

> A. Two astronauts, X and Y, are traveling in their spaceships in the same direction at different speeds. Y is travelling 'faster' than X—the difference in speeds is 90% of the speed of light.
>
> B. A third object, a moon we shall designate Z, is traveling in the same direction as X and Y, and moving at the same speed as X.
>
> C. One second after Y passes by X, a gas pocket on moon Z explodes, releasing several successive flashes of light.

According to STR, the light will travel at C (the speed of light) regardless of the frame of reference of the measurement. Thus we consider the unfolding events from the frame of reference of X. From this frame of reference, Y is traveling at 90% of C, and the light from the first explosion (let us say it is white light) is traveling at C (100% of the speed of light). Hence, at the moment of the explosion, Y is 90% of C or approximately 167,400 miles away. From then, Y continues to move away from X at 90% of C, while the light 'chases' Y at 100% of C. X will therefore observe that the light reaches Y after another 9 seconds.[73]

139.   Now consider the events as observed from Y's frame of reference. After one second, Y will be approximately 167,400 miles away from X. When the light from the explosion approaches him, however, he will observe it as approaching at 100% of C, or around 186,000 miles per second. Given that Y is only 167,400 miles from the light when it begins its journey, it will certainly not take 9 seconds for the light to reach him.

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[72] The math in this test case is to be taken only as estimations. I am ignoring here, as is common in such discussions for simplicity, acceleration of the objects in question, and dealing with constant speeds only. I do not believe the imprecision of the math will impact the accuracy of the conclusions.
[73] X's observation of this event, of course, won't occur until after that time.

From his frame of reference, Y is not traveling at 90% of the speed of *that* light. It will therefore reach him in less than 1 second—approximately .9 seconds.

140.   When the light from the explosion reaches astronaut Y, he utters a surprised "Wow!" This occurs at 2 seconds after he passed X, or 1 second after the gas explosion. Meanwhile[74], the gas pocket continues to explode, releasing a second flash of bright light, red this time, 1 second after the first explosion. Y has continued to move away from Z at 167,400 miles per second, and thus measures his distance from Z after 2 seconds as 334,800 miles—this is when he says "Wow!" The red flash of light will therefore reach him in another 1.8 seconds: $334,800/186,000 = 1.8$. Importantly, his uttering of "Wow" will be determined, from his point of view, to be simultaneous with the release of the second flash of light from Z. But this will not be the case from X's frame of reference. The initial white flash of light—the cause of Y's "wow" utterance—does not reach Y until 9 seconds after the explosion. This is a full 8 seconds after X measures the release of the second red flash of light. But is this problematic for Craig's non-metrical account?

141.   What are the events we have available to measure, to fill in the blank in "the present _____", when we attempt to refer to 'the present'? An explosion of gas, the arrival of flashes of light at Y's spaceship, Y's utterances—none of these appear problematic for Craig, as long as he is willing to accept that the question "How long is the present _____" can (and must) have any number of equally correct answers, depending on which frame of reference the answer is looked for in. But is that an acceptable condition? Is it incoherent to ask whether two objects or events are *co-existing*, i.e. existing 'at the same time'? What is the difference between a Presentist account that accepts an indeterminate number of equally correct answers regarding 'what exists' and the four-dimensional account of time? "Only the present exists," argues the

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[74] I recognize fully the futility of using this word literally here, and intend it to be a linguistic tool only.

Presentist, "not the past and future". *But by 'present'*, we ask, *you mean 'those things that exist'?* An affirmative answer to this, coupled with an acceptance of the claim that reports of what exists will vary by observer, sounds remarkably like the four-dimensional account. At the least, it sounds very little like the objective-sounding claims we have been taking to be the Prestentist's claims.

2.3.6. A Final Option—The Atomic Durational Present

142.   One reason given above for rejecting the *big interval* account of a durational present was that the Presentist seemed to have to accept a set of untensed temporal relations as fundamental—the 'earlier than' and 'later than' of proper parts could not be defined in terms of tensed relations of past and present, in order to avoid Augustine's objection to a durational present. An attempt to compromise with a more fluid account of *big intervals* led to an apparent regress with regard to the inclusion of a single proper part in a number of supposedly 'successive' *big intervals*.

143.   Does this account become more appealing if we were to accept an atomic duration as fundamental? If there are durations which are not susceptible to being divided into proper parts, what are we led to accept regarding temporal relations? Does the regress end as a result? Consider for example the theories of *quantum foam* and *loop quantum gravity*.[75] Everett Wheeler coined the term 'quantum foam' to describe a theoretical 'probabalistic boiling' of the structure of space itself at very small lengths—Planck's length specifically, or 10^{-33}cm. Much like observing the surface of a 'smooth' table at high magnification, the apparent smooth and continuous structure of space does not hold at 10^{-33}cm. Cartesian x,y,z coordinates become inapplicable due to the quantum uncertainty that applies at such a scale. The theory of *loop quantum gravity,* arising from

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[75] The basics of these theories, which I won't go much beyond, can be found, among many places, in Brooks, Michael. 1999. Quantum Foam. *New Scientist*, 28); Wheeler, John, and Kenneth Ford. 1998. *Geons, Black Holes, and Quantum foam: A Life in Physics*. New York: W.W. Norton and Co.; and Davies, Paul. 1995. *About Time: Einstein's Unfinished Revolution*. New York: Simon & Schuster.

theories of quantum foam, includes the claim that as a result of this foam-like structure of space, there is a minimum linear size of space—minimum lengths and volumes, from which all larger lengths and volumes are built. Further investigation can lead to the conclusion, due to the intimate relationship between space and time inherent in STR, that time also possesses this sort of *digital* structure. Objects move about by *jumping* from one location to the next, across an indivisible distance. *Time* progresses in similar leaps, like frames in a movie.

144.   But what hay can we make from the merging of a theory like loop quantum gravity with durational Presentism? Is the present, existence, to be accepted as only the length of Planck time—10^{-43} seconds? Is all that *exists* contained in a span of time so ridiculously short that we have trouble describing what can actually *happen* in such a span? Light only travels 1.616×10^{-35} meters in that amount of time. One option is to build up a *big interval* of the present from the more fundamental atomic units of time. The present would consist of a (likely vast) number of these atomic Planck times in succession, possibly enough to allow us to claim that observable *events* can occur in the present.

145.   Augustine will be ready to ask us the same questions he has been asking: are the atomic durations that are included in 'the present' simultaneous with each other? How can they be simultaneous if they do not overlap? How can they all be 'present' if they are not simultaneous? What, then, happens if we just accept the atomic duration itself as the present, with no larger composite present made up of smaller proper parts? Is the problem that this runs counter to our intuitions regarding space and time? It seems reasonable to claim that Craig would find it counter-intuitive—we speak, and think, of 'present events', including as an *apparent* fundamental sort of event something like 'my present thought' or 'my present observation'—the sort of events that can fit into the phenomenal present discussed previously. I step outside on a bright summer day, and I think "It's hot." It sounds reasonable to claim that this rather short mental event is

entirely present, but of course for me to think "it's hot" takes far longer than 10^{-43} seconds. The 'presently existing thing' at any moment within the duration it takes to think "it's hot" is a thing that exists for an incredibly brief span, and it is hard to conceive of such a 'short-lived' thing as *thinking* at all.

146. But I think much more complicated thoughts than "It's hot" all the time—take any of my thoughts regarding loop quantum gravity as an example. The process of thinking one of *these* thoughts can easily be observed as occurring through an apparently tensed duration. The end of the process is obviously later than, and not present with, the beginning of the process—what is observable present *now* is no longer the beginning of the thought. And yet I have no trouble accepting that there is a thing, one thing, one entity, one person, that *is thinking that thought*. 'I' am a process, we might say. It suddenly becomes no harder to accept that 'I' am something that contains or experiences a vast succession of moments so short that they are literally indistinguishable from each other. A longer 'present', made up of seconds or perhaps minutes, is a fiction.

147. What will follow such a theory includes, among many replies, concerns regarding the make-up of the 'thing that is observing the fiction'. If a long present is an 'illusion', a 'deception', we presume that there is a thing *being deceived*. Is it that thing that exists for 10^{-43} seconds that is being deceived? That thing, by itself, cannot even consider the meaning of 'deception', for 'considering' is an action that, if done, is done by that thing and the succession of things that follow after it in time. Perhaps eliminative materialism suddenly becomes palatable, particularly for Presentists—the "I" that is able to think long and complicated thoughts simply does not exist. There is only a blindly-fast succession of entities which each possess a tiny fraction of the total thought, somehow all together being deluded by the limits of my mind.

148. Alvin Plantinga has considered such a possibility as well, and arrives at much the same sort of intermediary conclusions:

> So say that a *person slice* is a person who exists for a microsecond or so. Perhaps there aren't any enduring persons, but only successions of person slices linked by appropriate causal relations and overlapping series of apparent memories. Perhaps a person slice is what (strictly speaking) thinks, believes, feels, and so on; perhaps what I refer to, when I refer to the appropriate thing that thinks, is a person slice, a thing that exists for but a moment. There is I, and all my successors, and all my predecessors; each of us exists just for a moment, the later slices often involving apparent memories: memories apparently of earlier properties of an enduring self, but actually of slices earlier in the series to which the given slice belongs. Or perhaps there aren't even person slices, if a person slice is a thing distinct from thoughts and feelings that *has* thoughts and feelings; perhaps there are only the thoughts and feelings, linked by relations of causality and resemblance. Couldn't these things be the case? More to the point, couldn't it be *both* that our experience be as it is *and* these things be the case?[76]

The loss of the person, to be replaced entirely by thoughts and feelings, may be a blow to the intuitive strength of Presentism. But regardless of consequences to concerns of *personal* identity, such a description of the existence through time of rocks and tennis balls is at least not immediately absurd.

149.   Craig quotes Prior as stating that "basic reality is things acting….dates, like classes, are a wonderfully and tremendously useful invention, but they are an invention; the reality is things acting".[77] This Craig/Prior claim about the primitive status of actions and things coincides with the Craig/Loizou position that *areas* are ontologically prior to our measurements of those areas. Compare this to loop quantum gravity, according to which one might claim that the *area* of space itself is more fundamental than the *size* of the area—there exists space at lengths smaller than 10^{-33}cm, there is just no possible *measurement* of that space. The space itself is more primitive than the size of the space; the quasi-substance has been divorced from its accidents.

150.   Craig himself addresses this possibility:

> But suppose some temporal atomist were to press the question, "What is the *minimum* spatial length or temporal duration?" It seems to me that one

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[76] Plantinga, Alvin. 1993. *Warrant and proper function / Alvin Plantinga*. New York :: Oxford University Press. p. 51
[77] Craig. 2000. p 246

could coherently reply that once one has decided to apply quantitative concepts to time there need be no such minimum length or temporal duration because both space and time are potentially infinitely divisible.[78]

Any duration we choose to identify as 'the present', according to this view, will be arbitrary, determined by a specific event. To avoid Augustine's objection, Craig refers to Loizou's claim that the non-metrical Presentist can correctly claim that a duration is 'present' if any phase of it is present. The analogy, I presume, is between the present and a physical object being referred to as 'spatially present'. Consider an old picture I am showing to a friend—I can point to a hand barely showing on the edge of the image and correctly state "I am in that picture, for that is my hand." The claim would be that if any proper part of me is in the picture, then *I* am in the picture. Similarly, if only half of my hand is visible in the picture, then 'my hand' is in the picture.

151.   On this view, measured durations are only conceptual structures. But I do not see that this is a necessary part of the overall position. The act, like the area, *can be* fundamental, primitive—even if we were to declare, because of a loop quantum gravity theory of spacetime, that there *is* a basic, indivisible unit of both space and time. The difference here is that 'the act' that is fundamental cannot be expanded to include 'acts' as we typically think of them—running after a missed bus, doing your taxes, playing the autoharp. The sort of act that *is* fundamental consists of quanta shifting around inside complex matrices. We *measure* such complex acts when our perceptions of space allow us to, and we construct larger and longer acts out of such primitive acts. But those are mere constructions, just as 'the football game' is a construction of my act of running, your act of moving your arm, his act of jumping, etc…and just as each of *those* acts is a construction of smaller physical movements, themselves constructions of the twitching of muscles and the firing of nerves, themselves constructions of…and etc. Or at least, and etc. until we arrive at the point where there are no progressively smaller acts to be found.

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[78] Ibid.

We must deny the accuracy of some of our intuitions about our own 'actions', but in this business, every road seems to lead to that destination.

2.4. Conclusion

152. Having taken a closer look at both four-dimensional and three-dimensional space, we have noticed that, while the general associations of Endurantism/three-dimensional spacetime and Perdurantism/four-dimensional spacetime do seem to be more elegant than a mixing and matching of the theories, there is room for the Endurantist to accept four-dimensional spacetime. Of course, such an acceptance seems at every turn to have potentially undesirable consequences. However, that may be more than can be said for a pairing of Perdurantism and three-dimensional spacetime, which has been left uninvestigated on the grounds that it appears immediately contradictory.

153. Given my claims regarding points, events, and duration, the Presentist who wishes to accept four-dimensional space and the Special Theory of Relativity appears hard-pressed to give up one or more of some very intuitive concepts—objective existence, for example, or the existence of the 'I'. Given these consequences, my suspicion is that the average Endurantist will wish to maintain a three-dimensionalist theory of spacetime. With this in mind, we will turn in the next chapter to a further investigation of the two theories of persistence.

CHAPTER 3 — PERDURANTISM AND ENDURANTISM

3.1. A Classic Case Of Perdurantism—Heller, Temporal Parts, and 4D Objects

3.1.1. Heller's Hunks

154.　　　　In his article "Temporal Parts of Four-Dimensional Objects", Mark Heller presents a Perdurantist view that I wish to present here as a standard example of Perdurantism. By choosing to do this, I do not wish to indicate that any or all of Heller's claims are shared by all, a majority, or necessarily any Perdurantists. I make this decision instead because Heller is discussing a Perdurantist view that involves standard objects— the sort of objects I indicated in chapter 1 that we are interested in for this investigation. Heller refers to these as "four-dimensional hunks of matter."[79] Such entities have also been referred to as 'object stages'[80], 'object segments', 'object slices'[81], 'temporal parts'[82], 'temporal phases', and perhaps more. In order to keep separate the discussion of identity from personal identity, I will endeavor here to refer to either 'temporal parts' or 'object-slices' when speaking of the general concept, and will avoid when possible using 'person-stage' or 'person-slice' language.

 Chapter Three will begin with a detailed presentation of a standard Perdurantist/temporal parts theory, and continue with an analysis of the difficulties faced by such a theory in light of the claims previously made regarding space and time.

[79] Heller, Mark. 2001. Temporal Parts of Four Dimensional Objects. In *Metaphysics: Contemporary Readings*, edited by M. J. Loux. London: Routledge. p 328

[80] W.V.O. Quine refers to entities such as river-stages and person stages in Quine, W. V. 1950. Identity, Ostension, and Hypostasis. *Journal of Philosophy* 47:621-632.

[81] David O. Brink discusses an ontology including 'person slices' in Brink, David O. 2002. Sidgwick and the Rationale for Rational Egoism. In *Essays on Henry Sidgwick*, edited by B. Schultz. Cambridge, UK: The University of Cambridge. In his discussion, he distinguishes his person *slices* from person *segments*. The former are instantaneous or "temporally minimal", the latter of longer extension in time, and thus his person segments are analogous to what we will be discussing here. Person segments, not slices, are the sort of things that can be rational, according to Brink.

[82] As in John Perry's discussions of personal identity Perry, John. 1972. Can the Self Divide? *Journal of Philosophy* 69 (7):463-488. and his previously mentioned *A Dialogue on Personal Identity and Immortality*, 1978.

155.   As Heller notes, David Lewis has attempted to explain the general concept of a temporal part by enumerating the hallmark properties of these entities. To paraphrase Lewis, we might describe a temporal part of an object (rather than a person), or an object-slice, in the following manner. A temporal part of an object is itself a physical object. It has extension, size, shape, and location. It acts, or reacts, in many of the same ways the object of which it is a part acts or reacts. It has a temporal duration, although not as long of a duration as the whole. Thus the actions or reactions the whole is capable of that the temporal part is not capable of are those actions or reactions that require a longer duration than the temporal part has. Finally, a temporal part both begins and ceases to exist abruptly. It is also interesting to note that Lewis may be willing to accept the possibility of temporal parts that are not the proper parts of any larger whole. He writes of a temporal part (a 'person-stage' in his words) that we might "suppose it to appear out of thin air, then vanish again. Never mind whether it is a stage of any person (though in fact I think it is)."[83] The parenthetical seems able to be taken as a contingent matter to some degree, given his 'never mind' dismissal of the matter as unimportant to his discussion.

156.   So we can imagine an object—a salt shaker—appearing abruptly on the table on front of us, existing there for several seconds, and then disappearing again, leaving no trace behind. This briefly existing object is a temporal part. We would be understandably unsure whether it was a part of any greater whole, but that is an epistemic matter. It is this sort of thing that we are considering—an object of momentary duration. Of course, the Perdurantist will claim that normal, everyday objects have more than just one temporal part. If an electrical storm caused our lighting in the room to flicker, we might have briefly lasting glimpses of a salt shaker sitting on the table in front of us—the lights come on, and we see the salt shaker, doing salt shakery things, existing as any other

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[83] Lewis, David. 2001. Survival and Identity. In *Metaphysics: Contemporary Readings*, edited by M. J. Loux. London: Routledge. p 417

object does. The lights go off. The lights come on again, and we see the salt shaker, still behaving in a most salt shakerish way. The lights go off again.

157.	We are observing temporal parts of the salt shaker, the Perdurantist will claim. It does not matter that, as we assume and as far as we know, the salt shaker is still there when the lights are off—we are observing the very same sort of entity we observed when the mysterious previous salt shaker appeared and then disappeared abruptly. There are, we are assuming, temporal parts of the shaker that exist when the lights are off. Compare this to glimpsing an object through vertical blinds. We see parts of the object, spatial parts, between the gaps in the blinds, and we naturally assume that there are other parts of that object in the places we cannot see. The parts are attached, of course, meaning that there is no gap, no space, in between the parts, and it seems entirely up to convention exactly how we will divide up the whole into parts—this is the lower arm, this is the upper arm, that is one finger, etc. Where we choose to claim that the head of the femur stops and the shaft of the femur starts, for example, is a matter of convenience, and is not entirely precise. But we can distinguish spatial parts of wholes easily enough.

158.	Temporal parts are like that, says the Perdurantist. There is typically no gap in between the temporal parts of objects—not spatial gaps in this instance, but temporal gaps. There is usually no duration between the end of one temporal part and the start of another. The temporal part of the salt shaker we see when the light is on is temporally contiguous with the temporal part of the salt shaker we do not see—but we claim still exists—when the lights are off. The one part ceases to be and the next part begins to be on either side of a durationless instant[84]. Because of this, it seems reasonable to claim that how we divide up the whole into temporal parts is also a matter of convention. In the room with the flashing lights, we have divided up the whole salt shaker, existing across a long duration of time, into temporal parts according to the

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[84] Durationless instant here indicating the divisions between parts with duration as discussed in the previous chapter.

flashing of the lights. But of course the lights do not hold any special sway over the four-dimensional construction of the salt shaker. It is merely more convenient, at least for the moment, to discuss the visible and non-visible temporal parts of the salt shaker, rather than distinguishing temporal parts that each exist half seen and half unseen—but this latter seems to be just as legitimate a way to divide up the shaker.

159.   We have been speaking of parts and of wholes, but the distinction between the two, if there is a real distinction, requires some clarification. Heller's proposal is that a physical object (and here I am glad that he has moved away from talk of 'persons') is not a spatial hunk of matter, "but is, rather, a spatiotemporal hunk of matter."[85] Objects fill up regions of spacetime, not just regions of space. Given the preceding discussion of the nature of four-dimensional space, I will conclude that a physical object has both extended size and extended duration—no 'object' as we typically use the word fills up an area of space but does not do so for any length of time. I do not think this is anything Heller would object to.

160.   So a physical object—a rock, a salt shaker, a banana—is a hunk of matter than exists extended in both space and time. But this is precisely what a temporal part amounts to, which is of course because, as Lewis has stated, temporal parts *are* physical objects. When the salt shaker appears suddenly on the table in front of us and disappears just as suddenly, we are left with a question—have we seen only a temporal part of a larger whole salt shaker, or have we seen the entire salt shaker? When we talk of a 'whole' physical object, we might therefore add by way of distinction that a 'whole' object is a hunk of matter extended in a designated area of both space and time *and* to which we do not wish to attribute any additional temporal parts which lie outside of that designated spacetime area. The brief blip of a salt shaker will be considered to be only a temporal part (and not a whole) if we believe that there are more temporal parts else*when*

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[85] Heller. 2001. p 331

that we wish to attribute to a larger whole along with that temporal part on the table. If we crush the current temporal part of the salt shaker to dust with a hammer, we will likely not believe that any future temporal slices of salt shakers will be parts of the same whole, regardless of their similarity to the one we crushed—although this is merely an assumption on our part.

161.   A temporal part, then, is a physical object, but we will stipulate that it is not a whole physical object. Furthermore, since temporal parts have duration, and since 'parthood' is a matter of convention and convenience, it seems reasonable to hold that temporal parts may themselves have temporal parts. Just as a finger—a part of my whole body—itself has parts (knuckles, bones, fingertip, etc.), a temporal part of an object existing for 1 second can be subdivided into ten temporal parts of 1/10th of a second each, or 1 temporal part of ½ second and 2 temporal parts of 1/4th of a second, etc. The smaller parts are parts of the larger whole, but because specifically identified parts are not real divisions (meaning that they do not exist independent of our distinctions of them), we may distinguish as many successively larger temporal parts as we wish while still staying inside the spatiotemporal boundaries of the whole.

3.1.2. Ceasing to Exist—A Brief Objection

162.   It might be said by way of objection that it is strange to use words like 'ceasing to exist' or 'passing out of existence' to describe the ending of a temporal part. Typically, when we think of something ceasing to exist, there is some noticeable change in the object—a human being stops breathing and moving and eventually rots, a rock is turned into dust, a Kleenex box is burned into ashes, etc. This is, I believe, why Lewis began his consideration of temporal parts with a thought experiment concerning the salt shaker than appears and disappears suddenly. This is a 'ceasing to exist' that we can understand. The salt shaker is not there anymore. If that is all there is to the salt shaker— if there are no additional (future) temporal parts—then it has ceased to exist.

163.   But the Perdurantist wants us to accept that, as we watch the salt shaker sit on the table and do nothing dramatic at all, temporal parts of that salt shaker are passing out of existence, ceasing to be, right as we watch. And this is, I will grant, an unusual way of using these words. But I propose that it is only unusual because we simply do not consider temporal parts most of the time—we think of objects, things that drag their parts around with them, and furthermore we usually think of objects as the three-dimensionalist does. We do not see, or feel, or hear, the *divisions* between temporal parts, so we do not consider them. I can see the divisions between the segments of a centipede, for example. I can see where my finger stops and my palm starts. I cannot see, in normal circumstances, where one temporal part ends and one begins. But certainly human sight is not so powerful as to determine metaphysical parthood of objects.

164.   Furthermore, the notion of temporal parts ceasing to exist seems to make sense when we consider that individual temporal parts are defined as the part of a whole that exists for a certain duration. The temporal part of the salt shaker that exists from Noon to 1, that particular part, of course does not exist between 2 and 3. This is because the part has been identified—via stipulation—by the time when it exists. Consider that the part of my finger that exists from my palm to my first knuckle does not exist where the part that exists from my fingertip to my second knuckle exists—again, this follows from my very picking out of the parts by their location. And if pressed, I will have to make some eventually arbitrary decisions regarding exactly where those various parts are to be separated. Similarly, temporal parts exist by our very picking out of those parts by their temporal location.

165.   As to the typical, dramatic, and noticeable 'ceasing to exist' of normal objects mentioned above, I am reminded of a quote from Steven Wright. Everyone dies instantly, his claim is—you're alive-you're alive-you're alive-you're dead. There are usually noticeable signs of an impending 'ceasing to be' of most objects, but it is easy enough to imagine 'disintegrators', machines that disassemble objects into their

constituent atoms faster than we can follow. Fire can often achieve the same result of a thing passing out of existence very suddenly. The object is seen to simply disappear. Now consider that temporal parts also simply disappear. Once 1:00 passes, I can no longer see the temporal part of the salt shaker that existed from Noon to 1. And it disappeared suddenly. I did not start seeing the temporal part existing from 1 to 2, and see the Noon to 1 part slowly fade away. The part that existed from Noon to 1 was there, right there, entirely visible, and suddenly it wasn't. Now, of course it was replaced immediately, and seamlessly, by the part that exists from 1 to 2. But my seeing of the part existing from Noon to 1 ended just as suddenly as 1:00 arrived. Once 1:00 has arrived, we can certainly agree, can no longer see the part of the object that existed before that.[86]

166.   Consider my finger again—it would be unusual, but not necessarily wrong, to indicate a spot on my finger and say "the upper part of my finger ceases to be right around here". Of course I would say 'right around here' because my act of pointing with a finger, on the scale of something the size of my finger, may be somewhat imprecise. I might do away with the vague language if I used a fine pointer—a pin or laser pointer—to indicate the place instead. But it seems that I can indeed indicate where one body part 'ceases' and another body part 'starts'. Again, the analogy of temporal parts to spatial parts seems appropriate. The conclusion to draw here is that 'ceasing to be' does not require flames, or long procedures of rotting, or an empty space left behind, or anything else we might consider to be a dramatic physical change—and the ceasing to exist of temporal parts certainly does not require a dramatic physical change in the whole, nor it would seem any physical change in the whole at all, if we define physical change in the whole in terms of changes in size, shape, constitution, etc., over a duration.

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[86] Of course there is a caveat: my perceptions, taking time, will necessarily be *behind* the existence of the things perceived. When I see the clock reach 1:00, the clock itself is actually slightly *past* 1:00. I am then, in a sense, seeing a temporal part that no longer exists. This is, I believe, a far more interesting claim than some might give credit, but it is not a claim for the present investigation.

3.1.3. Thomson's Objection and 'Normal' Objects

167.	A more difficult problem to confront here will be the objection raised against theories of temporal parts by Judith Jarvis Thomson. This objection appears to have immediate force for many temporal part theories because, I believe, of the lack of restrictions made to the scope of terms used. I also believe, however, that the restrictions made here will allow us to escape from Thomson's objections. 'Object', as we specified earlier, is being used only to refer to 'normal', everyday objects—the sort of things that drag their parts around with them. We are decidedly not concerned herein with any more esoteric use of 'object' that encompasses a collection of unconnected and otherwise unrelated parts (the 'object' that is my shoe, my neighbor's dog, and the northern half of Chicago), things that do not drag their parts about with them (as Heller lists, "processes, events, ways things are, sets, and portions of careers or histories"[87]), or any possible combination of such things (the object that is my shoe, my neighbor's pack of dogs, and my possible career as a meteorologist).

168.	Consider Thomson's attempt to explain the concept of a temporal part. She charges that those who use the term have been too "casual"[88] in explaining precisely what they are identifying, and presents her own charitable attempt at a definition. But how charitable is the end result of her efforts?

169.	In her attempt to understand temporal parthood, she begins by either conflating 'parthood' and 'temporal parthood', or by making the latter a subset of the former. She claims that, as she understands it, those who are friends of temporal parts claim that temporal parts are "literally a part of the whole." She opposes this to identifying temporal parts not as parts of the whole but as, for an example, parts of the whole's history. But it's unclear that this attempt at disambiguation is any less 'casual'

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[87] Heller. 2001. p 329.
[88] Thomson, Judith Jarvis. 1983. Parthood and Identity Across Time. *The Journal of Philosophy* 80 (4):201-220. p 205

than the definitions she is attempting to replace—for it's unclear what Thomson means to indicate by 'part'.

170.   I have been using 'proper part' so far when describing temporal parts, and I have intended to mean by 'proper part' that the temporal parts of four-dimensional objects *make up* the whole object—that combining the temporal parts together, and nothing other than the temporal parts, will result in the whole. Of course here I do not mean to commit to physicalism, as the notion of a temporal part of an object seemingly can accommodate a non-physical substance that may come along with the physical whole. But this is neither here nor there. When you have accounted for all of the temporal parts of a physical object, you have accounted for the whole physical object. The former seems to be both a sufficient and necessary condition for the latter.

171.   We also, of course, must have a concrete notion of the physical parts of a physical object. In another perfectly reasonable sense, my physical body is made up of all and only the physical parts. When you have accounted for all of the physical parts of my body, you have accounted for the whole physical body. But importantly, we must note that there is a limit to the interplay between physical parts and temporal parts. One will fail, for example, to account for the whole of a four-dimensional object by accounting for the physical parts that are present at a particular given time. Enumerating such parts would enable one to account for only the whole physical body that is present at that time—accounting for the physical parts of an object at a given time, or across a given duration, accounts for the physical body of a temporal part of the object. We say this because surely we must admit that the object may have more, or fewer, or other, physical parts later on, or earlier. Objects gain and lose physical parts.

172.   It even seems strange to attempt to account for the whole physical object by enumerating the physical parts belonging to that body across the entire duration of its existence. Indeed, merely listing the physical parts with no reference to their place in the temporal part structure of the whole will not be helpful to many projects regarding that

object. What have we said about a house, the four-dimensional object existing over the span of 200 years, if we simply list the rooms, roof lines, siding material, windows, and etc., without explaining the order in which they were parts of the house, the temporal relations between these parts? Don't we, when explaining the whole of a physical object, over time, explain it by way of reference to the temporal parts? "This house used to be a small Sears & Roebuck project house, and the west half was added on in 1901…the new roof was put on in '38…"

173.   It seems perhaps more proper, and certainly more coherent in cases like the house description, to refer to physical parts as parts of temporal parts. Temporal parts are, as Lewis has claimed, themselves physical objects. They do things that the whole does, they take up space, etc. And the temporal parts of a whole will usually (perhaps always) have different sets of physical parts—ions will be scraped off, cells will die, etc. But what does this leave us concluding? Temporal parts are proper parts of a whole physical object, understood as an object with a temporal duration. They are proper parts because they and only they, when accounted for, account for the whole object. Physical parts are also proper parts, but they are proper parts of a given temporal part of an object (perhaps multiple temporal parts, given various possible divisions of the whole into temporal parts or of parts into increasingly smaller parts). Physical parts are therefore indirectly proper parts of the whole four-dimensional physical object, but we must remember that adding together all of the physical parts constituting an object over its lifetime only accounts for the whole when reference has been made to their place in the temporal parts—in the history—of the object.

174.   This, I think, is a clear distinction between temporal parts and physical parts, a distinction which I believe allows us to avoid any confusion arising from discussing 'parts' in general. Thomson's objection, however, relies on more than just this general confusion. Her objection begins with the (very roughly) outlined thought experiment as follows:

1. Take H to be a tinkertoy house, made all and only of tinkertoys, sitting on the shelf at 1:15.

2. Take W to be the fusion of all and only the tinkertoys on the shelf at 1:15.

3. H = W.

4. At 1:30, we remove tinkertoy Alpha from H, replacing it with tinkertoy Beta.

5. H is on the shelf at 1:45.

6. From 3 and 5, we conclude that W is on the shelf at 1:45.

7. W is not on the shelf at 1:45 (for W necessarily included Alpha, and not Beta)

The 'temporal part' solution suggested by Thomson is to claim that, in making statements like "H is on the shelf at T", we are in fact discussing temporal parts of the whole tinkertoy house: H-from-1:00-to1:30, for instance. As I understand it, the proposed solution is to replace the object in the first premise with "H-from-1:00-to1:30", and likewise replace the entity that is the fusion of tinkertoys in premise 2 with "W-from-1:00-to-1:30". Premise 3 remains as written.

175.   At 1:30, then, we remove a tinkertoy from H. It seems reasonable then to say that, while we can leave premise 5 as written, premise 6 no longer follows from 3 and 5. W-from-1:00-to-1:30 is not on the shelf at 1:45. Is W still on the shelf? What exactly is W, the fusion of tinkertoys, now that we have brought temporal parts into the mix? W is no longer used to designate the tinkertoys on the shelf at a particular time—those fusions will now be designated with labels like "W-from-1:00-to-1:30". W must be the whole that those temporal part fusions are parts of. Perhaps W is a fusion of all of the tinkertoys that will ever be on the shelf, or perhaps just the tinkertoys that will be on the shelf and associated with H, the tinkertoy house. Perhaps we can restrict W to a duration instead. I

do not think any of these will be particularly problematic, given for the moment that we are accepting the existence of fusions in the first place.

176.   Thomson, for her part, acknowledges that some might be uncomfortable with accepting the sort of fusions she proposes. If we are not comfortable discussing the 'fusion of the tinkertoys on the shelf at such-and-such a time', she writes that we are free to consider instead 'the wood that is on the shelf at such-and-such a time'—tinkertoys are made entirely of wood, and granting that there is nothing else made of wood on the shelf, 'the wood that is on the shelf' should encompass all and only the tinkertoys that are on the shelf. We are then to replace talk of the fusion of the tinkertoys and W in premises 2, 3, 6, and 7, with talk of the wood on the shelf, and the placeholder W'. We will still arrive at the conclusion that W', the collection of wood that had been on the shelf at 1:15, is still there on the shelf at 1:45, and this conclusion will still be false.

177.   Whether we accept fusions or collections of wood, Thomson is right that we seem able to solve the problem by appeal to temporal parts. But, Thomson argues, there is a problem with relying on temporal parts for a solution to this problem. Accepting temporal parts leads us to "absurd" results, and "a crazy metaphysic—obviously false"[89]. For example, Thomson claims that, if we accept the claim that every object is a temporal part of itself, then we will be able to treat Thomson's chair like any other temporal part—specifically, we will be able to claim that there is a time T that her chair exists through, and no part of her chair exists outside of T, either before or after. But this will lead us, she argues, to conclude that the legs the chair was eventually made out of existed before the chair existed, and therefore the legs are not part of the chair.[90]

178.   And this would indeed be an absurd result, if it followed from a theory of temporal parts. But assuming we can designate a duration through which Thomson's chair exists (a very foggy sort of endeavor), what we should conclude from a theory of

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[89] Ibid, p 210
[90] Ibid

temporal parts is not that, if an object exists entirely within a time T, then no *part* of that object exists outside of that time. We are to conclude that no *temporal part* of the object exists outside of that duration. Here, then, is the problematic conflation of 'part' with 'temporal part'. But, replies the Thomson-esque objector, didn't I claim above that physical parts of an object are *parts of temporal parts*? If that's correct, then the legs of the chair prior to the chair's existence, being parts of the chair, would need to belong to a temporal part of the chair. And since the chair is hypothesized to not exist at that time, the conclusion is that the legs are not part of the chair.

179.   But we only arrive at this conclusion if we agree that the pieces of wood that at a later time are to be the legs of the chair are, *at that earlier time*, parts of the chair. And this seems like a claim we can simply reject. Gazing at a pile of wooden legs in a chair factory, I see no problem with claiming that "those are not parts of any chair" is a true statement. The legs *become* parts of the chair at some time during the creation of the chair. Even if we admit, as I think we should, that things like chairs have either non-rigid or arbitrarily determined beginnings and endings to their existence—at what point during the construction process does the thing being built become a chair?—it seems unproblematic to both claim that the 'parts' still exist prior to the existence of the whole, and yet reject that they are actually parts of the whole *at that earlier time*. The physical objects that are chair legs exist prior to the chair's existence, but they do not have the status of 'chair parthood' at that time.

180.   Does this lead us to any distressing consequences for our metaphysics? Physical objects can now gain and lose 'parthood', participation in a whole, without themselves being dramatically affected. Alpha, the tinkertoy that was removed from tinkertoy house H at 1:30, was not altered in any significant way. If H is a physical object, and I see no reason why it should deny it that status at the moment, then certainly the parts of H existed, and were not parts of H, *prior* to the existence of H. Certainly objects such as tinkertoy houses are not created *ex-nihilo*. Thomson calls the intuition that

physical objects can gain and lose parts "the most obvious common sense".[91] But I am
not sure that claiming that physical objects gain and lose parthood amounts to, or implies,
the claim that physical objects gain and lose parts. When the chair first begins to exist, it
does not seem correct to say that the beginning chair "gains parts"—to 'gain' parts
implies that the chair already existed with a certain constitution, and acquired a different
constitution at that point. The chair did not 'gain parts' as it was made—rather, the
physical objects that went into making the chair *gained parthood*, and thereby was the
chair created. It did not exist prior to that, which it would have had to in order to 'gain'
parts. Looking at the duration of existence of 'chair leg C1', we see now that a temporal
part of C1 is a physical part of Thomson's chair—it is more properly a physical part of a
temporal part of the whole four-dimensional object that is Thomson's chair.

181.   Will this help us to overcome the remainder of Thomson's objection?
Relating physical and temporal parts in the way we need to, she argues, becomes
problematic when both objects or parts do not exist at the point in time at which we wish
to state the relation. If we wish to claim, for instance, that two objects are discrete (that
no parts of them overlap) at a given time—x D y @ t[92]—we will run into trouble when
we try to relate my nose to Caesar's nose. What are the conditions that must be met for
being discrete from an object that does not exist at this time? What are the conditions for
being non-discrete with an object that does not exist now? Presumably, we are to
conclude that if an object does not exist *now*, then nothing can be a part of it *now*. But
does this not lead us to claim that, in the case of Caesar's nose (which does not exist
now), Caesar's left nostril is therefore not a part of Caesar's nose *now*? Indeed, Caesar's
nose, the whole object, is currently discrete from Caesar's nose, the whole object, on this
definition, for there are no parts of Caesar's nose which can overlap.[93]

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[91] Ibid, p 213
[92] Read "x is discrete from y at time t".
[93] Thomson. 1983. p 214

182.   Can the Perdurantist accept such a claim? Are we right to think, as Thomson seems to, that we should want to preserve the truth of "Caesar's nose is identical to Caesar's nose" at all times, regardless of the existence of Caesar's nose? Perhaps the answer lies in requiring some sort of existence claim as a prerequisite for properties like discreteness, non-discreteness, identity, etc. What do we mean when we indicate that an object is *discrete* from another object? Might we mean that an object *exists physically separated from* the other object? If we accept a definition like this, then Caesar's nose cannot be discrete in relation to anything *now*—neither can it overlap (be non-discrete from) anything *now*. This strategy is akin to treating properties like complex questions. Have you stopped cheating on your taxes? Is Caesar's nose discrete from my nose? A simple answer of 'no' does not tell the whole story. I have not, in fact, *stopped* cheating on my taxes, because I never was cheating on my taxes. *Stopping* requires a process. Analogously, Caesar's nose is not discrete from my nose, but that is because *discreteness-at-a-time* requires existence at that time.

183.   It does seem strange, however, to put *my nose* in the subject position in the same sentence—to say that my nose is not discrete from Caesar's nose right now. In order to keep away from the absurdity Thomson charges the view with, we would have to claim that 'not being discrete' is not equivalent to 'being identical'—presumably because 'being identical' also requires existence. To make sense of this, the Perdurantist could claim that what he is doing is denying the claim that "being discrete from X" is a property that the proposed entity has—this as opposed to claiming that "not being discrete" is a property that the entity has. This is an analogous position to a position one can take on apparently paradoxical statements like the Liar's Paradox. "I am lying now" or "this sentence is false" can be considered to be lacking *any* truth value, rather than having both. Claiming that those combinations of words are actually nonsense masquerading as statements is one possible way to attempt to accomplish this.

184.　　　　What is analogous to that claim regarding no-longer-existing objects? Presumably, the claim would be that it is nonsense to attempt to attribute properties *now*—at least relational and most likely non-relational properties—to objects which do not *now* exist. This strategy is not without its difficulties, but it strikes me that we are now dealing with one of the standard difficulties that any theory of metaphysics will face, and one we have already seen briefly in an earlier chapter, namely how one manages to relate existing objects to nonexisting objects. We *want* to be able to place ourselves in relations with Caesar, or our future great-grandchildren, or possibly even Batman. And if this is the difficulty that Thomson's objection can be reduced to, the Perdurantist should be happy, for it is a difficulty that is already on his plate.

185.　　　　How then, by restricting our discussion to 'normal' objects, are we able to dodge much of the urgency of Thomson's objection? While she seems to want to reject this claim, the primary force of her argument still appears to come from her use of 'fusions' of things or objects. She refers early on to what she calls the Fusion Principle: $(\exists x)(x \in S) > (E!y)(y \; Fu \; S)$. As she translates it, this is the principle that "if anything is a member of S, then there is such a thing as the fusion of the Ss."[94]

186.　　　　What follows from the Fusion Principle, as Thomson acknowledges, is an explosion of entities, 'fusions', that will fall outside of our theoretical definition of 'object' in this project. The set of "all giraffes and all apples" will, for example, result in a thing which is the fusion of all members of that set—there is an entity, an *object*, which is the fusion of all giraffes and all apples. Such an entity is most certainly not something which 'drags its parts around with it'. 'All giraffes and all apples' does not move about, fall down, have a position and speed, etc., as one normal object does. Is there in fact a 'thing' which is the fusion of all giraffes and all apples? I suppose, when we decide to deal with the category of "all things", we should be readily willing to accept every sort of fantasy

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[94] Ibid, p 202

or conjecture as a 'thing'. And why not? The wildest, most logically contradictory notion is in fact still a wild, logically contradictory notion. And 'wild, logically contradictory notions' are indeed 'things'. 'Thing' is perhaps the most unrestricted of all possible groups—indeed, someone once remarked to me that "'nothing' is a thing", which certainly does appear to be the case.

187.   Is there a 'thing' which is the fusion of 'all giraffes and all apples'? Certainly. We might even provide slightly more specific synonyms for 'thing' in this specific case: 'notion', 'subject of a sentence', 'group', 'set', 'class', 'collection', etc. But none of these are considered to be 'objects' in the sense we are using—they are certainly not common sense objects, they do not drag their parts about with them, and 'physical object' does not apply to them. Some might wish to attribute properties to some of these, but it is more difficult to assign properties to a class or set than one might think. There is famously good reason, for example, to want to avoid such pseudo-properties as "being believed by X to be" or "being spoken of by X", 'properties' that otherwise might naturally be thought to apply to the subject of a sentence—the morning star and evening star difficulties are the classic case of the problem with this route. And while the class of all 'physically large' things (whatever we define physically large to be) is not itself physically large, a class may be 'empty' or 'large' when we compare the number of members it has to other classes. Thus classes do have properties. And it seems reasonable to say that classes may have relational properties in the same way—indeed, 'large' is a relational property.

188.   Do we need to be concerned with the relationships such non-objects may have to objects? May I actually be 'fearful of' the *class* of all tigers, or am I actually afraid of individual tigers (or of a mental image of a tiger, or of death by tiger-bite, or of my general frailty or mortality or something else the thought of a tiger represents to me, etc.)? Can I be discrete from the class of all machine sheds? I am not convinced that the issues such non-object entities will face are of concern to the immediate project. If

classes exist, then they exist through durations; at least, that seems like a likely claim, although the duration of existence of the class of all objects that exist with no duration—an empty class—might cause trouble. The persistence through time of a class or set might seem intuitively to reduce to the persistence through time of the class members. But this intuition fails when we consider empty classes. A class does have its own existence apart from the class members it claims, even if that existence is only the existence of a concept or notion, a so-called *abstract object*. The class of all prehistoric physicists has no existing members, and yet the class may plausibly have properties.

189.   However, we not concerning ourselves with the persistence through time of classes, but only of ordinary physical objects. If notions or abstract objects or subjects of sentences exist, they exist through durations (again, at least a likely claim). But we are not concerned with the persistence through time of notions, abstract objects, concepts, subjects, or the like—although the matter does strike me as interesting, it is beside the current point. Their existence and persistence requirements might very well be wildly different from that of physical objects. But because of that very possibility, my impulse is to want to avoid confusing the issue of persistence through time of physical objects by bringing abstract objects into the discussion—I certainly will not want to allow an '=' to be put between a physical object and a 'fusion' without significant argument.

190.   My claim, then, is that we may talk of a fusion of any number of entities: my foot, your head, and the Eiffel Tower. But we are not talking about a *physical object* at all. At most, we are talking about some other sort of entity that is in some way *composed* of objects. And this is not merely a grammatical distinction, but a metaphysical one. The claim, not argued for here, is that such non-object entities *are nothing more* than the objects, spoken of in a certain way. Either the supposed entity made up of my foot, your head, and the Eiffel Tower persists through time only as, and no more than, my foot persists through time, your head persists through time, and the Eiffel Tower persists

through time, *or* the entity is a concept, an abstract entity, and thus is already admitted to have a different set of possible properties from objects.

191.   If this is the position we take regarding fusions and objects, we might ask what force Thomson's objection has without the Fusion Principle. As mentioned above, she claims that her arguments stand if we replace all talk of fusions with talk of what we might call collections of things. She replaces talk of the 'fusion of the tinkertoys on the shelf' with talk of the 'wood on the shelf', draws parallel conclusions, and continues on. But is there a real distinction here? I have denied that fusions are objects—is 'the wood on the shelf', when I point to a house made of tinkertoys, an object? Is it anything other than the tinkertoy house itself?

192.   In one sense, no, the wood on the shelf is nothing more than the tinkertoy house, and vice versa—in the sense that the tinkertoy house *consists of* the wood on the shelf. But of course most of us will want to claim that the house will persist in a way that the wood will not. Replacing Alpha with Beta allows the house to persist while the wood does not. 'The wood on the shelf' now has a different referent. But is 'the wood on the shelf' an object? In the case of the tinkertoy house, 'the wood' seems to fit our loose 'drags its parts around with itself' standard of objecthood. Compare the wood on the shelf to 'the plastic in my car'. I do own a car, and there is indeed plastic inside that car—quite a great deal of it. And given that there are no parts of my car that are not attached to the car, it is true that there are no plastic bits in my car that are not dragged about with the rest of the plastic bits when the car moves.

193.   But consider waving a magic wand and instantly disintegrating every part of my car that is not plastic—would you be left with an object? Imaging the plastic pieces all hanging together in more or less the same positions they were in before you disintegrated the car—we can grant for argument's sake that all of the plastic pieces in my car are not only attached to the car, but are themselves connected in an uninterrupted chain, such that removing all metal, glass, and other material would not cause one piece

of plastic to fall from the position is was in previously. Would you be left with 'an object'? We might think it's reasonable to say that you would indeed be left with an object, for an artist could conceivably obtain those same plastic parts from a junkyard and assemble them into the same configuration—and a sculpture is certainly an object. Of course, we might not hold that 'the plastic in my car' is an object if it is not all interconnected. Waving the magic wand again and being left with a jumbled pile of plastic pieces might leave us reluctant to use 'object' in this case in the singular, to refer to everything that is left as a whole.

194.   There is another meaning of 'the plastic in the car' or 'the wood on the shelf', however. Can I not pick up two tinkertoys of drastically different sizes and say of the larger one "there is more wood here (or *in* here) than in the other one"? Or I can point to a plastic lawn chair and ask "do you know how much plastic goes into making that?" I can speak of 'the wood in that single tinkertoy piece' just as easily, and correctly, as I can speak of 'the wood on the shelf'. And it is somewhat mysterious what we are referring to when we speak this way. We might claim that we are referring to some parts of the tinkertoy or chair, but this seems unlikely. If I point to 'the wood in that tinkertoy', and someone carves a chip off the tinkertoy and asks "is this one of the things you were referring to?", I will think they have misunderstood me. I was not referring to a collection of *things*, but rather of *stuff*. I had no *wooden things* in mind, nor do I have any plastic things or bits in mind when I refer to the plastic 'in' that chair.

195.   But perhaps, one might object, I *do* have things in mind—wood and plastic, after all, are made of molecules, in that reducing the physical constituents of either of them past the molecular level will leave you without wood or plastic. Both are defined by a specific molecular structure. So might I be referring to the molecules of wood in the tinkertoy, the molecules of plastic in the chair? It's conceivable, but does not seem necessary. Someone who is familiar with wood or plastic might just as easily refer to 'the wood' or 'the plastic' without having any knowledge of molecules. In this case,

we might think that they are unknowingly referring to molecules, but I am uncomfortable for a number of reasons with unknowingly referring to things. Still, this is an option.

196.   We might instead wish to invoke universals—'the wood in that tinkertoy' sounds suspiciously like 'the red on that book'. We might even wish to combine this with something like Armstrong's structural universals theory to bring back a veiled reference to molecules. In this case, 'the wood on the shelf' sounds even less like an object that might be equated with a tinkertoy house, for universals certainly do not drag their parts around with them. As Joan Pagès is correct to point out in her criticism of Armstrong's theory, universals are commonly conceived of by *removing* the particulars from a state of affairs.[95] *Particulars* drag their parts around with them. Whatever your view of universals and particulars, I am willing to bet that you do not wish to claim that a universal is a physical object.

197.   Perhaps *tropes,* then. Is 'look at all the wood in that tinkertoy' equivalent to 'look at all the instances of the property of woodness', or something of a similar vein? The inclusion of a reference to quantity in the original phrase is still problematic, for it is difficult to distinguish multiple tropes of wood in one single unbroken tinkertoy. So maybe the solution is to claim that 'all', the apparent comparison of quantity, is short-hand for something else. Perhaps the real claim being made is that the instance of the property of wood on the one hand takes up less space than the instance of the property of wood on the other hand, and there is no pluralistic claim. 'All the wood' is, then, *not* analogous to 'all the people'. It is more properly 'all *of* the wood', which might be analogous with 'all of the car' or 'all of the molecule'. But this does not seem to coincide with other similar statements: 'look at *how much wood* is there', '*how much* plastic goes into that chair'. This seems clearly to be referring to an *amount*—not a countable amount, perhaps, but not all amounts are countable—as opposed to a *size* of a singular amount.

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[95] Pagès, Joan. 2002. Structural Universals and Formal Relations. *Synthese: An International Journal for Epistemology, Methodology and Philosophy of Science* 131 (2): p. 219.

198.   At the least, I believe that it is yet to be shown that we can reasonably

place an "=" between 'the tinkertoy house on the shelf' and 'the wood on the shelf'. I

believe this even as I willingly accept that the tinkertoy house is *made of* all and only the

wood that is on the shelf—or at least that the tinkertoy house is made of all and only the

wooden pieces that are on the shelf. Tinkertoys are made of *wood*, and thus a tinkertoy

house is made of *wood*. But is the tinkertoy house made of '*the* wood'? This is a much

less obvious claim. If 'the wood' is to be identified with an instantiation of a universal, or

with a trope, there will be a lot more to say. But this is not the place for such

investigations, and so I will also recognize a possible plausibility of such a claim. But for

now, 'the wood' appears to not get us any farther than 'the fusion'—it is an 'object' of

questionable existence to begin with.

3.2. Heller's Replies to Objections

3.2.1. Thomson and Van Inwagen

199.   For his part, Heller remarks that Thomson's account is problematic

because it "seems to be developed against the background of an unhelpful presupposition

about the nature of physical objects."[96] That presupposition, he claims, is of an

Endurantist view of physical objects. If this is true, then of course her account of

temporal parts will be problematic, given that she would be attempting to provide an

account of temporal parts of things that have no temporal parts. I am not certain I agree

with Heller about Thomson's bias in that account, but as indicated above I do concur that

she is incorrect in accepting the claim that there can be two distinct physical objects

occupying exactly the same set of three-dimensional coordinates at the same time—what

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[96] Heller. 2001. p 329

Heller describes as the fourth of five "unpleasant alternatives"[97] that a three-dimensional view of objects leads to.

200.   Heller lists the five alternatives, one of which he claims must be accepted in order to defend a three-dimensionalist view, and the philosophers who accept each as a way to save their three-dimensional view of objects, as:

> (a) there is no such physical object as my body (which presumably no one wants to deny)
> (b) there is no physical object in the space that we would typically say is now exactly occupied by all of me other than my left hand (accepted by Peter van Inwagen)
> (c) no physical object can undergo a loss of parts (accepted by Chisholm)
> (d) there can be distinct physical objects exactly occupying the same space at the same time (accepted by Thomson)
> (e) identity is not transitive (this or something very like it is possibly accepted by Peter Geach)[98]

The last of these, it should be noted, is rejected without reservation by van Inwagen, who writes that "anyone who rejects the principle of the transitivity of identity simply does not understand the difference between the number one and the number two."[99] What is interesting is that van Inwagen leads into the previous quote by claiming that "people who take this line are, as Professor Geach would say, "not to be heard""—and yet Heller attributes the rejection of the transitivity of identity, or something very like it, to none other than Geach himself.

201.   The Perdurantist will claim that an ontology of temporal parts allows us to avoid the unpleasant alternatives above. A dilemma van Inwagen uses in his objection against the doctrine of arbitrary undetached parts (and against Perdurantism in general) is resurrected by Heller as an example of the general sort of problem Thomson, van

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[97] Ibid.
[98] Ibid, pp 329-330
[99] Van Inwagen, Peter. 1981. The Doctrine of Arbitrary Undetached Parts. *Pacific Philosophical Quarterly* 62: p. 128.

Inwagen, and others bring against temporal parts. The dilemma is built by denying all of

the above alternatives (a) through (e), and Heller claims is solved with temporal parts.

> **Assumption:** my body exists (from the denial of (a))
> - Def: My body = 'Body'.
> - Def: All of my body except my left hand = 'Body-minus' (its existence derived from the denial of (b) above)
> - Def: Time 't' = the time my left hand is cut off.
>
> 1. The thing that is Body-minus before t = the thing that is Body-minus after t.
> 2. The thing that is Body after t = the thing that is Body before t (from the denial of (c) above, we accept that a body can lose parts).
> 3. The thing that is Body-minus after t = the thing that is Body after t (from the denial of (d) above, we accept that distinct things cannot occupy the same space at the same time).
> 4. From 1-3, we conclude that the thing that is Body-minus before t = the thing that is Body before t (from the denial of (e) above, we accept that identity is transitive).
> 5. But the thing that is Body-minus before t ≠ the thing that is Body before t (Body was *bigger* than Body-minus before t).[100]

It is at this point in his own project where van Inwagen rejects the denial of the

transitivity of identity that is one option for resolving the apparent contradiction between

premises 4 and 5. Generally speaking, a property is transitive if X bearing that property to

Y and Y bearing that property to Z indicates that X bears that property to Z—'being taller

than' is a good example. If identity is transitive, then from X=Y and Y=Z, we would

necessarily conclude that X=Z. I take it that the denial of the transitivity of identity would

allow us to reject 4 while keeping 1, 2, 3, and 5. Body-minus-after = Body-minus-before,

Body-before = Body-after, and Body-minus-after = Body-after, but we draw no further

conclusion. W=X, X=Y, Y=Z, and yet W≠Z.

202.   Algebraically, van Inwagen is obviously correct—such a denial makes no

sense when our variables stand for numbers. And while physical objects are not numbers

(and possibly numbers are not physical objects), we tend to think of equality and identity

applying to objects exactly as it applies to numbers. There is no difference at all between

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[100] Heller. 2001. p. 330.

the way '=' is typically thought to work when placed between '2x2' and '4' and when it is placed between 'Barack Obama' and '44th President of the United States'. This is why, frankly, we have had difficulty in accounting for 'morning star/evening star' sort of dilemmas—the notion of universal substitution of identicals is a mathematical notion, and holds for mathematical equations. Beyond that, we begin to run into difficulty. I cannot universally substitute the words 'Bruce Banner' for the words 'The Hulk' and retain the same *linguistic* equations (i.e. statements) across all uses—particularly when we discuss statements of people's beliefs about Bruce Banner and The Hulk.

203.   It seems to me that there may be reason to question this conflation of identity, as applied to objects, with identity as applied in mathematics (I hesitate to use the term 'numerical identity' for the latter simply because of the implicit conflation that term already accepts). There is far more packed into the concept of an 'object' to even allow us to say that there is a single concept of an object. The limits of certain objects may be a matter of convention (where does 'the beach' end?), other objects may not be accepted as objects in some metaphysics (is 'the beach' even a single object?). And while there is contention regarding the metaphysical status of numbers, there is little contention regarding the use of '=' in applied mathematics.

204.   But consider: while the operations performed are both mathematical, Socrates and I would disagree on whether to place an '=' between '2 – 2' and '0'. I am told the ancient Greeks did not have the concept of zero in their mathematics. What we may wish to conclude from this is that there is no disagreement about the relationship between '2 – 2' and the answers that Socrates and I will arrive at when subtracting 2 from 2. *Both answers* will be identical to, equal to, '=' to, 2 subtracted from 2. But there is also an element of the non-mathematical, or at least a matter that is perhaps not the province of *applied* mathematics—namely, the relationship between 'nothing' and the number 'zero'. When Socrates subtracts 2 from 2, he is left with 'nothing', just as when Socrates starts with 2 sacrificial roosters and kills them both, he is left with nothing. On the

contrary, I will also be left with 'nothing' when I give away both of my two sacrificial roosters—but I will arrive at *zero* when I subtract 2 from 2. Mathematicians will look at me strangely if I write 'nothing' as the answer to '2 – 2'.

205.　　　　What I am attempting to illustrate here is simply that it may be wise to reinvestigate our willingness to apply the mathematical notion of identity to other non-mathematical appearances of the word 'identity'. If we decide that other notions of identity *are* in fact significantly different from the mathematical notion as to give us pause, then perhaps there is room to question other similarly applied mathematical notions—such as transitivity. This is unintuitive to many, including many philosophers. We love binary relationships across our discipline—things are identical or not identical, statements are either *true* or *false*. This latter may lead us to conclude that therefore answers are either *wrong* or *right*—but this would ignore that a student who replies "the answer is '17'" to the question "what is 8+8?" is *less wrong* than the student who replies that the answer is 'blue'. However, this is not a discussion for this investigation, and while I am not as quick as van Inwagen to consider such an option immediately "absurd"[101], we can assume for the moment that identity of objects is as safely transitive as identity of numbers seems to be, and go where this assumption leads us.

206.　　　　Where I will claim this leads us isn't very far. The Perdurantist is able to sidestep the transitivity issue by appealing to identity through time and *distinguishing* it from identity at a time—diachronic identity as opposed to synchronic identity. If temporal parts are physical objects made up of physical parts, and whole physical objects are made up of those temporal parts, then what it means for two non-contemporaneous temporal parts to be 'identical' is radically different from what it means for an object to be identical with an object existing *at the same time.* A temporal part at time t is 'identical' to a temporal part at time t2 if those two temporal parts are parts of the same

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[101] Van Inwagen. 1981. p. 126.

whole physical object—we need make no mention of sharing all or any parts or properties, although some sharing of parts or properties will usually (perhaps always, perhaps even necessarily) be the case. Two temporal parts being 'identical' (diachronically) is analogous to pointing at two of my fingers in turn and saying "*that* is the same thing as *that*"—referring both times to my physical body as a whole. But for a thing to be identical to a thing existing at the same time (synchronically identical), the impulse still is to apply Leibnizian standards of sharing all parts or properties, being in the same location, etc.

207.   If this is how a Perdurantist views identity, then the Perdurantist can willingly accept the transitivity of identity, wholly and without reservation, while still denying that 'A-at-t = B-at-t' follows from 'A-at-t = A-at-t2', 'B-at-t = B-at-t2', and 'A-at-t2 = B-at-t2'. The Perdurantist solves the problem by pointing out that the '=' in the last premise, an '=' of *synchronic* identity, is not the same relation as the '=' present in the two preceding premises. *That* '=' represents *diachronic* identity. The problem arises from our failure to recognize, or to properly symbolize, the distinction between the two relations.

208.   In response to such a reply made by the Perdurantist, van Inwagen clearly declares his Endurantism when he writes that what he absolutely denies is:

> …a violation of the principle of the transitivity of identity *simpliciter*, by the way, and not of a principle that claims transitivity for some "specialized" version of identity like "identity through time." So far as I can see, there is no relation called "identity through time," unless those words are simply another name for identity *simpliciter*.[102]

Now, in once sense van Inwagen is mistaken in his implied interpretation of Perdurantism's claims. He apparently takes an appeal to temporal parts in avoiding the dilemma above to be a violation of the principle of transitivity of identity—and the quote

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[102] Ibid. pp 126-7

immediately above indicates that van Inwagen believes the Perdurantist to be claiming that they are violating a *different*, special kind of identity. But the Perdurantist need not claim that there is *any* denial of transitivity of *any* sort of identity, if by 'transitivity' we are indicating an equivalence property using the *same relation* throughout. As above, the Perdurantist can *appear* to deny transitivity of identity, but this appearance is again due to an illegitimate conflation of *two* properties, two relations. Perdurantists need not deny the transitivity of identity in order to distinguish 'identity through time' from 'identity at a time'. Synchronic identity can be accepted as transitive, and diachronic identity can be accepted as transitive, without apparent difficulty. The former is van Inwagen's (the intuitive) sense of identity; the latter is more correctly a *parthood* relation.

209.　　　　Van Inwagen does appear correct, however, in the second half of the quoted passage, when he claims that Endurantism has only one identity relation. If objects are fully present at every time in which they exist—if there is in some way no problematic difference of property or composition between 'A-at-t' and 'A-at-t2', even when 'A-at-t2' appears dramatically different from 'A-at-t', then the same Leibnizian standards of identity can be used for synchronic and diachronic identity. There is just 'identity', or "identity *simpliciter*" as van Inwagen calls it, as we apply it across the board, regardless of what times the relata are located relative to each other. If in an algebra course a student on one page equates 'A' with 'B', and on another page equates 'B' with 'C', then as long as the referent of 'B' is not changing from page to page, transitivity applies. There is no change in the meaning of the '=' he uses to equate any of these variables. The same holds for van Inwagen's Endurantist—identifying 'Winston Churchill' on Tuesday with 'Winston Churchill' on Wednesday uses no different standards of identity than does identifying 'Winston Churchill' on Tuesday with 'Winston Churchill' on that same Tuesday.

3.2.2. Geach, Relative Identity, and Sortal Dependence

210.   Where then does Geach indicate that he holds a position Heller considers to be close enough to denying transitivity of identity as to "have the same effect for this argument as accepting"[103] the denial of the transitivity of identity? In "Identity", the article Heller cites for his claim, Geach declares that his primary interest is to argue for "the thesis that identity is relative."[104] This is, in short, the thesis that "X is the same as Y" is an incomplete expression—it must be considered to be short for "X is the same A as Y" if it to mean anything at all. Such a position is similar to that taken by Hobbes in his *Elements of Philosophy* as a solution to 'Ship of Theseus' sort of problems.[105] Answers to questions such as "what ship will you end up on?" will depend on how you choose to define 'ship', and pointing at Theseus' ship when he pulls back into port and asking "Is that the same one?" will be revealed as meaningless. The same *what*? Ship? Object owned by Theseus? Collection of wood? Even 'ship' must be further defined in order to receive an unproblematic answer.

211.   Can this rejection of absolute identity alone be considered a rejection of the transitivity of identity? I would hesitate to make that claim, given that the sort of 'non-transitivity' allowed by a theory of relative identity would be of the same sort allowed by the Perdurantist and his distinction between synchronic and diachronic identity. 'The same boat as' would presumably not be *cross-transitive* with 'the same collection of wood as'—A may be the same 'boat' as B while B is the 'same collection of wood' as C, and yet we may reject that A is the same 'boat', or 'collection of wood', as C. But to say this is not to have denied the transitivity of any *single relation*—we have only made further distinctions between relations. To deny the transitivity of a relation, we

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[103] Heller. 2001. p. 330.
[104] Geach, P. T. 1967. Identity. *Review of Metaphysics* 21: p. 3.
[105] Hobbes, Thomas. *The Elements of Philosophy, Section I: On Body, Part II, Chapter 11: The Same and the Different* [cited. Available from
http://www.philosophy.leeds.ac.uk/GMR/hmp/texts/modern/hobbes/decorpore/decorp2.html#c11.

would have to deny that 'same boat as' was transitive when 'boat' is being used in the same sense across multiple pairings of relata. And this is not something Geach, nor Hobbes, seems to want to accept.

212.　　　　I believe Geach's stance on this is made clear by his 'surmen'—beings who differ from humans in just one aspect: two different surmen cannot have the same surname. If, Geach argues, we "suppose that each Leeds man has just one surname"[106] (and presumably that each surname in Leeds belongs to only one man[107]), then we can claim of every man in Leeds that he is *the same surman* as himself. Every man in Leeds is also, of course, *the same man* as himself—and importantly, given the one-to-one correspondence of men and surnames we have supposed, each surman then is *the same man* as himself. But the fact that there is a one-to-one correspondence of men to surmen in Leeds is only a result of the supposition—in an alternate Leeds, Fred Jones, who's son is named Bill Jones, would be *the same man* as himself, but would fail to be *the same surman* as himself.

213.　　　　Under the one-to-one supposition　(of 'men' to 'men with unique surnames', writes Geach, there are not "surmen *as well as* men in Leeds; "surmen" and "men" simply give two ways of counting the inhabitants."[108] What follows from Geach's claims is the conclusion that X and Y may be identical given one specific relative identity relation (Locke's *same man*, for instance) and yet may fail to be identical given another specific relative identity relation (*same person*). This, then, I will take to be the claim Heller is pointing to as being similar enough to the denial of the transitivity of identity as to be treated as such for the sake of Heller's arguments. It must be pointed out, however, that Geach is *not* claiming, nor does it follow from his claims, that any *individual identity relation* would fail to be transitive.

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[106] Geach. 1967. p. 11.
[107] Geach's quote seems to indicate the opposite of what he needs to indicate here: as I understand it, surmen are defined by the uniqueness of their surnames, not by each one only having one surname.
[108] Geach. 1967. p. 12.

214.　　　　Heller's claim regarding Geach's thesis, then, bears further investigation, which we may gain by reconstructing Heller's Body/Body-Minus argument in Geach's relative identity terms.

> **Assumption:** my body exists (from the denial of (a))
> - My body will be referred to as 'Body'.
> - All of my body except my left hand will be referred to as 'Body-minus' (its existence derived from the denial of (b) above)
> - At time 't', my left hand is cut off.
> 1. The thing that is Body-minus before t ***is the same*** _____ ***as*** the thing that is Body-minus after t.

Now we face the first question: what do we fill in the blank with to keep our first premise true? 'Collection of matter' does not work, given the reasonable assumption that my body is gaining and losing tiny parts as time passes. Perhaps 'collection of body parts' will work better, as long as we can state without complaint that 'my eyeball' is the same body part, still 'my eyeball', from time to time.

> 1. The thing that is Body-minus before t ***is the same collection of body parts as*** the thing that is Body-minus after t.
> 2. The thing that is Body after t ***is the same collection of body parts as*** the thing that is Body before t (from the denial of (c) above).

But 'collection of body parts' will fail to preserve our truth values here, as Body after t is one hand short of Body before t. 'Same object referred to as my body' will preserve the truth value of 2, but may fail to preserve the truth value of 1—is all of my body except my left hand referred to as, picked out as, 'my body'? We might say casually "there is my body" when we see a picture in which my left hand is cropped out, but we will also be apt to note that what we are indicating is not *all* of my body. My intuition is to maintain that 'same object referred to as my body' fails to maintain the truth of premise 2.

215.　　　　Body-minus before t, the object, is the same *referent of the term "Body-minus"* as Body-minus after t, the object. But that relative identity relation will not apply to 'Body'. If we are denying (d), the claim that there can be distinct physical objects exactly occupying the same space at the same time, then can we also claim that Body-

minus after t is *the same physical object as* Body-minus before t? Here we face a dilemma. Either we decide that we cannot claim this because Body-minus is *not* any physical object other than Body (Body-minus is a notation for *parts* of a physical object, but 'Body-minus' is not the object—'Body' is the object), or we decide that we can in fact make this claim because, intuitively, 'my hand' is a physical object. How absurd is it, we would note, to say "my hand is not a physical object"?[109]

216.   Let us assume for the moment that we can agree that 'Body-minus' can be called a physical object. Premises 1 and 2 would now be true.

1. The thing that is Body-minus before t *is the same physical object as* the thing that is Body-minus after t.
2. The thing that is Body after t *is the same physical object as* the thing that is Body before t (from the denial of (c) above).
3. The thing that is Body-minus after t *is the same physical object as* the thing that is Body after t (from the denial of (d) above).
4. The thing that is Body-minus before t *is the same physical object as* the thing that is Body before t (from the denial of (e) above).
5. But the thing that is Body-minus before t *is not the same physical object as* the thing that is Body before t (Body was *bigger* than Body-minus before t).[110]

Does Geach's relative identity allow us to reject premise 4? It doesn't seem like it does. We could only reject the premise if 'is the same physical object as' was distinguished into still further relative identity relations—if 'object' or 'physical' were taken in two different senses in the preceding premises. A true rejection of the transitivity of individual identity relations would allow us to reject premise 4, but Geach cannot.

217.   However, perhaps there is more to be said regarding the differences in calling an entire body a physical object and in calling undetached parts of that body a physical object. One might wish to take a (perhaps partial, paraphrased) page from van Inwagen and deny (b), that there is no physical object in the space that we would say is exactly occupied by all of my body except my left hand, by pointing out that *of course*

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[109] We should note that this is exactly the position taken by van Inwagen.
[110] Heller. 2001. p. 330.

there is a physical object in that space—*my body* is in that space. It is in *more* than that

space at the moment, to be sure. But it certainly is in that space. The physical object that

is in that space is not to be distinguished from the physical object that is in that space *plus*

other contiguous spaces. Body and Body-minus are the same *physical object*, yet we are

distinguishing two different *collections of parts*. Is the front half of my car the same

collection of parts as all of my car? Certainly not, for the pieces that make up 'the front

half of my car' will not include the tail lights. Are they—'the front half of my car' and

'all of my car' *the same car*? Why wouldn't it be? If 'the front half of my car' is a car at

all, it is not a *different* car.

218.   This argument turns on the inclusion of 'exactly' in Heller's alternative

(b)—there is no physical object in the space that we would typically say is now *exactly*

occupied by all of me other than my left hand. But what does this mean? A space exists

that is occupied by all of me except my left hand—there are x,y,z coordinates that can

describe where all of me except my left hand resides at any moment. And all of me

except my left hand occupies no other space than that space, given that the space was

defined as that space occupied by all of me except my left hand. Is there anything else

other than all of me except my left hand in that space? Presumably, yes. There are

neutrinos passing right through my body, trillions of tiny electrically neutral particles that

are existing right where my body is existing. On a larger scale, there is food being

digested in my stomach, which is also within the boundary of the physical space occupied

by all of my body except my left hand.

219.   Well, perhaps we can be much more specific about the space we are

talking about—given enough time and a supercomputer, let's assume I am able to give a

complex set of coordinates such that they describe exactly where all of my body except

my left hand is, while *leaving out* all of the 'non-me' things that are within the general

outer boundary of that area. Thus, there is an area of space inside my stomach that would

be recognized to not contain part of me, just as there would presumably be trillions of

smaller areas throughout my body recognized as containing neutrinos, and not part of me. So there is now nothing other than all of my body except my left hand in the space we have described, and that space entirely contains all of me except my left hand. There is a space defined as the space *exactly* occupied by all of me except my left hand, and there is a physical object in that space—me, my body.

220.　　　　But according to current van Inwangian strategy, we would want to reject that the physical object in that space is *exactly contained* in that space. What exactly occupies the space in discussion is 'all of me except my left hand'—and we mean by 'exactly occupies' that no part of 'all of me except my left hand' is outside of that space, and there is no part of that space that is not occupied by 'all of me except my left hand'. What we deny is that 'all of me except my left hand' describes a *complete physical object*. There is an object there, but there is no object *exactly* there—the *whole* object is not there. There seems to be nothing wrong with claiming that there is a physical object in the space that is exactly occupied by all of me except my left and, *and* claiming that the physical object that is there is not *entirely* there—a part of it is elsewhere.

221.　　　　What this is heading for is a rejection of premise 1 as currently stated. The claim would be that it is misleading to refer to Body-minus as its own *physical object*. That only leads us to confusion, as premise 2 is then too easily taken to be distinguishing a *different* physical object, when it is not. If 'Body-minus' indicates something that 'Body' does not, the fan of Geach's relative identity might claim, it indicates a *collection of parts*, rather than a physical object. Thus, premises 1 and 2 are restated as:

1. The thing that is Body-minus before t *is the same collection of parts as* the thing that is Body-minus after t.
2. The thing that is Body after t *is the same physical object as* the thing that is Body before t (from the denial of (c) above).

And with this restatement of the premises, the dilemma disappears. We need not reject the transitivity of identity relations in order to reject premise 4—we need only note that it

does not follow from premises 1 through 3 as now stated. In fact, we may wish to be much more specific in our phrasing of premise 3 now. Given that 'Body-minus' was used in premise 1 to refer to a collection of parts while 'Body' was used in premise 2 to refer to a physical object, premise 3 can now be read as an identity claim being made between a collection of parts and a physical object—the collection of parts designated by such-and-such is the same physical object as the physical object designated by such-and-such. It seems that premise 3, if true, would include a change in the referent of 'Body-minus'—the name is now being used to indicate either a physical object or *both* a physical object and a collection of parts.

222.   Can we then deny every one of Heller's unpleasant alternatives without arriving at a contradiction? We agree that there is a physical object called 'my body', and thus we deny (a). We agree that there *is* a physical object in the space that is exactly occupied by 'all of me other than my left hand'—that physical object is my body, even though another part of my body is outside that space—and thus we deny (b). We accept that physical objects can lose parts by identifying 'Body' after t with 'Body' before t, and thus we deny (c). By denying that 'Body-minus' is a physical object distinct from 'Body', we can safely deny that distinct physical objects can occupy the same space at the same time—we deny (d). We can also accept that each and every identity relation is transitive—we can deny (e). And all of this seems to come with no Body/Body-minus contradiction, *and* seemingly without having to accept a temporal parts ontology.

223.   Seeing that we would have leaned rather far towards the claims made by van Inwagen in his rejection of the Doctrine of Arbitrary Undetached Parts (DAUP), it bears investigating to discover whether van Inwagen can be happy with this use of *parts* of physical objects. In the article bearing the title of the Doctrine, he clearly leaves to her own devices the philosopher who wishes to claim that there is some *abstract* sort of entity corresponding with 'Body-minus', the philosopher who holds a theory that in some way connects parts with abstract notions of combination. Specifically, van Inwagen

claims that DAUP is the claim that, for example, "the northern half of the Eiffel Tower is a concrete material particular in the same sense as that in which the Eiffel Tower itself is a concrete material particular."[111] If we take 'concrete material particular' to indicate the *normal* sort of objects we have been discussing—the *whole* physical entities that drag their parts around with them—then so far so good. The northern half of the Eiffel Tower is not an object *in addition to* the Eiffel Tower, Body-minus is not an object *in addition to* Body. Enumerating all of the normal, whole, physical objects in the world will not require us to list both Body and Body-minus, both the Eiffel Tower and the northern half of the Eiffel Tower.

224.   Van Inwagen sees the same pending contradiction that Heller has indicated, but claims that the most reasonable escape route from the problem, given that one accepts DAUP (which van Inwagen does not), is to also accept a form of *mereological essentialism* (ME)—the general thesis that objects cannot survive the loss of a part. In particular, van Inwagen claims that DAUP leads to '*Mereological Near-Essentialism*' (MNE)—the difference between this thesis and the former parent thesis being that for MNE lost parts may be 'replaced' in order for the object to survive.

225.   The bones of the argument are indeed similar to that of Heller explained above, as Heller indicated. Where van Inwagen differs is in the solution to the contradiction he believes adherents of DAUP would embrace—to claim that Body before t is not identical to Body-minus before t, and most certainly without rejecting the transitivity of identity, the DAUP adherent will (must? should?) accept that Body simply ceases to exist once the hand has been cut off. Body-minus continues to exist, as Body-minus did not lose a hand—the part severed from Body was never a part of Body-minus, by definition. But Body ceases to exist, and therefore there is no 'Body after t' existing to be identical to 'Body before t'. The row of dominoes never falls, contradiction is avoided.

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[111] Van Inwagen. 1981. p. 124.

226.   But we are to reject this conclusion, according to van Inwagen, because "one can, after all, survive the loss of a leg."[112] Body continues to exist after the hand is severed. The proper conclusion, then, is to abandon DAUP, to claim that there *are* and *were* no objects such as 'Descartes except for his leg', 'my body except for my left hand', etc. Of course the compliment is also to be rejected. If 'all of me except my left hand' is not an object, then 'all of me except 'all of me except my left hand''—i.e., my left hand—is not an object either. At least, I assume, such things are not objects while they are *attached*. Cut off my left hand and fling it across the room and I will, when I am conscious, want to call my hand an object in its own right (even while informing the paramedics that it is *my* hand). And all of this seems in keeping with the denial of Heller's (b) alternative above—there is an object (if we mean whole, distinct, *normal* object) in the space occupied by all of my body except my left hand. But that object is not 'all of my body except my left hand'. Rather, that object is 'my body'.

227.   Returning then briefly to the earlier and ongoing project of disambiguation regarding terms, we should note that Perdurantists will be very likely to claim that in fact there is a sense in which physical objects *cannot lose parts at all*—at least not *temporal* parts. It still makes sense to speak of objects losing parts, Descartes losing his leg (which is van Inwagen's example), me losing my hand, etc. But if we stick to the part ontology we have built previously, we will have to note that while we can speak of physical parts being 'lost'—meaning that a physical bit of matter was at one time attached to other bits of matter and at a later time was not attached—we must note that temporal parts cannot be 'lost'. Temporal parts cannot be part of a physical object at one time and not part of that object at a later time. If 'Tom from Noon to 4 today' is a temporal part of the physical object that is me (albeit a poorly labeled part), then it is, *tenselessly is*, a part of the whole. It is true *now* that 'Tom from Noon to 4 today' is a temporal part of me, it will

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[112] Ibid, p 126

be true in two hours, and most likely (depending on your flavor of Perdurantism) it was true *yesterday*.

228.　　　However, I have claimed that temporal parts are *made of* physical parts, and also that the dividing up of temporal parts is a fluid, nondefinite sort of practice. If this is true, then in the *same sense* in which we claim that I cannot lose a temporal part, I also cannot lose a physical part. The whole physical object that is me is composed of the temporal parts—eternally composed, tenselessly composed—and the temporal parts are, while they exist, composed of a certain set of physical parts. Even if we admit of temporal parts with long durations, and accept that temporal part X has a duration that includes the severing of a physical part, we will simply note that temporal part X is itself composed of temporal parts X1 and X2, the former of which is *eternally* composed of such-and-such physical parts and the latter of which is *eternally* composed of such-and-such (minus one) physical parts. So the conclusion is that, while the list of physical parts that compose my temporal parts will be different at any given time, those parts that are present at a time will always be present *at that time*—tenselessly speaking.

229.　　　Van Inwagen, however, claims not only that *he* does not understand what temporal parts are, but that *no one* understands what temporal parts are—those who claim to understand them only *think they do*[113]. This is a bold claim, that others do not understand a concept. It is particularly both when you have admitted that *you* do not understand the concept—for we must ask you by what standards is one uncomprehending individual able to judge the comprehension of others regarding the very same uncomprehended issue? It might make sense to claim that charges of incomprehension in fact *require* some level of comprehension—without that, the reasonable claim is that one cannot comprehend *how* others comprehend. But that is a much weaker claim than the

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[113] Ibid., p. 128

claim that no one understands such things at all. Much of the functioning of the stock market is a mystery to me, yet I cannot thereby conclude that it is a mystery to everyone.

230.   Nevertheless, what does seem reasonable is van Inwagen's claim that all who believe in the existence of temporal parts would also accept what he calls the Doctrine of Arbitrary Temporal Parts (DATP):

> For every persisting object P, if I is the interval of time occupied by P and sub-I is *any* occupied sub-interval of I *whatever*, there exists a persisting object that occupies the sub-interval sub-I and which, for every moment t that falls within sub-I, has at t exactly the same momentary properties that P has.[114]

Here van Inwagen calls attention to and then dismisses as unimportant to the argument the 'grave' difficulties surrounding 'momentary properties'. I shall take him to mean, hopefully charitably, that temporal parts have the same properties that the whole physical object has *just at that time*—any properties the whole might have at other times, or even perhaps through a duration longer than the duration of the temporal part in question, are another matter.

231.   I believe that van Inwagen is right in charging the friends of temporal parts with holding something like DATP, but it's also true that the language he uses to state DATP does not lend itself well to a charitable interpretation of temporal part theories—perhaps that is due to his lack of comprehension of what temporal parts are. To claim that the persisting object existing through sub-I—we shall call it sub-P—has the same momentary properties that P has leaves out the rather important claim that sub-P *is* P, in the diachronic sense of identity—sub-P is the part of P existing at that time. We might say by way of example that my hand has all and only the properties that I have *in the area occupied by my hand*, even if this is a complicated way of stating things.

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[114] Ibid., p. 133

232.		But it is true that I have already above described temporal parts as being arbitrary entities, existing as distinct from each other based only on the way in which we wish to divide them up at any time. Unless we accept something like the minimum indivisible unit of time taken from the theory of loop quantum gravity, there does not seem to be any non-arbitrary way to slice up a four-dimensional whole into its temporal parts. It may seem to us that there are obvious distinctions between temporal parts, or at least obvious times at which we may want to stipulate a dividing line. But my claim is that those 'obvious' divisions are only obvious given a certain framework of observing the world. We might, for example, distinguish two temporal parts by noting the moment I have my hand cut off in an accident. But we would only have this impulse because we usually find the loss of a body part to be an important event—at least for large body parts. We are less given to distinguishing temporal parts based on the flaking away of dead skin following a bad sunburn.

233.		Van Inwagen's project becomes, after declaring that temporal parts are incomprehensible, to argue that DATP is false—or at least we must presume would be false if the notion of temporal parts was not meaningless to begin with (are propositions including meaningless terms actually propositions? Can meaningless pseudo-propositions be true or false?). It is my contention, however, that his argument against DATP falls prey to the same problems that were faced by Heller's presentation of van Inwagen's original argument against DAUP—specifically, that Geach's relative identity theory can be used to dissolve the supposed contradiction.

234.		We are to suppose, van Inwagen tells us, that the adjoining temporal parts of an object might not have been adjoining—that it is *possible*, in some meaningful sense of the word, for two actually adjoining temporal parts to either have been separated by an interval, or to not be adjoining because of the nonexistence of one of the parts. His argument may be reconstructed as follows:

Assume: D = Descartes
          L = the temporal part of Descartes spanning the last year of his existence.
          D-minus = the temporal part of Descartes spanning the beginning of his existence until one year before the end of his existence.

1. There are possible worlds in which L and D-minus are (or were) not adjoining (worlds in which Descartes died a year earlier, or lived a year longer).
2. D-minus ≠ D
3. There is a possible world W' in which D existed for one year less than D existed in this world, W.
4. In W', D existed for the same duration as D-minus.
5. Given that temporal parts are physical objects with duration, in W' it would be true that D-minus would be a temporal part with the same duration as D.
6. In W', D = D-minus.
7. In W, there are two things—D and D-minus—that could have been one thing.
8. 7 is a violation of an obvious modal principle: $x \neq y \supset \Box(x \neq y)$.

8 is van Inwagen's first conclusion, which strikes me immediately as false. It is not the modal principle that strikes me immediately as false, but rather the claim that the principle in question is *obvious*. Consider that the truth of statements such as "Shakespeare is the author of the Merchant of Venice" or "JFK's first son is identical to Jackie O's first son" seem remarkably contingent.

235.   To be charitable, we can presume that van Inwagen is claiming that this principle is obvious when applied to *rigid designators*—those labels which designate the same object in all possible worlds, and never any other object. 'Descartes' is supposed to be a rigid designator, picking out a man with such-and-such features, properties, causal history, etc. But not everything true about Descartes is necessarily true. The various facts about that man may be accepted as contingent. If 'Descartes ≠ Kant' is true then it is *necessarily* true. But if 'Descartes ≠ the man who wrote A Critique of Pure Reason' is true, it is only contingent. Surely, we are supposed to realize, it's possible that Descartes might have written a book entitled 'A Critique of Pure Reason'—he might even have written it in German, with the same content that Kant included in the book when he wrote it in the actual world. But we are also supposed to see that it is impossible for Descartes

to be *identical* to Kant, in any possible world, given that they are not identical in this world.

236.   I am not particularly interested in directly challenging theories of rigid designators in this project, but I will pause to question how *obvious* truths about rigid designators are, and even how useful the overall theories are. Rigid designators are certainly not without their theoretical difficulties. But to be charitable in interpretation, I believe we can accept the standard line on them for the moment. D, then, can be taken unproblematically as a rigid designator. What remains is to determine whether the designators of the temporal parts in question are rigid or not. Do L and D-minus, for example, succeed in picking out the very same thing in every world?

237.   Again, D, designating Descartes himself, is not problematic. If anything is a rigid designator, our proper names for people are rigid designators. But what about L? L designates the temporal part of Descartes spanning the last year of his existence. D-minus seems to designate the temporal part compliment of L—the duration of Descartes up until that last year. But do L and D-minus pick out the same thing in all possible worlds? It is important to note that this is *not* the same question as to ask whether it is necessary that Descartes lived for precisely 53 years, 10 months, and 11 days. There will undoubtedly be some possible world in which Descartes lived for 53 years, 10 months, and 10 days. Van Inwagen relies on this very possibility for his own premises. A general theory of rigid designators will (or perhaps must) accept that the thing picked out in each world by the designator in question can have dramatically different properties. In some worlds where Descartes exists, he was born severely emotional dysfunctional and never learned to speak. In other worlds, he eschewed a life of philosophy for a quiet life in an asylum—in yet other worlds he pursued *both* lives.

238.   But there is a limit to the amount by which the Descartes of various worlds can differ. Had Descartes' mother died as a child, presumably whatever children were eventually born to Descartes father would *not* be picked out by the rigid designator

'Descartes'. At least, I present this as a common claim among theories of rigid designation. In some worlds, Descartes will simply fail to exist—and in those worlds, 'Descartes' will either fail to designate anything, or will designate a non-existent object (depending upon your flavor of rigid designation).

239.   In the actual world, Joachim Descartes and Jeanne Brochard had four children. Three lived past childhood, the youngest of them being Rene, a sickly child sent to study at a Jesuit college. In a world W'' wherein Joachim Descartes and Jeanne Brochard had only 3 children (2 surviving), and their youngest child named Pierre was a sickly child sent to a Jesuit college for boarding and schooling who later became the 'Father of Modern Philosophy', would 'Descartes' (and perhaps it seems odd to claim) fail to refer to the person named 'Pierre Descartes' in that world? Would it fail because Pierre Descartes, the Father of Modern Philosophy in world W'', is not identical to Rene Descartes, the Father of Modern Philosophy in the actual world? They might fail to be identical, for example, due to their place in the birth order of Descartes children. If it is true that Pierre Descartes in W'' is not identical with Rene Descartes in W, then this would be true even though the name 'Descartes', when used in philosophy classrooms *in world W''*, would refer to Pierre Descartes of W''.

240.   In short, it seems to be common among rigid designator theories that there are *essential* properties that objects have, and that things without those essential properties but with similar causal histories will not be identical to those objects in other worlds. To hold a theory of rigid designators without accompanying essential properties would seem to lead to a wildly confusing ontology, wherein a human being will be identical to a human in one world, a tree in another, and perhaps even an abstract object in yet another world. Consider: in the actual world, 'Descartes' designates a human, the child of Joachim and Jeanne (themselves picked out by rigid designators). What if, in world W''', Joachim and Jeanne, the parents of 3 children, had named their third child 'Rene', rather than 'Pierre'? In our world, Rene was the fourth child—an older brother

Pierre died as a child, and two older siblings, Jeanne and Pierre, survived. Rene was a sickly child, sent to board and study at a Jesuit college because of his health.

241.   Is being the fourth child of Joachim and Jeanne essential to 'Descartes'? Is being named 'Rene' essential? Perhaps we would be too quick above to claim that Pierre Descartes, the former sickly child in world W'' who came to be referred to as the 'Father of Modern Philosophy', would not be picked out by the rigid designator 'Descartes'. If Descartes, the human in our world, *could have* had one less brother (and been the third child), and if he *could have* had the first name 'Pierre' rather than 'Rene', we might be close to claiming that the 'Pierre' of that world *is* the 'Rene' of our world. But do we want to say that being sickly and/or becoming a philosopher (even a famous philosopher?) are essential properties of the things picked out by 'Descartes'? For isn't Pierre and Jeanne's fourth child Rene in world W'''', sickly for only a brief time and later a famous soldier, not picked out by 'Descartes'?

242.   A growing suspicion that one might hold, given the difficulties presented for rigid designation in even such a small space here, is to accept that 'Descartehood' is a matter of convention rather than rigid designation. Is the third child of Joachim and Jeanne in some possible world, named Pierre, sickly for a time as a child, and grown to be a thoughtful and intelligent but uneducated town drunk, to be identified with 'Descartes', or with 'Pierre Descartes', or neither? Which person, supposedly himself picked out by *some* rigid designator, exists in that world? Might it simply depend on what we think is *important* about Rene and Pierre Descartes? If this man in this other world made contributions to mathematics (as did Rene Descartes in our world) *and* entered the parliament of Brittany (as did his other older brother, also named Pierre Descartes, did in our world), we might begin to accept, if we can make sense of possible worlds at all, that in fact *counterparts* seem to make much more sense—that there is *one* person in that other world who is 'the closest thing' to Rene (within certain minimal limits, perhaps) and is also 'the closest thing' to Pierre (the older Pierre), and is thus 'identical' in this

looser sense to *both* of them. If we are concerned about who in that world shares what we consider to be *the important properties* of the Descartes of this world, we will have some reason to abandon the notion that 'Rene Descartes' and 'Pierre Descartes' are terribly rigid in their designations.

243.　　　　But this is not supposed to be a robust investigation into rigid designators. What we have to determine, in order to evaluate van Inwagen's argument, is whether the designators for temporal parts are rigid designators. The truth of $x \neq y \supset \Box(x \neq y)$ seems to depend on x and y being rigid designators, and on *both* of them being rigid designators. As mentioned above, 'Descartes $\neq$ the author of *Critique of Pure Reason*' is not a necessary truth, as the second relata is not a rigid designator. If objects do have essential properties that rigid designation turns on, it seems reasonable to come to the conclusion that temporal parts also have such essential properties, as temporal parts *are* objects (just not *whole* objects).

244.　　　　If D-minus represents all of Descartes except the last year of his life, and it is possible that Descartes might have died at age 5, then D-minus designates something radically different in another possible world from what D-minus designates in this world. Is the duration of a temporal part an essential property? If not, van Inwagen's argument collapses immediately. If $D \neq D\text{-minus}$, and *only D* is a rigid designator, it does not seem to follow that it is *necessary* that $D \neq D\text{-minus}$. In order to save the necessity, temporal parts must either be necessarily the length that they are—which he must reject to preserve his first premise—or must not include duration of existence as an essential property. So what happens if we conclude that duration is not an essential property?

245.　　　　'D-minus' would designate, in the actual world W, a physical object (a part of a whole physical object) that existed for 52 years, 10 months, and 11 days. 'D-minus' would also designate, in world W''''', a physical object that existed for 2 days (for Descartes only lived 1 year and 2 days in that world). And the claim would then be, if 'D-minus' is a rigid designator, that these two physical objects are *identical*—they are

the same physical object. 'D-minus' (Descartes from birth until 1 year before his death) is a rigid designator of a temporal part existing in many worlds. In some worlds, that temporal part exists for many years. In other worlds, its existence is measured in days. But it's *the same* temporal part—the same *physical object*. One option is to simply accept this as true, perhaps even obvious given an assumed theory of rigid designators. If, for example, one accepts that 'Descartes' designates a man who died when he was 53 years old in one world and a child who died when he was 1 day old in another world—and accepting therefore that those are *the same object*—then accepting temporal parts with wildly different durations and momentary properties as 'the same temporal part' seems no more difficult on the surface.

246.   An analogy to physical parts would seem to make this an acceptable option. 'Descartes' left leg' appears to be a rigid designator—one that will fail to designate in some worlds, to be sure (or will designate a nonexistent thing). But the name does not pick out a human leg in this world, and an apple in another world. In such a world where an apple is the object that is the closest to being called 'Descartes left leg' (to borrow 'closest' sort of terminology from counterpart theory), the name will simply not designate anything (or a nonexistent human leg). But in a world where Descartes was less fortunate, 'Descartes left leg' will designate a badly deformed and radically different object (or perhaps 'collection of matter' to appease those who don't want Descartes left leg, while attached, to be its own object)—but it *will* designate that object.

247.   And yet this still seems like an unfortunate consequence of the theory so accepted—that an essential property of a temporal part is not the *duration* of that temporal part. That the very same *temporal* part might last fifty years in one world and 1 second in another world is not a view I would wish to defend. But to be honest, a theory of true identity *across worlds* is not a theory I would wish to defend in any form. One final objection we might make to rigid designation is to simply charge such theories with an equivocation. Surely, we would say, you don't mean that this physical object in this

world is *the same* physical object as that object in that world—they are in *two different worlds*, after all. Destroying one of them in its world does not destroy the other in its world, for it is an *other*.

248.   I believe at this point that enough has been said to allow us to reject van Inwagen's first conclusion, premise 8, regarding DATP. At best, 'x ≠ y > □(x ≠ y)' is a remarkably non-obvious truth that requires significant attention. At worst, it is a conclusion drawn from a confusing and false theory of modal language.

249.   Van Inwagen's second conclusion is that claiming that D and D-minus could have been identical is a violation of the principle of transitivity of identity—again, van Inwagen here restricts 'identity' to identity *simpliciter*. But we shall note before moving on that it's unclear whether he is willing to grant a distinction between synchronic and diachronic identity in his assumptions for this reductio regarding temporal parts. In other words, it is unclear whether he is allowing, for the sake of his reductio, Perdurantists to distinguish between identities as they want to, or whether he is enforcing an Endurantist definition of identity. Van Inwagen presents us with the following four propositions (continuing my own imposed numbering from above) which, he claims, follow from the earlier premises:

> **Assume:** 't' denotes the moment exactly one year before the moment at which Descartes ceased to exist.
> 9. D-minus = the thing that would have been D-minus if D had ceased to exist at t.
> 10. The thing that would have been D-minus if D had ceased to exist at t = the thing that would have been D if D had ceased to exist at t.
> 11. The thing that would have been D if D had ceased to exist at t = D.
> 12. D-minus ≠ D.[115]

To formally complete the reductio, we can add between 11 and 12 the conclusion, arrived at from 9 through 11, that D-minus = D. Van Inwagen admittedly does not provide the argument that gets us from the previous premises to these last, but claims that we should

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[115] Van Inwagen. 1981. p. 135.

find it an "easy task" to construct the argument he *would* give.[116] That, then, is our task. But I must admit I do not find it so easy.

250.   To begin with, we must clarify what our designators are supposed to designate. If we acknowledge that the time of Descartes' death is contingent, does 't' designate the time one year before he ceased to exist *in this world*, or should we treat 't' as some kind of *floating* designator, indicating that so-described time across all worlds? Let us assume for the moment that 't' is rigid and indicates the former, and continue. If we take 't' to be the time *in this world* exactly one year before Descartes ceased to exist, how do we read premise 9? D-minus *in this world* = the thing that *in another world in which D ceased to exist at t* is described as 'Descartes until one year before his death'? This is false, and the problem seems to turn on the discussion above of the rigid designation of temporal parts. The D-minus in this world is a thing with a duration of 52 years, 10 months, and 11 days. The D-minus in that other world is a thing with a duration of 51 years, 10 months, and 11 days. Are these to be identified? I would not think so.

251.   But I also do not think we can make sense of the argument as given if we take 't' to indicate something along the lines of 'one year before Descartes' death *world-relative*'—a floating designator. Premise 9 would be an identity claim between 'Descartes from birth until one year before the time he died in this world' and 'Descartes from birth until one year before the time he would have died in world W' if he had died in world W' one year earlier than he did die in that world'. I am not sure how to even make sense of the latter relata, given that there is still possible world language being used within an attempted disambiguation of possible world talk, and we seem to be referring now to yet a third world.

252.   Premise 10 seems even more problematic. The thing that would have been D-minus if D had ceased to exist at t—i.e. a thing with a duration of 51 years, 10 months,

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[116] Ibid.

and 11 days, a temporal part existing in world W'—is identical to the thing that *would have been D* if D had ceased to exist at t—a thing with a duration of 52 years, 10 months, and 11 days, a *whole physical object* existing in world W'. We are dealing here only with the objects of that other world: D-minus *in that world* would have been a temporal part of D *in that world*, but they would not have been identical. Temporal parts are not *identified* with the wholes—they are acknowledged as *part of* the whole.

253.   And I must confess that I am not sure what premise is even needed by van Inwagen to complete his argument. But we can try to be charitable—if there is a contradiction to be had, what identity relation can he make, given the assumptions he is working with? Let's start with a reworking of his argument into world-indexed language:

> **Assume:** 't' denotes the moment exactly one year before the moment at which Descartes in world W ceased to exist.
> **Assume:** In world W', Descartes lived for one year less than he lived in world W.
> **Assume:** D and D-minus = inhabitants of world W. D' and D-minus' = corresponding inhabitants of world W'.
> **Assume:** D up to time t = D-minus
>
> 9. D-minus = D-minus'
> 10. D-minus' = D'
> 11. D' = D.
> 12. D-minus ≠ D.

254.   It's obvious in this translation that 10 is where the problem lies. The problem is, as we have been seeing, that it is not clear what precisely D-minus' is. Let's say the term D-minus is a rigid designator. In this world, it picks out a temporal part of Descartes that existed from his birth until a year before his death. Now, in W', Descartes died a year earlier. Does D-minus pick out the thing in that world that existed for the *same duration*, or the thing that fits the *same description*: the Descartes of that world from birth until a year before his death? Clearly the latter will lead to premise 10 being false, for D-minus' will be a year short of being identified with D'. The former, identifying the D-minus of this world with the thing that lasted the same duration in

another world, leads us to even more unfortunate consequences. If D-minus is identified with D' due to their shared duration, then presumably in a world in which Descartes died *three* years earlier than he did in our world, the rigid designator D-minus will *fail to designate*. To make it clear, 'the temporal part that is Descartes from birth until a year before his death', when that time is picked out by measuring his life in *our world*, will *fail to pick out* an object in a world in which Descartes lived for 50 years. This is clearly an unfortunate consequence of the view.

255.   We must therefore conclude that the designator D-minus picks out in world W' a temporal part of Descartes, D-minus', that is one year shorter in duration than D'. Premise 10 is then clearly false, and we arrive at no contradiction with premise 12.

256.   I think it is fair to say at this point that van Inwagen is not successful. The evidence seems to indicate that a Perdurantist view can be successfully explicated without any contradiction of the transitivity of identity. And even though I am becoming more and more suspicious that there is an unwarranted conflation of 'identity' in mathematics with 'identity' in metaphysics (a claim that if investigated might lead us to abandon the use of such mathematical principles in metaphysics) I think we can move on with the current project satisfied that transitivity of identity is preserved.

257.   Our 'classic' theory of Perdurantism has thus been defended from some of the more complex objections—I have claimed because those objections have either failed to recognize or *not allowed as sensible* the Perdurantist's distinctions between properties and relations. What remains, after we examine a similarly 'classic' theory of Endurantism, is to examine the objections that are leveled at each theory even when we allow each theory its unique definitions.

3.3. A Classic Case of Endurantism?

3.3.1. "It's Intuitive"

258.   Unlike what was the case with Perdurantism, there is some difficulty finding one or two presentations that might be considered to be 'the' or 'a' *classic* presentation of Endurantism. In the main, this is because many—on both sides of the debate, it should be noted—hold that the Endurantist position is the *intuitive* position. The temptation exists to define Endurantism negatively, by way of rejecting the claims of Perdurantism, by defining Endurantism as the claim that Perdurantism is false. It is counterintuitive, the claim goes, to point to any normal object—a rock, for example—and say "the whole rock is not present right now…there are parts of that rock that are not here at the moment." And I do not wish to disagree with this claim about intuition. It is even more counterintuitive, in fact, at least initially, when we apply these claims to *people*. "I am not entirely here right now", unless being used to indicate mental distraction, sounds perhaps confused.

259.   But a negative definition will be lacking. If the Endurantist rejects the Perdurantist definition of an object as a four-dimensional whole, it will not be satisfactory for the Endurantist to claim he has *defined* the term by saying that an object is "not *that*"—we want to know what an object *is* if it's not 'that'. What appears to be the standard line, the common denominator, is that objects are *entirely present* at every time that they are present—there are no temporal parts that are somewhere else or some*when* else, because there are no such things as temporal parts to begin with. The only way 'part' and 'whole' are used correctly within an enduranist framework is when they are used to describe what I have been calling 'physical parts'—my hand, the leg of that chair, and the red-colored section of that rock are parts of physical objects; my body, the chair,

and the rock are whole physical objects. Does this mean then that Endurantism must entail three-dimensionalism?

260.   I have mentioned earlier that there appears to be logical room for Endurantism to be divorced from the three-dimensionalism it is commonly associated with. But this logical room may not be apparent to everyone. Steven Hales and Timothy Johnson, among many others, have assumed such an association holds, and perhaps they even conflate the two theories when they state that "Endurantists hold that objects are three-dimensional, have only spatial parts, and wholly exist at each moment of their existence."[117] I suppose that one might try to defend a view that contained only three-dimensional objects *as well as* four-dimensional spacetime, but I do not hesitate to state that such an effort seems problematically quixotic—and this is in fact the position taken by Hales and Johnson. In a 2007 article they seemingly conflate the perdurance/endurance controversy with the 4D/3D spacetime controversy[118], and in the former 2003 article claim that "Endurantism, an ontology more suited to an outmoded Galilean relativity, is revealed as inadequate to what are generally regarded as the facts of our Einsteinian world."[119] But their ultimate claim—that Endurantism may be altered so that it is compatible with four-dimensional spacetime, but not without unacceptable consequences—does leave room for some kind of Endurantist/four-dimensionalist position, however unacceptable they see the consequences of such a position to be.

261.   As mentioned in the previous chapter, Hales and Johnson have claimed that the failure of simultaneity in STR leads to the denial of Endurantism, and it will do us good to look at their position in more detail now. Central to Endurantism is the claim that persisting objects are wholly present at every time they exist. To be 'wholly present' is to have *all parts* be present—for all parts to co-exist. And we can safely take this 'co-

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[117] Hales and Johnson. 2003. p. 524.
[118] Hales, Steven D., and Timothy A. Johnson. 2007. Time for Change. *Southern Journal of Philosophy* 45 (4):497-513.
[119] Hales and Johnson. 2003. p. 524.

exist' to be a present-tensed co-existing, as opposed to the four-dimensionalist's untensed notion of existing. If an object does not have all of its parts *present* at any moment of its existence, then it is not an enduring object. Simultaneity, they will argue, *is* co-existence.

262.   By way of a thought experiment involving a high-speed (relativistic speed, in fact, i.e. nearing the speed of light) train, a passenger on the train, a bystander watching the train go past, two terrorists, and two bombs, Hales and Johnson attempt to produce a scenario in which the bystander's (Sally) 12:00 is simultaneous with the unexploded front of the train and the exploded back of the train, while the passenger's (Dave) 12:00 is simultaneous to both the exploded front and exploded back of the train. Sally, they claim, is simultaneous with what is both past, present, and future relative to Dave. Having previously discussed issues very like this in earlier sections of this project, I will not reproduce the details here, but will instead assume that Hales and Johnson have the math and physics correct. What, then, can the Endurantist say by way of reply? We seem to have an object—a train—which both does and does not have all of its parts co-existing. But if parts a,b,c,etc. are indeed proper parts of the train, they should be present at all times the train exists…and this is not the case as observed by Sally.

263.   The solution suggested by Hales and Johnson—and, keep in mind, a solution they believe will be rejected by the Endurantist—is for the Endurantist to accept a startling abundance of objects into his metaphysics. Given that Dave and Sally are simultaneous with different hunks of physical stuff, we conclude that 'the train' is not in fact the standard sort of three-dimensional object we think of when we think of a train. Indeed, 'the train' no longer refers even to one object, although it does not refer to any four-dimensional objects. Every object that exists must exist entirely *now*, with all of its parts *present*. If we ask Dave a question about 'the train', we must refer to the physical hunks of matter that Dave is simultaneous with—our description would be rather complex, to be sure. 'The train' that is simultaneous to Dave would need to be specified in terms of Dave's frame of reference, including his velocity, location relative to the

physical objects around him, and the particular time we are inquiring about. We cannot escape this result, as Dave would in theory be able to prove that such things exist at such-and-such times, given measurements that he would be able to take. And we would face similar complexities in asking Sally about 'the train'—similar complexities, but different results. Sally's description of 'the train' would be dramatically different (seeing as the thought experiment involves bombs and terrorists, there are dramatic changes occurring), leading us to conclude that Sally's train is a *different enduring object* than Dave's train.

264.   Suddenly there are not only *two* trains, but any number of trains where previously we believed there to be only one. And each is a conglomeration of "those train-like spatiotemporal parts (of some hyperobject) which are simultaneous in a particular reference-frame, at a particular time."[120] Now presumably these objects are able to endure in the way that the Endurantist wants objects to endure, but they are no longer the sort of objects that Endurantists will want to admit of as *intuitive*. As indicated above, the strength of Endurantism is its appeal to our prephilosophical or prescientific intuitions about space, time, and objects. Certainly trains being collections of spatiotemporal parts of hyperobjects is unintuitive. In this project I have limited Perdurantists and Endurantists both to talk of normal objects, simply because I am aware that some solutions to identity problems involve arbitrary, detached and otherwise unrelated parts being conjoined into 'objects'—unintutive objects in the extreme.

265.   In an ontology with an infinite (or innumerable) set of frames of reference, the above food processing of Endurantist and four-dimensionalist theories leads to an infinite (or innumerable) number of actual trains for every 'train' we intuitively think exists, and the same for every rock, tree, person, planet, and earthworm. A crowded ontology indeed. Hales and Johnson therefore liken Endurantism to Galilean physics— intuitive and often remarkably useful, but in the end not a successful description of how

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[120] Ibid, p 537

the world is. But presumably if the failings of Endurantism were as obvious as Hales and Johnson find them to be, there would be at least a diminished discussion between those supporting the opposing theories. I do not wish to pretend that there would be *no* adherents to a theory that seemed obviously false to philosophers at large, for of course the history of philosophy is rife with examples of exactly that—and worse, you will likely get a completely different list of 'philosophers brazenly denying the obvious' from every philosopher you ask to provide such a list. And so we must assume either that there is a flaw in the Hales and Johnson description of the interaction between Endurantism and four-dimensionalism, or that Perdurantism presents us with problems as well, problems serious enough to cause some philosophers to fly in the face of a theory as widely embraced as relativity theory.

3.3.2. The Problem of Change

266.   To some, Endurantism is supposed to provide a more satisfactory account of *change* in or of objects than Perdurantism can—and here we of course will mean to say *intuitively* satisfying. If we indicate that a physical object has *changed*, we naturally believe ourselves to be indicating that the object *had* one set of properties, and at a later time had another, different, set of properties. The extent to which the sets of properties differ is not terribly important, nor is the length of time the physical object had either set of properties. The car *was* red, made of metal, weighed 2.1 tons, etc. The car *then* was blue, made of metal, weighed 2.1 tons, etc.

267.   Can Endurantism accommodate this natural belief about objects changing? If a train, or a rock, or a fruit fly is a single object, entirely present at every time that it exists, then the same object will have the second set of properties as had the first set of properties. Of course there is still much to explain regarding the gaining and losing of properties, but that is neither here nor there for the moment. Perdurantists must, seemingly, accept the fact that perduring objects do not change in this intuitive way. The

thing that is pointed to as being red, being a temporal part of the entire four-dimensional 'worm' object that is the whole car, is not the same thing—not the same temporal part, not the same part of the whole—as the thing that is blue. If, as I have indicated, physical objects are composed of temporal parts which are in turn composed of physical parts, all of it existing in as robust a sense as any of it exists, then there is no 'one thing' that gains and loses properties. There is only a perduring object, 'the car', made up of a red part, a blue part, etc. The *parts* do not gain or lose properties, and importantly neither does the whole. If the car has a temporal part that is red, then it *tenselessly, always* has a temporal part that is red, and that part of the car that *was* red from time *t* to time *t+1* has always been and will always be red. Perdurantist 'change', says the Endurantist, amounts to nothing more in kind than to point out that one of the hairs on my head is brown and another is grey—different parts have (eternally have, for the Perdurantist) different properties. No thing that has a property loses that property, or gains another.

268.   So as not to beg the question against the Perdurantist, we will refer to the intuitive notion of change in just this way described above: an object, the same object, having different sets of properties at different times. What this allows us to avoid, for example, are the specious sort of arguments that I believe build too much into what is supposed to be intuitive. Consider Charles Klein's rejection of Perdurantism, which arises as a result of his definition of change as involving not only one object having different sets of properties at different times, but also as that object being *wholly present* at the times when it has these properties[121]—in other words, Klein defines change as '*enduring objects* possessing different sets of properties at different times'. No surprise, then, that perduring objects would not be able to 'change' on Klein's definition, given that change is restricted by definition to enduring objects.

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[121] Klein, Charles J. 1999. Change and Temporal Movement. *American Philosophical Quarterly* 36 (3): p. 225.

269.   I do not mean to claim that objects being wholly present when they exist is not intuitive, for I agree that it is—Endurantism does indeed better represent our prephilosophical, prescientific intuitions. And in fact we also intuitively see change as the gaining and losing of properties by *one and the same* object. But there is a very careful distinction to be made: I do not believe that intuitive notions of change *contain* the intuitive notions of enduring objects. To be clear, it seems to me that one might accept that an object, one and the same object, might gain and lose properties through time and yet not be *wholly* present at each time in question. All that seems to need to be present are the parts of that object that are gaining and losing the properties in question. An object gaining a property does not imply that *every part* of that object gains the property.

270.   But is this accurate—is there room for such an accommodating position, or does the apparent logical space only appear because of a failure to disambiguate the sort of parts we mean to talk about? As I hope has been made clear by now, temporal parts and physical parts are *analogous*, but by their nature analogies only go so far. Consider again the claim, made in the previous chapter, that the distinctions between temporal parts are a matter of convention. Unless we decide to embrace a theory of atomic temporal parts (whether we appeal to Planck's constant and loop quantum gravity or some other set of evidence), and having rejected instantaneous (durationless) temporal parts, it seems we should conclude that there are no natural separations between temporal parts—we divide objects up into parts based on the features and times we believe are important. Certainly these parts *exist*, but to apply labels and to distinguish between them in concrete ways requires us to draw lines and divisions, lines and divisions that are not there before we put them there.

271.   Thus, the collection of physical stuff that types this sentence is a temporal part of a whole physical object. Can we divide that temporal part up into still smaller temporal parts? Yes, we *can*—but there is no natural division until we do so. Without performing such a division, considering the temporal part of me that types an *entire*

sentence, we quite clearly are faced with a temporal part that has a different set of properties at the end of typing that sentence than it had when it began typing that sentence. The *same temporal part* has two different sets of properties.

272.   Sure, the Endurantist replies, but that temporal part is *made up of* smaller temporal parts, and *those* are what possess the different property sets. The larger temporal part only 'has' the different properties derivatively. And this may be true, or at least is a passing accurate way to describe what has happened. But note that it is also accurate to say of *me* that I have been cut when I scrape my hand with a nail. *My hand* has been cut, and *I* have therefore been cut—have I only been cut *derivatively*? There is nothing unintuitive about claiming *I* have been cut when my hand has been cut. And therefore as to the question of whether we can intuitively describe a temporal part, the same part, as possessing different sets of properties over time, we can appeal to Lewis' way of describing temporal parts, provided at the beginning of this chapter: temporal parts are themselves physical objects. They have extension, size, shape, location, they act, react, and have temporal duration. The temporal part of me that is typing this sentence *can indeed* be accurately considered to be a single temporal part. Although we *may* subdivide this part, we *need not*. This, I claim, seems to show a temporal part, the parts that Perdurantists want to talk about, *changing* as intuitively as any enduring object would change.

273.   There are several questions to consider if we accept a changing perduring object in this way. 1) Is the temporal part that is considered to be changing 'wholly present' when it is changing? 2) Is the whole physical object still *intuitively* changing because of what we have claimed about temporal parts being able to change? 3) Does this (problematically) reduce any so-called perduring object to a succession of *enduring* objects?

3.3.2.1. Are temporal parts wholly present as they change?

274.   I stand by my previous claim that the intuitive definition of changing does not *include* an intuitive definition of things being wholly present, even if after some reflection we were to decide that change does require being wholly present. However, I think the answer to this first question requires us to say something more about what being 'wholly present' entails in the first place. If the Endurantist is not careful, the wrong definition of being wholly present could cause conflict with the Endurantist's basic concept of persisting through time.

275.   The Endurantist may want to claim that an object's being wholly present 'right now' means that there exist no parts of the object that are not *here, right now*. Since Endurantists do not believe in the existence of temporal parts, all *parts* the Endurantist discusses will be physical parts. The Endurantist's claim will then be that there are no *physical parts* that are not here right now—all the parts of an object are present when the object exists, and there are no 'temporal parts', so all of the parts that are present must be physical parts. We will take an object, say the human being Fred, as our example. He exists right now, and so we claim that there is no part of Fred that is not existing here, right now. But consider that Fred is an amputee—four years ago, his right leg was removed following an accident. As is often the case, Fred's right leg was incinerated soon after the operation. We now have a decision to make regarding our theory.

276.   As we look at Fred now, four years after the amputation, we claim as Endurantists that there is no part of Fred that is not here, right now. But just over four years ago, there was an object, identified as a 'right leg', that *was* a physical part of Fred. And back then, we made the same claims regarding Fred's enduring status—there are no parts of Fred that aren't here (meaning 'there') right now (meaning 'back then'). Obviously, the Endurantist cannot claim that Fred's right leg *now* is a part of Fred, for it certainly is not here right now. It has been reduced to ashes and constituent elements, and

no part of Fred consists of ashes at the moment. If Fred *did* have a right leg, and does not have one now, and the 'Fred' that exists now is the very same object, the very same 'Fred', that existing back then—not 'very same' in a Perdurantist part/whole way, but identified with the = sign—then the Endurantist must accept that physical objects can lose and gain parts through time. And of course the Endurantist will want to embrace this claim as intuitive, and thus as part of the theory. But it should be no surprise to anyone who has been paying attention that this will lead to at least an *apparent* conflict with what we have called Leibniz's Law—if x and y are the same object, they should have the same properties. If x and y do not have the same properties, they are not the same object. Fred back then had a right leg. Fred does not have a right leg now. Presumably the possession of a right leg involves at least one property.

277.   This is obviously a central concern of the Endurantists, given that it has been one of the primary motivations for accepting Perdurantism in the past. Given also that this issue has been the subject of a library's worth of literature, I do not plan to offer more than a brief overview of what I take to be the most successful category of replies for the Endurantist to embrace.

278.   One attempt to reconcile Endurantism with Leibniz's Law is to claim that enduring objects have all of the properties that they have ever had or will ever have, all of the time. Fred, for example, now has the property of 'having a leg at such-and-such a time', where the time referred to is specified by whatever method one wishes (date and time of day, for instance), and Fred also of course has the property of 'not having a leg at such-and-such a time', where here the time referred to is what we established as the present in the original presentation of the thought experiment. Furthermore, Fred *had* both of these properties four years ago—when he had a right leg, he also had the property of 'not having a leg at such-and-such a time', referring to what was then the future. By treating all properties as *time indexed* properties, we can assure ourselves that the x that was Fred four years ago has all the properties that the y that is Fred now has. We simply

have to reject from our metaphysics any ill-formed property-like phrases such as 'having a leg *now*', or simply 'having a leg'. Properties must be much more specific.

279.   Astute readers will want to know, of course, all about the truthmakers for claims about Fred's having properties that are time-indexed to the future, particularly as this is an Endurantist position and the future does not exist. How then are statements about the future made true? Will the Endurantist have to accept four-dimensionalism, relativity, and all of the baggage that Hales and Johnson warn of? Or perhaps eternalism, which I admit is difficult to separate from four-dimensionalism? This is, after all, the very same problem encountered previously with Presentism—what makes it the case *now*, if the past does not exist, that it *is presently true* that Caesar crossed the Rubicon? What makes it the case *now* that Fred has the property of 'not having a right leg at such-and-such a time', when that specified time is four years in the speaker's future, a time that does not yet exist? And it does indeed seem like we must say that Fred's future-indexed[122] properties are *determined*, for when those times referred to in the properties become *present*, it will certainly be determined that Fred will have certain properties. And if it is true *now* that Fred has property P, and it was not true four years ago that Fred had property P, then there is something true about Fred now that was not true about Fred then, and we run afoul of Leibniz's Law. If Fred *now* has every property he ever has had, does have, or will have, then he must truly *have them*, not potentially have them or their opposite.

280.   Let us assume for the moment (as it is outside the scope of this discussion) that the Endurantist, like the Presentist, has a plausibe theory to account for the troublesome truthmakers. There is, unfortunately, another significant problem with the Endurantist embracing these sort of time-indexed properties, particularly at this point in the current discussion: if the Endurantist wants objects to be able to *change*, and that

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[122] This is shorthand for 'time-indexed properties where the time referred to is in the future'.

change amounts to *gaining and losing properties*....well, the incompatibility with permanent time-indexed properties is immediately obvious. An object that *always* has all the properties it ever will have seems to be an object that no longer *gains* properties.

281.   This problem seems to remain if the Endurantist pursues other similar options—if properties are relations of objects to times as above, momentary tropes (as Douglas Ehring proposes[123]), or distributional properties (as Josh Parsons suggests[124]). Indeed, the so-called 'problem of temporary intrinsics' (properties that an object has for only a portion of its existence) has many solutions, but none of them adequately accommodate a fully intuitive change, as all of them include objects *always* having the properties that they are intuitively thought to have only *momentarily*. So on the one hand the Endurantist must contend with a widely accepted and intuitive law that seemingly will not allow an object to gain and lose properties, and on the other hand with an intuition that seemingly requires objects to gain and lose properties. To foreshadow the coming dialogue, we seem to be headed towards a cliff, one that will require us to shed one or more of our beloved intuitions if we are to keep the rest of them. Or perhaps the answer is that we should abandon our intuitive love of intuitions—not that we should abandon intuitions entire, as if that were possible. But much of the conflict we see here arises from theory colliding with 'the way things *should* be'.

282.   At any rate, if enduring objects should be taken to be objects which have a singular set of time-indexed properties throughout their existence, then being 'wholly present' could indicate 'having all it's properties at every moment it exists.' But I suspect that this definition will not satisfy the Endurantist, for the simple reason that *perduring* objects could just as easily be 'wholly present' in this way—indeed, time-indexed properties seem like a better fit for a four-dimensional theory of spacetime, and four-

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[123] Ehring, Douglas. 1997. Lewis, Temporary Intrinsics and Momentary Tropes. *Analysis* 57 (4):254-258.
[124] Parsons, Josh. 2004. *Distributional Properties*. Edited by F. Jackson, *Lewisian Themes: The Philosophy of David K. Lewis*. Oxford: Oxford University Press.

dimensionalism is (as we have seen) most often associated with Perdurantism. Consider that, if a perduring object exists, then presumably we can point to one by pointing to just one of its parts (just as I could point to a person with my finger, even though the invisible line extending from the tip of my finger does not intersect every part of that person's body).

283.   "*That* is my car", I can point for a single second and say by way of indicating the four-dimensional whole object that is 'my car', and I do not have to continue pointing for the duration of the four-dimensional object's existence. "My car is present", I might continue to say, "right now. And it has the following properties…" At this point, I do not see why I could not list time-indexed properties that the whole four-dimensional object has—has *right now*, and will always have. My car does indeed exist *right now*—yes, 'derivatively' as much as my body exists 'derivatively' because all of my body parts exist in a certain manner—and it, the four-dimensional whole, therefore has properties right now. But the Endurantist should not want my perduring car to be 'wholly present', as that is a hallmark difference between perduring and enduring objects.

284.   We could say instead that objects are wholly present simply when *every part* is *here right now*—every part of every kind. All of the parts of the object need to be present. All of the physical parts, and, why not, all of *any* sort of part. But what about Fred's leg, post-amputation? Assuming the Endurantist is able to satisfy Leibniz's Law, can we not just say that Fred's leg is *no longer part of him*? That of course would be a common language way of stating it—*his* leg is not *his*. But we know what is meant—Fred's right leg is not present, because there is no longer any such physical bunch of stuff or part of Fred called 'Fred's right leg'. Fred is not missing any parts, not in this sense.

285.   If this is how we should read 'wholly present', we return to the question: is the temporal part, if it is *changing* in the important sense, also *wholly present* while it is changing? This, I think, will now hinge on how we wish to define the present. If temporal parts are distinguished by convention, let us consider a 5 minute temporal part

of a rising lump of bread dough. And let us assume that we can establish that this temporal part of the lump of dough is *changing* in the way Endurantists want objects to change: the same temporal part of the lump of bread dough is gaining and losing properties throughout that five minutes. Let us also assume that, one minute into that particular five minutes, Fred tears off a small piece of the lump to do the 'window pane' dough test. At one point later in those five minutes, we ask whether the current temporal part of the lump of dough is 'wholly present'. How are we to take 'present'? Does the present include the whole five minute duration?

286.   We might be tempted to claim that a piece of matter that *was* a physical part of that temporal part of dough is *no longer* present (say for example if Fred eats the small piece he tears off). To make that claim would be to claim that 'the present' is of a duration shorter than the duration of the temporal part, which in itself does not seem particularly problematic to the Perdurantist. Given that 'the present' isn't anything with any special sort of ontological status for the Perdurantist, and is possibly only a byproduct of the character of our perceptions of the world—combined with the conventional or perhaps arbitrary durations of temporal parts, I do not see why a given temporal part might not be entirely in any 'present' that is picked out. Perhaps, then, that is the Perdurantist's best reply: we should simply be unconcerned with things (changing or not) being 'wholly present', as the present is not as special of an entity as the Endurantist might believe it to be.

3.3.2.2. Is the whole perduring object intuitively changing?

287.   Assuming that by addressing the above questions we have arrived at a sense in which temporal parts are *changing* as intuitively as the Endurantist has required, it is another question whether or not the whole physical object is therefore changing in an intuitive manner. Again, the classic intuition of changing is supposed to be that *one* object has a set of properties at a time, and the *same object* has a different set of

properties at a later time—the object either gains or loses properties over time. Obviously, in a derivative sense of 'has' and in a tensed sense of 'gains' or 'loses', perduring objects fit the bill. A perduring object 'has' properties by virtue of its temporal parts having physical parts that have properties, and if we talk of what properties are exhibited by an object *at a certain time*, perduring objects can 'gain' or 'lose' properties. Of course, the Perdurantist will also be committed to the view that objects do not gain or lose properties in what is likely to be seen as a more important sense of the terms— perduring objects, if they are four-dimensional objects, 'have' their properties (the properties of the temporal parts) eternally. If a four-dimensional object has a temporal part that has a property, then that object always has that part with that property, even if the observation is being made at a time when that part is no longer cotemporaneous.

288.   But it must also be noted that regardless of your view of persistence through time, how an object manages to 'change' while still remaining 'the same object' presents difficulties. An object being 'the same object' according to Leibniz's Law seems to be in direct opposition to that thing being *different* in any meaningful sense, and this difficulty is faced by both Perdurantists and Endurantists. It is my contention that *any* notion of change becomes markedly unintuitive once this observation is made.

3.3.2.3. Does accepting intuitively changing temporal parts reduce to endurance?

289.   This final question is the more problematic of the three questions raised here, for we must cut through to the heart of the differences between the two positions in order to answer it. Enduring objects, so far, have been defined as objects that are wholly present at every time they exist. Perduring objects are objects that are composed of temporal parts in succession. Presumably, enduring objects 'pass through' time, vaguely analogous to a ship on the sea. As the ship floats over the waves, the same ship can be seen to be passing along over the water. Perduring objects, however, never 'move' through time. Their parts are where they are, and there they will remain. A temporal part

existing from Noon to 1 will not *move* into the duration from 1 to 2—that is a different temporal part. For a perduring object to be located at another time means that there is *another part* at that other time. So far so good.

290.   But I have made further claims here. First, I have claimed that temporal parts only make sense as *proper parts* if they have duration. Second, I have claimed that temporal parts make more sense if they are seen as not inherently delineated—if we accept that there are no 'natural' divisions of objects into specific temporal parts. Third, I have constructed a metaphysics in which temporal parts are *made up of* physical parts. And there is room for these claims to be problematic for the Perdurantist.

291.   If a temporal part is made up of physical parts, and temporal parts must have a duration, we might ask what the *atomic* constituents of physical objects really are. One answer might be that a temporal part is made up of *enduring* things—given that each temporal part must have a duration, it seems possible to point to the *earlier and later parts* of that temporal part—and to the earlier and later parts of those smaller parts, and etc. Either we arrive at a regress, or we admit that there is a smallest temporal part that is made up of things that do not themselves have temporal parts—i.e. *enduring* things. On this account, objects would consist of presumably very briefly existing *enduring* objects, run together in a chain of some as-yet-undescribed nature.

292.   Perhaps we could even consider the smallest temporal constituents that loop quantum gravity theories arrive at to be *enduring* objects. If there are smallest *physically possible* times, then whatever exists through those times would exist *wholly* in those times, for there seems to be no room for those objects to lose or gain parts within that indivisible duration.

293.   Without loop quantum gravity's atomic durations in the mix, I do think there is a reasonable response the Perdurantist can make which will allow a rejection of essentially enduring objects. The reply is similar in nature to replies made to Zeno-type paradoxes, but I think more successful due to the conventional/arbitrary nature of

temporal parts. The general idea is that infinite *proportional* parts do not lead to vicious regresses in the way that infinite *aliquot* parts would. Can Achilles perform an infinite number of tasks in 1 second? If Achilles has an infinite amount of increasingly shorter durations of time *within that 1 second,* and the tasks are of infinitely increasingly shorter duration, then he should be able to. And given that the so-called infinite tasks are *proportionally* infinite tasks—each successively 'smaller' task is a part of the 'bigger' previous task—the fact that the infinite time that is available to Achilles is *proportionately* infinite time—each successively shorter duration being part of the previous longer duration—should not matter.

294.   In essence, we *need not* divide Achilles' tasks up ad infinitum in order to solve the problem. The same can be said, then, for the temporal parts of objects—that it is conceptually possible for a temporal part to be divided up into smaller temporal parts does not mean that we *have to* divide them up. Temporal parts *are* physical objects, as Lewis has stated, and when the temporal parts are considered as distinct entities (not to say 'whole physical objects'), they can be seen to change, act, move, etc. When we divide a temporal part up into smaller parts, those things too can be considered to change, act, move, etc. We can only make this claim *because of* the previous claim that we impose these divisions on objects, that they are not inherent divisions. We are not *discovering* successively smaller parts; we are *distinguishing* successively smaller parts, parts not distinguished until we do the work to distinguish them.

295.   As we continue to analyze Achilles' situation, we find (seemingly unfortunately, even for one who has help from the gods) that every time we look, there is yet another task he must perform *before* he can do anything else. And yet, fortunately, we also find a corresponding bit of time in which Achilles can perform that action. Similarly, every time we look, it may be that we *can* find a successively smaller part. But, fortunately, each of those successive parts would be itself a perduring temporal part.

3.3.3. Intuitions Satisfied or Discarded?

296.　　　　Given the preceding questions and their answers, I do not think that the Perdurantist needs to follow the more radical path Hales and Johnson take when they suggest that it is our intuitions that must be discarded when the pretheoretical conflicts with the established theoretical. Their argument is that our intuitions are a *reaction* to our experiences—and it is the appearances, the experiences, that need to be preserved, not necessarily the intuitions, the beliefs, that we construct from those experiences. They claim that "the test of an adequate theory is not whether it can preserve pretheoretical intuitions, but whether it can accommodate the experiential data upon which those pretheoretical intuitions are grounded."[125] And they charge that Endurantists (Klein, David Oderberg, Mark Hinchliff, Markosian, and Gary RozenKrantz) are wrongly discarding a theory that fits with the best explanation of our experiential data (relativity) in favor of intuitions—intuitions about change for Klein, Oderberg, and Hinchliff, intuitions about Presentism for Markosian, and intuitions about personal identity for Rosenkrantz.[126]

297.　　　　But it's interesting to keep in mind that, when last we saw Hales and Johnson, they were rejecting Endurantism—an Endurantism that tried to embrace the physics of relativity—by pointing to the *unintuitive* proliferation of objects that such a theory would result in. We don't want to be overrun by infinite trains, so we embrace Perdurantism instead. But isn't our rejection of an infinite number of trains based on the bad taste it leaves in our theoretical mouths after a lifetime of an uncrowded ontology? What we have is not a conflict between intuitions and some sort of higher truth—we have a conflict between intuitions. What is *more unintuitive*: infinite trains where we would normally think there is only one, or objects not changing in the way we've always

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[125] Hales and Johnson. 2007. p. 501.
[126] Ibid, p 500-1

thought of them as changing? I do not think it's obvious which of these intuitions is, or should be, more important to us.

298.   Fortunately, as I have described here I don't think the Perdurantist has to abandon intuitive change. At most, the Perdurantist has to cease thinking of her view as being of chains of already-chopped-up temporal parts combining into objects. The universe is out there, all laid out and existing, uncaring about where temporal parts stop and start, or even whether or not events are simultaneous in *any* sense of the word.

299.   The burden seems to be on the Endurantist, then, to make something out of Hales and Johnson's charge of unintuitive infinite trains. As Hales and Johnson have pointed out, one way to make sense of the conflict is to reject relativity physics and four-dimensionalism as incorrect. For the purposes of this project, I will leave this as a viable and mostly unexplored option—mostly unexplored in the sense that I will not be considering the *how* of the rejections, while allowing for the sake of the argument the *possibility* of the rejection. The actual task of rejecting one of the most beloved and agreed-upon scientific theories, while often historically a practice that is a cornerstone of scientific progress, is a task too large for this arena.

300.   That said, given that defining the Endurantist position makes use of 'present' sort of talk, the Endurantist who does not reject STR seems to have simultaneity and the present to worry about. Whether or not any progress can be made without that rejection remains to be seen.

CHAPTER 4 — GAPS AND INTERMITTENT EXISTENCE

4.1. Gaps and Radical Thought Experiments

301.   If one has taught philosophy at the introductory level, then one has run across the standard complaint—sure, the student says, it's interesting to 'wonder' about identity requirements in bizarre cases of brain transplants and the like…but what's the point? Why not look at identity requirements in 'normal' cases, like walking across the room? And the student, we should admit, is right to be concerned about where our focus should be. When we investigate such issues, we are primarily concerned about the *human condition*—and the human condition undoubtedly involves walking across rooms to a much greater extent than it involves brain transplants and fissions.

302.   But what we know that the student who asks the question does not yet know is that the answers to such questions about 'normal' situations are often found by pushing out to conceptual limits. Perhaps, philosophers often think, we will have a better understanding of what a *person* is as she sits in a room eating her lunch if we can figure out what a *person* is as she spontaneously divides into two individuals. Perhaps if we can discover what the identity conditions are for a rock being atomized and 'beamed' across the room, we can discover what the identity requirements are for a rock sitting on a table as time passes by. Such an understanding has led to a long tradition of remarkable thought experiments, from the Ring of Gyges to princes and cobblers and Julia North/Mary Francis Beaudine.

303.   The case I would like to consider will remain in large part rather mysterious—while there may be scientific explanations for the conditions that will occur

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Chapter Four will begin the investigation into 'gappy' existence, and the ability of perdurance and endurance to describe the identities and identity conditions of objects existing through, prior to, and/or after 'gaps'.

in the thought experiments, I plan as often as not to treat the conditions of those experiments not as appearances which need to be explained in terms of 'what is actually happening', but rather as brute facts with which we must contend. In this way I hope to keep the focus where I believe it should belong—on the explanatory powers of perdurance, endurance, four-dimensionalism, and three-dimensionalism.

304.   The cases I wish to consider I will call 'Gap Cases', or cases of 'gappy existence'. What I hope these cases will all have in common is a *gap* in the existence of one or more objects—and this is a loaded word which deserves significant elucidation. First, by 'gap', I intend to indicate a *durational* gap, as opposed to a *spatial* gap. If I were to cut a deck of cards, placing the top half of the deck on another table from the bottom half, we could rightly claim that there is a spatial gap in the deck of cards—there is a significant amount of 'empty' (i.e. 'deckless') space in the single entity that is the deck of cards. If one is unhappy with a deck of cards counting as a single physical object (as opposed to a composite entity made up of 52 physical objects), perhaps instead we might consider a whistle to be a physical object—even the kind that have rubber or plastic balls inside the air chamber, balls that, while the whistle is being blown, are frequently not in direct contact with the rest of the object. The ball is part of the object that is the whistle, and yet there is empty non-whistle space between the ball and the rest of the whistle at various times. Such is a spatial gap. But I intend to discuss durational gaps, as one might experience were the deck of cards on the table to suddenly disappear and apparently reappear at a later, but not immediately contiguous, time.

305.   Second, I do not mean to imply *yet* that a durational gap even allows for *the same object* to exist on both sides of the gap. B.A.O. Williams makes very clear his position that "bodily identity is always a necessary condition of personal identity…[and that] the criterion of bodily identity…includes the notion of spatio-temporal

continuity".[127] There will also undoubtedly be those (committed Lockians, for example) who will wish to declare that "one thing cannot have two beginnings of existence"[128], and therefore, since the start of a 'gap' is really only an *end of existence* of a thing, anything appearing after that *end* would be *beginning* its existence, and therefore must be a new and distinct object. Thus, for the moment, my talk of such gaps will be of an informal nature—in describing 'the rock disappearing and reappearing', I will be allowing for the rock that 'reappears' to not be identical to the rock that disappeared, and to thus not even be *re*appearing at all (but rather 'appearing' for the first time). This, however, is a good place to start, and I believe this is the clearest language that we can use at the moment, provided that we keep such allowances in mind.

4.2. Intermittent Existence

4.2.1. Locke and the Basics

306.		Let us assume for the moment that an object *may* have a temporal gap in its existence—that, somewhere in between the earliest moment of its existence and the latest moment of its existence, there is a duration of time wherein that object is not located at any spatial coordinates. This, I suspect, is as close to a theory-neutral explanation as we can give (assuming as we have the identity of what lies on either side of the gap). The question we will first consider is this: during that span of time wherein the object is not located at any spatial coordinates, has the object *ceased* to exist?

307.		An affirmative answer to this question—that the object that does include the gap has 'ceased' to exist at the beginning of the gap—may be rejected by the

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[127] Williams, B. A. O. 1957. Personal Identity and Individuation. *Proceedings of the Aristotelian Society* 57: p. 230.
[128] Locke, John. 1849. "Of Identity and Diversity". *An Essay Concerning Human Understanding*. 30 ed. London: William Tegg and Co.

Lockians among us. Assuming a Lockian will grant that a single object may persist through (around?) such a gap—and this is a big assumption—claiming that the object *ceases to exist* during that gap may lead us to claim that the object *begins to exist again* at the end of the gap—the object will have *begun* to exist twice, which is strictly *verboten*. The Lockian's options would then be limited. If the object cannot begin (for a second time) to exist at the end of the gap, the object seemingly must *continue to exist* through the gap—the object must be considered to be *existing* while it is not located at any spatial coordinates.

308.   But wait—might we claim instead that the object *resumes* existing at the end of the gap, rather than *begins* to exist again? Can we make this more than a simple semantic distinction? Is there a significant difference between a thing *resuming* and a thing *beginning again*? We might think, for example, that a baseball game suspended for an hour by rain *resumes* after that hour, but does not *begin again*—play picks up at the point where play ended, not with a new first inning, first pitch, etc. We might say that a piano student stopped in the middle of a piece by his instructor *resumes* playing the piece if he picks up where he left off, but *begins again* if he starts over from the first note of the piece.

309.   But is there a real distinction in these (possibly analogous) cases of non-objects (a game and a performance)? Consider that the piano student has a bad habit of lengthening the first note he plays after any pause in his playing. Might his teacher rightly object that this problem manifests whenever the student *begins* playing—even when that first note is the first note in the *resumption* of a piece right at the point he left off before a pause? Or does the teacher need to say "you have this problem both whenever you *begin* playing *and* whenever you *resume* playing" in order to be correct?

310.   I don't think anyone will argue that the student is not *resuming* his performance—the question is whether or not *resuming* just amounts to *beginning* for a second time. If the student is *beginning* when he *resumes*, what exactly is it that is

beginning? His performance of the piece—the whole performance? When he reaches the end and his teacher says of the whole performance, including before the pause, "that performance was better, particularly the beginning", could the teacher be referring to the *resumption* after the pause? It does seem correct to say that the teacher could rightly refer to the *beginning* of 'the second half', or 'the second measure', or 'the part after I stopped you', etc. But we have now dusted off our 'part' language—going this route, what *begins* after the pause is not 'the performance', but 'the *second part* of the performance'. The whole performance did not *begin to exist* again—the second part *began* to exist. And it only did so once. Similarly, the part of the baseball game after the rain delay can begin to exist separately from the beginning of the game as a whole, but that part cannot begin to exist twice. Neither, then, can the whole game, taken to include every inning, begin to exist twice.

311.   If we accept an informative analogy between objects and performances or games, this seems to be right in the Perdurantist's wheelhouse, at least as far as we have looked.[129] Of course 'one thing' cannot have two beginnings, but different parts of that one thing will each have their own beginning. In this way, *resumption* would be significantly different from *beginning*—the former being used to indicate the *beginning of a part* of a larger whole, the latter to indicate the first parts of the whole. And presumably, Locke would have no argument against a single game or performance of music stopping and then *resuming*—the second act of a play is still the second act of *the same play* that was being performed before the intermission. To argue otherwise would be to conclude in the end that in 'attending a play', one actually attended a number of plays—for surely there were pauses and *resumptions* between scenes, acts, and even *lines*.

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[129] We have yet to determine, for example, how the temporal parts are supposed to be 'connected' to each other, and some theories may possibly discount the possibility of noncontiguous parts.

312.   Accepting an ontology of temporal parts, then, seems for the moment to allow one to accept the possibility of intermittent existences, at least without violating what Locke seemingly took to be a law of some sort. But to answer the question of whether the Lockian would be happy with this resolution, I think it bears investigating what intuition or intuitions possibly led Locke to such a proclamation in the first place. For when one stops to consider the claim, it does not seem so obvious as Locke intimated. What makes us think, intuitively, that one thing cannot have two beginnings of existence?

313.   Locke's statement of the origins of our concepts of identity and diversity is not without its interpretive problems, however.

> 1. *Wherein Identity Consists.* Another occasion the mind often takes of comparing, is the very being of things; when, considering anything as existing at any determined place and time, we compare it with itself existing at another time, and thereon form the ideas of identity and diversity.[130]

Our idea of identity arises, claims Locke, as an idea of *diachronic* identity. This is not terribly surprising, given that we are not normally confronted with challenges of the synchronic variety—radical thought experiments aside, a thing at a single set of spacetime coordinates is easy enough to identify with itself that the prephilosophical idea of 'identity' as a property or relation would not likely arise from such. Indeed, we intuitively see synchronic identity as rather obvious:

> When we see anything to be in any place in any instant of time, we are sure (be it what it will) that it is that very thing, and not another which at that same time exists in another place, how like and undistinguishable soever it may be in all other respects: and in this consists identity, when the ideas it is attributed to vary not at all from what they were that moment wherein we consider their former existence, and to which we compare the present.[131]

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[130] Ibid
[131] Ibid

314.   Being in a particular place at a particular time is enough for us to distinguish an object from anything else at another place at the same time. Furthermore, Locke states unequivocally that we cannot even conceive of the possibility of two things *of the same kind* existing at the same place at the same time—we establish the diversity of an object from everything else existing at other places, and cannot even conceive of a diverse object existing at the same place. If we take this to be the claim that two diverse objects cannot exist *entirely* in the same location, as opposed to the possibility of two diverse objects sharing the same part and therefore *partially* existing in the same place— conjoined twins, for example—there seems to be little room for disagreement. Even theories that allow for a statue and a lump of clay, as diverse objects, to exist in the same place at the same time do not typically allow for *two statues* to coexist in a place at a single time. *Location* in spacetime is key—not surprising for an empiricist like Locke.

315.   When we investigate the identity of an object, then, we are asking about a thing which existed at such-and-such a place at such-and-such a time and of which we are *certain* it was identical only to itself. But this all seems very obvious—by definition, an object cannot be identical with *another* object, for *another* presupposes non-identity. But from these very obvious statements, Locke draws his remarkably strong conclusion:

> From whence it follows, that one thing cannot have two beginnings of existence, nor two things one beginning; it being impossible for two things of the same kind to be or exist in the same instant, in the very same place, or one and the same thing in different places. That, therefore, that had one beginning, is the same thing; and that which had a different beginning in time and place from that, is not the same, but diverse.[132]

316.   But Locke's argument, taken as it stands, is not valid—at least not regarding the second conclusion. If the premise is that we cannot conceive of two objects of the same kind existing in the same place at the same time, it *does* follow that we cannot conceive of two things beginning to exist at the same place at the same time. This

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[132] Ibid

difficulty is one of the points that many fission problems turn on: many of us are reluctant to claim after X splits into Y and Z that there were *always* two things coexisting prior to X's split—although this too has been embraced by some Perdurantists.

317.   But our conceptual difficulties regarding a single object existing at only one place *at one time* does *not* itself lead us to an inability to conceive of an object having two beginnings of existence *at different times*. Let us assume that we cannot conceive of an object X fully existing at time T in two locations A and B (as opposed to my body existing in the two locations where my left hand and right hand are—my body is not *fully* existing in either location). I understandably then should not be able to conceive of X *beginning* to exist at both A and B at time T. But it is another claim altogether that I cannot conceive of X beginning to exist at place A at time T and then at place B *at time T2*. As strange as this new conclusion sounds, it does not follow from the premises we have been given by Locke.

318.   I *can* conceive of X existing at A at time T and existing at B at time T2—objects move around as time passes, in other words. And Locke is right that two beginnings of existence for one object is unintuitive. But it is not because of our intuitions about *simultaneous* existence that we arrive at this further intuition, for the further intuition has nothing to do with simultaneity. Instead, I claim that the intuitions at the heart of Locke's ultimate conclusion are intuitions regarding intermittent existence itself, and the nature of 'a beginning'.

319.   Intuitively and experientially, existence of objects is unbroken—a thing begins to exist (has its first appearance in spacetime), remains existing without interruption (continues to occupy various regions of spacetime), and ceases to exist (has a last appearance in spacetime), and all in that order. And I suspect that I may have gone beyond intuition here a bit in connecting 'beginning' with 'having a first appearance in spacetime'. I believe that our intuitive conception of the beginning of a physical object involves a systematic *creation* of the object—a creation involving steps we can see, parts

we can identify, and which is upon examination not easily confined to a particular point in time. We do not typically consider that objects can appear suddenly, fully formed. When we see magicians present the appearance of such a 'creation', we believe that it is a ruse, and we are generally right to do so.

320.   We do not find it intuitive that objects appear suddenly when they *begin* to exist (although the length of the process of creation can be very brief), and we do not find it intuitive that an object's existence would have gaps—that the coffee cup sitting in front of me would simply cease to be located at any set of spatial coordinates for the next five minutes, and would once more be located in space after those five minutes. And these intuitions are not based on the synchronic intuitions Locke discusses at the beginning of chapter 27 of his *Essay*. It might be that the intuition of uninterrupted existence is logically founded on the intuition that a beginning involves a process—a watch, for example, is a thing put together by a watchmaker, and it is put together at a specific place and time (granting that the time of the watch's creation may not have well-defined limits). This action, taken to create this specific watch, we believe to be *unique*. An action that is *similar* but not identical to this action, taken at a later time, will result in the creation of *another* watch.

321.   What is of interest, however, may be the difference between the creation of the watch and the *rebuilding* of the watch after it has been repaired. A watch X is built in location A at time T, and is later brought in for repair and cleaning. A is taken apart in location A at time T2, and is reassembled in location A at time T3. Intuitively, we are left with the same watch we began with—the reassembly does not count as a second *beginning* of existence, and also intuitively the disassembly does not count as the 'ceasing to exist' of the watch. E. J. Lowe finds this very example to be intuitive, claiming that:

> someone entering the workshop and seeing the pieces laid out carefully on the watchmaker's bench would quite property be told "That is Jones's watch"; and if such a person were, say, to stamp on these delicate bits of

machinery, he would clearly be guilty of *destroying* Jones's watch, i.e., terminating its existence."[133]

The intuition presented by Lowe is that the watch *still exists* when it is disassembled.

322.   We should note that there may be much disagreement about *how* the watch continues to exist—perhaps better stated as a disagreement over *what* the watch continues to exist *as*. As we have seen previously, Geach allows for *relative identity*, wherein A and B might be 'the same f' but not 'the same g'. All and only the same watch parts from watch X used to build another sort of instrument will be 'the same parts' but not 'the same watch', even though the parts when considered as either a collection or individuals will not have changed. David Wiggins, in his rather obscurely written *Sameness and Substance*[134], appeals to the difference between 'substance sortals' and 'phased sortals' to reject Geach's relative identity, while still allowing us to make the same claims about such watch parts.

323.   A sortal is, very generally[135], a concept or a term for a concept[136], specifically in instances where there are 'countable' things. 'Dog' is a sortal, 'sand' is not. A 'phased sortal' is, for Wiggins, a concept that only applies to an object during a particular duration of its existence. 'Puppy' does not apply to a particular dog throughout its life, and yet we can easily count 'puppies', use '*this* puppy' and '*that* puppy' to individuate between animals, and use the term to distinguish between young dogs and young cats. A 'substance sortal' is a concept that applies to an object throughout its existence—'dog', 'animal', 'mammal', etc. As I understand Wiggins—which is admittedly not terribly far—the theory would entail, when we consider the new instrument (a wind-up soldier, say) built from the watch parts, that there is one object

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[133] Lowe, E. J. 1983. On the Identity of Artifacts. *The Journal of Philosophy* 80 (4):222.

[134] Wiggins, David. 1980. *Sameness and Substance*. Oxford: Blackwell.

[135] And thus perhaps mildly incorrectly…there is a rather astonishing amount of confusion across the literature of metaphysics regarding what exactly a sortal is to be defined as.

[136] As I understand him, Wiggins is indicating concepts with his use of the word.

existing throughout, and object to which the phased sortal 'watch' would apply for a while and to which the phased sortal 'wind-up soldier' would apply for a while later. Either that, or there would simply be two objects. This particular case may not involve a persisting object, for as Helen Morris Cartwright states in her review of Wiggins, "the assumption is that, given anything at all, there is at least one *non*-phased sortal true of it as long as it exists; in particular, one which names a "substance concept."[137] Is there one concept which applies to a single entity, through the time when the parts are assembled as a watch *and* the time when the parts are assembled as a wind-up soldier? I am not entirely sure, as 'collection of stuff' may not be a proper sort of substance sortal at all. We shall have to keep a weather eye out, then, for such times as when we may not be able to find a single concept that persists even as *something* or some*things* are seen to persist.

324.   Returning to the watch (not the 'watch/soldier') and assuming that we can put aside sortal differences, what then makes the reassembly a reassembly and not a second beginning? What causes us to claim that the watch still exists when it is lying in pieces? This is a question which has occurred to me since my childhood viewing of Star Trek episodes. What is the difference between Captain Kirk being *disassembled* by the transporter and still considered to be alive, to exist, and the unfortunate crewmember who is disassembled by the transporter and mistakenly beamed into space—not reassembled in the vacuum, but his component parts simply allowed to drift away into space, unattached?

325.   One obvious difference, of course, is that Captain Kirk gets *reassembled* later, and the unfortunate crewmember does not. But if that is the only significant difference, then we seem to be on the road to claiming that the existential status of a disassembled object relies on the constitution of that object at a *later time*. Captain Kirk's *existence* a second after the transporter disassembles him *depends* upon Scotty's using the

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[137] Cartwright, Helen Morris. 1982. Book Review: Sameness and Substance. *The Philosophical Review* 91 (4): p. 598.

transporter to reassemble him five seconds later on the planet below. That his existence *after* his resassembly depends on his reassembly is unproblematic—causal dependence from past-to-future gives us no pause. But that we can only know whether Kirk exists *now* by seeing what happens *later* seems strange—but this is epistemic wording. That his very *existence,* independent of our knowledge of it, depends on his future states may be even stranger—it seems intuitive that Kirk's existence *now* should be quite independent of his existence *later*. As an intuitive objection, this might seem to be more of a problem for the Endurantist, given intuition as a strength of the theory. A Perdurantist, claiming that all stages of Captain Kirk 'exist' as much as any of them exist, might simply wish to point to the last assembled stage of Captain Kirk, call it 'the end of Kirk', and explain that, were there another *later* assembled stage, that end of the earlier stage and beginning of the disassembled period would *not* count as his end.

326.　　　　But there is another option available to us aside from dependence on future states. Consider when, in another two hundred years, the family of the unfortunate crew member manages, at great expense and effort, to collect the dispersed component parts of the crewmember, and puts them back together. Is this any different in kind from the successful transportation of Captain Kirk? It took longer, to be sure. But both men were disassembled into component parts, and then put back together. If this results in Captain Kirk's *continued, uninterrupted* existence, then should we not conclude that the crewmember in fact continued to exist during those intervening two hundred years? If we do conclude this, and we reject *actual future* reassembly as necessary for *present existence*, then we seem to be on a different road now—one that may lead us to conclude either that *nothing* ever ceases to exist (for possibly anything may be put back together out of the basic parts it was last constructed out of), or at least that we can never *know* whether anything has in fact ceased to exist. We could have confirmation that something has *not* ceased to exist, but never the other way around.

327.   It must be noted that Lowe's intuitions regarding the continued existence of the watch are, as most intuitions, not universal. Theodore Scaltsas seems to take as a given that, for example, an ancient vase that is discovered in pieces and subsequently restored:

> had *ceased to be* [my emphasis—TKJ] during the interval between its breaking into pieces and its being restored…Speaking of 'the broken vase' does not commit one to speaking of the vase in its broken phase, any more than speaking of one's dead father commits him to speaking of the dead phase of his father. Rather it should be understood that one is either speaking of the vase which subsequently broke or the pieces which were produced from the breaking of the vase; which of the two will be clear from context. But it should not be thought that the pieces of the vase produced by the destruction of the vase comprise a phase of the vase, simply because the vase has ceased to be; there is no vase once it is broken into pieces.[138]

The parts left over after an object has ceased to be can often, but not always, be used to maintain the *identity* of the object, writes Scaltsas, but they are not the object, are not numerically identical to the object. Their ability to maintain the identity of an object will be returned to shortly. For the moment, I will simply state that I am not sure that much will turn on whether we declare the disassembled object to be 'existing' or 'destroyed' during the duration in question. If Scaltsas is willing to accept *recreated identical objects* following destruction (which he is), this may only be a superficial difference in the theories—perhaps even a linguistic difference.

4.2.2. Lowe on Reliability

328.   What Lowe finds to be important is the *reliability* of the reassembly process. He stresses the reliability of the method, presumably primarily to avoid having to admit that accidental or 'lucky' reassembly would count as reassembly of the same object—swamp-man sort of cases in which all and only the unfortunate crew member's

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[138] Scaltsas, Theordore. 1981. Identity, Origin, and Spatiotemporal Continuity. *Philosophy* 56 (217): p. 395.

pieces are collected at random by a passing cloud of space gas and put into the same order they were in when the crew member last existed. And Lowe admits that the notion of 'reliability' will need to be unpacked, and importantly is "definable only relative to our technological capabilities"[139]. This last he takes from Scaltsas, who claims that whether or not the parts left over from the destruction of an object can be a 'medium' for that object's identity depend on two factors: first, the condition of those parts, and second, the *skill* of the people or agents who will be attempting the reassembly. The notion is that a vase broken into three large pieces might be repairable by a primitive society, where a vase broken into several thousand smaller pieces will not be—but such a vase might be repairable given our current technological abilities[140]. Similarly, Captain Kirk taken apart into his constituent particles in the early 21st century is, lamentably, dead. But this is problematic.

329.   In the first place, I am not sure that reliability is going to leave us with satisfactory identity claims in many cases. Would we, for instance, not wish to make an identity claim if Spock, in a burst of insight, developed an entirely new method of recovering the crew member's parts from the region of space around the *Enterprise*, a method that Spock claimed would have only a 5% chance of success? Is a method with a 95% chance of failure to be considered a *reliable* method? Consider that, in the 95% of cases considered unsuccessful, some include no reconstruction of a body at all, while some include radically different and non-human constructions of parts. And consider that Spock does manage to successfully gather the parts and put them together in what for all the world *seems to be* the right configuration. Has identity been preserved?

330.   Spock, presumably, is measuring his chances of success or failure based on the end result—the structure of the object that results from the procedure. A blob of vaguely flesh-colored material without any recognizable human organs would be

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[139] Lowe. 1983. p. 223.
[140] Scaltsas. 1981. p. 396.

considered an 'unsuccessful' reconstruction of the crewmember. A being looking and acting and constructed just like the previous incarnation of the crewmember would be a 'success'. The Lowe/Scaltsas intuition is that 'success' is to be determined by how often we would be able to achieve what Spock has labeled a 'success'. But if such results are not to be considered *actual* successes while they are deviations from the norm, we are forced into a position of categorizing identical sorts of results as 'successful' in one instance and 'unsuccessful' in another. The 'person-thing' Spock *creates* in his first use of the new procedure is declared not to be identical with the old, dead, crewmember. But after several years of trials and laboratory work, the results of the procedure—a procedure now more reliable but essentially the same—will be people, *reassembled* people, identical to persons who were previously destroyed or disassembled. And our choices about what to say regarding the *earlier* results are equally distasteful: either we continue to regard the first people produced by this procedure to be *not* identical to prior individuals, or we accept that their identities have *changed*, going from not-identical to prior individuals to being identical to those individuals. Either is a problem.

331.   I will briefly note that if we were to reject reliability, neither am I convinced that *intention* should be the key to identity in such cases. Presumably if we made identity turn on intention, we could preserve the identity of the crew member from Spock's new reassembly method, while excluding the thing created at random by the cloud of gas. Spock *intended* to reconstruct the crew member; the cloud intended nothing at all. Scaltas, for example, suggests that intention has such an impact on the identity of what would appear to be reconstructed objects. A pile of blocks built by a child, accidentally knocked down by the mother and rebuilt in the same pattern by the mother, would be the same pile of blocks—but a pile of blocks resulting from the jealous

knocking down of the first pile and a constructing of the same pattern by a second child, so as to make it *his* pile, would result in a different pile.[141]

332.　　　　But intention becomes questionable when we imagine a distraught mother of the crew member, who with no working knowledge of such technology at all wildly believes—without justification—that randomly shooting phasers into the area of space where her son disappeared might do the trick. And suppose that, contrary to the beliefs of Spock, who knows as much as anyone about such technology, her method just happens to work (and is never able to be replicated again, or perhaps is simply never attempted again). Freak occurrences on a passing comet plus a thousand other contributing factors, along with the mother's wild firing of phasers, resulted in what appears to be a human who is constructed, looks, and acts just like the crew member. Do we have identity? The mother *intended* to recreate the crewmember, even as we recognize that she possessed no real ability to do so reliably. Scaltsas may still wish to claim that intention is a *necessary* condition for identity in a rebuilt item, but I am yet skeptical. An earthquake that shakes the same collection of watch parts together in a box into the same watch construction (same pattern of parts) they had been in will not, I would like to say, have created a different watch—nor would a friend jealous of my watch wishing to put it back together '*as his watch*' be able to use the same parts in the same pattern to create a different watch. I have, as yet, presented no argument for this aside from intuition.

333.　　　　Returning to technological capacities, do Lowe and Scaltsas mean to indicate that our *present* technological capacities and skills are what relativizes the reliability, so that a ship passing through the region one hundred years later, with far more advanced and *reliable* technology relative to that time, would not be able to reconstruct the *same* crew member, regardless of the physical and mental states of the person their procedure results in? In his defense of the necessity of bodily continuity for

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[141] Scaltsas. 1981. pp. 398-9

identity, Williams also raises a red flag regarding significant lengths of time having passed before a reconstruction[142]. There, however, the difference is not technology available, but rather the inability for the new object to appear in *the same place* the original object disappeared from. An object blinking out of space (or existence) for a fraction of a second, the claim is, might sustain our intuitions about identity. This is because the object would be able to appear in 'the same place' as the original—the same spot on the counter, in the same bed in the same room, etc. But as time passes, it is harder to identify 'the same place'. Where must an object that disappeared while on the bed in room A appear, in order to be considered 'in the same place', now that the bed has been moved to room B? Presumably, a different spacecraft traveling near a given planet 100 years in the future is, in many ways, *not* in 'the same place' as a ship that was near that planet 100 years ago. The planet is in a different position in the star system, the star system is in a different position in the galaxy, the galaxy is in a different position relative to other galaxies, etc.

334.   But this very problem of location—and perhaps Williams would have no problem with this, given his insistence that bodily continuity *is* necessary for identity— should indicate that either *no* gap can possibly maintain identity, or that identity conditions would be based on convention of some sort. Consider that, relative to other stars and galaxies, my living room is currently rushing through space at fantastic speeds. If my coffee mug were to disappear, even for a fraction of a second, from the table where it sits, that same spot on the table will be thousands of miles away from where it was when the mug reappears—from the right frame of reference. All motion is relative[143], and all *lack of motion* is relative. Thus either nothing could appear in 'the same place' in every sense of the word—as even if the bed remains in the same room, and the room is in the same building, in the same city, state, nation, and continent, the *planet* is in a different

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[142] Williams, B. A. O. 1960. Bodily Continuity and Personal Identity: A Reply. *Analysis* 21 (2):43-48.
[143] Again, excepting acceleration.

place—or 'the same place' is to be arbitrarily defined. 'The same place', we might say, is to be determined relative to the planet, or perhaps to the land mass, as continental shift may then be problematic for us. Williams seems to accept 'same room' and 'same bed' as the sort of candidates we would want to look at. But there is no reason to accept any of these over any other, aside from our intuitions—our comfort level with calling something 'the same place' in a given situation.

335.   However, I do not believe it to be intuitive that the ship passing by one hundred years in the future *would not* be able to reassemble the very same person with their new technology, assuming we already accept an ontology that allows Captain Kirk to retain his identity through a 'normal' instance of transporting. Captain Kirk beaming down to a nearby planet certainly isn't being reconstructed in 'the same place' relative to anything we might ordinarily point to. He is thousands of miles away from where he was taken apart. And transporting that takes *longer* than normal, while perhaps inducing suspense regarding whether the reconstruction will eventually happen at all, does not cause the viewer any additional suspense regarding the identity of the 'Kirk' who appears at the end. If the advances of one hundred years is not a convincing scenario, consider instead the chance meeting with an advanced race a week after the 'death' of the crewmember. The strange and powerful new aliens, hearing of the crewmember's loss, shrug their shoulder-equivalents, press a few buttons, and the crewmember's parts are collected and assembled in less than a minute. The previous day, Captain Kirk and Spock, following Lowe and Scaltsas on reliability of current technological capacity, had declared the crewmember dead. When suddenly reliable technology is available, the death certificate may be easy enough to change, but the crewmember's metaphysical status is not a matter of paperwork.

336.   Robert C. Coburn accepts much the same solution as I have here—that, for instance, the crewmembers would be identical even after a longer period of time—as long as there are no additional conditions which would serve as defeaters of identity. He

follows Williams by holding *additional reduplications* as an example of such a defeater. Were the ship passing by in 100 years to gather the crewmember's particles, somehow manage to split them while maintaining a sufficient kind of particle identity (a very complicated notion which we will assume here is possible), and use those particles to reconstruct *two* crewmembers who are physically identical to the original crewmember, neither would be identical to the original[144]. I follow Coburn here in claiming that, which such defeaters might make perfect sense, the existence of those defeaters does not seem to indicate that therefore identity is not to be established between objects in similar conditions where the defeaters do not exist. In other words, the mere *potential* for a second physically identical crewmember to have been created does not itself mean that we should therefore not accept identity claims about the *single* crewmember that was recreated.

337.   But if we do not relativize reliability to current technology, then we would be claiming that identity will be preserved if at *any* time the technology exists to reverse the condition—and this brings us back to an epistemic nightmare of never being able to declare anyone as once-and-for-all dead, any object as ever ceasing to exist, period. Given that with current technology we can do to living bodies what people a thousand years ago would have considered to be magic (gene manipulation, for example) and that the *rate* of technological progress is itself increasing, what would possibly allow us to claim that a person completely immolated could not be returned to his prior form given technology advanced another thousand years?

338.   But perhaps this is not so worrisome. Will we have satisfied Perry's Gretchen Weirob[145] if in a thousand years we wake up 'a Gretchen Weirob' and inform her that, using incredibly reliable quantum-machine technology, we have located all of the particles that she had consisted of at the time of her death and reconstructed them

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[144] Coburn, Robert C. 1960. Bodily Continuity and Personal Identity. *Analysis* 20 (5):117-120.
[145] The dying character in John Perry's *Dialogue on Immortality and Personal Identity*. 1978.

back into the state she was at prior to her 'death'? Is it so hard to believe that the Kleenex box she imagines being burnt to cinders could be reconstituted via future technology— the *very same* Kleenex box? Burning is a chemical process, and we currently have the ability to reverse a great many chemical processes. Is there anything logically impossible about reversing burning? More importantly, is there any reason we need to preserve our ability to properly determine when a thing ceases to exist, other than that we are simply *comfortable* with being able to do so—or at least with believing that we are able to do so? The world is a complicated place—or thing—and since Descartes many of us grow more comfortable all the time with the belief that we, individually, may not *know* a great many things.

339.   Scaltsas points out that we *could* have knowledge of a thing's destruction—if something suffers a 'terminal catastrophe' (i.e. is disassembled, destroyed, and cannot be rebuilt) that is terminal in *all possible worlds*.[146] Were we to encounter a 'destruction' of an item with *no possibility* of its being reassembled, we would be assured of its final destruction, of the end of its existence. But the problem with this claim lies in establishing the modal significance of the possibility we are discussing. Must it be *logically* impossible for the object to be reassembled—i.e. that its reassembly would be a logical contradiction, of a kind with square-circles and married bachelors? Or are we using 'impossible' in a less restricted sense? If so, the problem as Scaltsas sees it is that we simply do not know what sort of technology is possible in *all* other worlds. Thus we in the end cannot make informed claims about what is possible in other worlds, and we do not therefore escape the epistemic issue. The dilemma does appear to be between accepting some arbitrary condition of the possibility of reliable reconstruction, or objects with literally *unknown* total durations of existence.

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[146] Scaltsas. 1981. p. 396-7.

340.   And as I indicated above, it seems strange to think that Captain Kirk's existence *right now* is determined by what has not happened yet—by his future reconstruction. So perhaps we could establish his existential status based not on whether a method of construction *is used* in the future, but on whether or not such a method *exists*. It may be that Lowe holds this view, for he claims that what is important is that "there *should be* [my emphasis—TKJ] some reliable means"[147] of reassembly. Neither he nor Scaltsas specifies that those means must actually be *used* before a judgment is made about identity or existence. So Captain Kirk being disassembled by the transporter—a reliable means of disassembling and reassembling objects—continues to exist[148], independent (to a certain degree, as regards his specific particles) of what happens later. We still might not want Kirk to continue existing into perpetuity—assuming no one ever reassembles him, are we comfortable claiming that Captain Kirk continues to exist until the hypothetical end of the universe? Any *existing* reliable process might become unusable, of course—perhaps if he is not reconstituted and his particles slowly drift apart, there is a point at which the process becomes unreliable—a point at which we declare him dead. But if a process exists that does not become less reliable with time, or if we accept the possibility of future reliable processes, we would have no reason to ever claim that any object so disassembled has ceased to exist.

341.   More troublesome is the previously-raised difficulty regarding how it is that we determine that such a process is even *reliable in the first place*. If Spock gets lucky the first time (with a process deemed to have a 5% chance of 'success') and the result is a man who appears otherwise identical to the original crew member, but Spock still determines that there is only a 5% chance of this 'successful' result in the future— and if we still hold *reliability of the process* as necessary for identity in these cases—then

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[147] Lowe. 1983. p. 223.
[148] Scaltsas will likely differ by claiming that Kirk has been *destroyed*, but in a way which allows for reconstruction. But, again, I side with Lowe in this matter, and I am not sure this is a significant difference for our purposes.

in fact Spock was *not successful* in reassembling the crew member. We need reliability for identity, and the process is not reliable. But this means that the process will *never* be reliable, for presumably we need *successful results* to begin to get reliability. In other words, under the reliability standard, in order to be considered successful Spock's procedure must reliably reassemble people *identical* to those disassembled. But in order to be able to say that the resulting people are identical, the process needs to be *reliable*. This is as vicious a circle as can be had.

342.   The alternative is to say that reliability is based on reassembling people who are *otherwise identical* to the people disassembled. Spock had a 5% chance of reassembling someone who was otherwise identical, so the new person is not identical. But later, when Spock determines through experiment that he has a 95% chance of reassembling people who are otherwise identical, we determine that the process *is* now reliable, and that the reassembled people *are* identical.

343.   But this makes identity rather arbitrary. The people reassembled in the beginning are *just as 'otherwise identical'* as the people reassembled later in the story—the only thing keeping them from being counted as identical is that other attempts in that same timeframe did not return *otherwise identical* results, and this is a result of a lack of knowledge on our part—a lack of the correct sequence of a handful of charges manipulated on computer chips, a sequence that makes the given process a process that will work more often than not. The identity of objects is now contingent upon the constitution of *other objects*, or on human knowledge—either should be troublesome. Although I have discussed *intention* above as being problematic in its own right, I am not sure we should be happy with a 'pseudo-reassembled person who was *intentionally* put into his current state so as to be *identical* with a previously assembled person' being counted as non-identical to the previously existing person because the process does not work as often as it fails. Does it make sense for the reassembled crew member to lament that he *would* have been identical to a past person, if only technology and human (or

Vulcan) knowledge had progressed faster, or if only Spock had put two 1's where he put two 0's?

344.   I do not know that there is a solution to this issue that will leave everyone satisfied. Our central question here is how to distinguish between things taken apart and still existing versus things taken apart and destroyed[149].

> **Choice 1**: Is the *future* reassembly of the object necessary for the *present* existence of the object? An affirmative answer seems to lead us to unintuitive 'backwards' causation, at least for the Endurantist. It does, however, allow us to declare that some, even most, objects will cease to exist, even if we don't *know* with certainty that they do.

> **Choice 2**: If we say no to Choice 1, is the *process* of reassembly important to the identity of the objects? To answer in the negative leaves open 'random' reassemblies of the 'swamp-man' variety. *Intention* also leaves us with problems of 'randomness'.

> **Choice 3**: If we say yes to #2, is it the *reliability* of the process that is necessary for identity? If it is not the reliability, what else about the process is there to look to?

> **Choice 4**: If it *is* the reliability that is important, is it the existence of a reliable method *now*, or the existence of a reliable method *at some point later* that gives us the continued existence of the object? Allowing a future reliable method to give us identity and continued existence leaves us uncertain about the continued existence of anything. Restricting ourselves to the reliability only of existing methods leaves us with identity being dependent on human knowledge, rather than on the structure of the objects in question or even their method of reassembly.

> **Choice 5**: How do we establish reliability of a method? It is circular to claim that reliability is established by 'successful' attempts to reassemble 'the same people', given that reassembling 'the same people' requires reliability. But it seems arbitrary to claim that people reassembled with a given method are identical to people in the past only when there are more attempts that are successful in a 'near identity' sort of way than there are 'unsuccessful' attempts.

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[149] For Scaltsas, between things terminally destroyed and things non-terminally destroyed.

The Perdurantist appears to have an affirmative answer to Choice 1 available as unproblematic. The Endurantist, or Perdurantist rejecting that option, will have to choose between what appear to be unfortunate consequences.

345.   Lowe is also clear in his rejection of what he calls the "solution of last resort"[150]: to claim that there is in some instances *no fact of the matter* where identity is concerned. This is not the claim that we *would not know* what the fact of the matter is, but rather that there is no objective fact of the matter whether the crew member reassembled at a given time is identical to the crew member prior to disassembly. X is neither identical to Y nor is X *not identical* to Y. Lowe's language leaves no room for doubt regarding his position: such a resolution is "one to avoid if at all possible", one adopted by "many faint-hearts…in the face of difficult puzzle cases", and amounts to "defeatism"[151]. He points to the apparent rejection of either the law of excluded middle or the law of bivalence (or presumably both) as the most odious of results from such a position, and makes such a rejection analogous to van Inwagen's position on rejecting the transitivity of identity. And surely enough, his desire to preserve these laws is not unusual.

346.   But I must say that it also strikes me that Lowe's position seems to stem from a kind of competitiveness that one often sees in philosophy and the sciences. It is branded as 'defeatism', and seen as simply throwing ones hands up and walking away from a problem to claim that perhaps there is no truth of the matter. One is 'faint of heart' if one is seen to be 'giving up' on the problem. But of course to hold such a position is not to 'give up' on the puzzle at all. How faint of heart is the philosopher who solves one problem by calling into question something like the law of excluded middle? Perhaps as faint of heart as the physicist who attempts to solve the puzzle of the apparent constant speed of light by rejecting Newtonian physics?

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[150] Lowe. 1983. p. 221.
[151] Ibid, p 227

347.   My point here of course is not to attack the position of Lowe and others by calling into question their own motives—rather it is to attempt to prevent the immediate rejection of opposing positions as 'defeatist'. We philosophers should not treat our 'laws' as ultimate, as 'never to be questioned', for to do so runs contrary to our training and our mission, if there is a single mission of philosophy. Given this attitude, I will simply say that such positions should be considered as alternative positions to any other solution presented—to be evaluated based on the sense we can make of the consequences, as compared to intuition, observation, and other theory. If observation and the body of our theories ever seem to point to the rejection of what some hold to be 'fundamental laws', those laws should be questioned anew. I will grant that it may be more often than not a more productive endeavor to question other, less apparently basic, 'laws', and in that sense perhaps such answers are 'a last resort'. But I wish to reject the questioning of the intellectual integrity of those who wish to actively pursue such courses.

4.2.3. Lowe on Intermittent Existence

348.   If we discard the notion of process reliability as necessary for identity through disassembly (and from the discussion above I think we should discard it), we remain confronted by two questions, both dealing with different kinds of 'intermittent existence'. The first: what are the necessary conditions for identity through a disassembly into constituent parts? The second: is there any possibility of identity through—or perhaps *around*—a gap wherein there are no constituent parts located anywhere in space?

349.   Unfortunately for his arguments, Lowe argues regarding the first question for what appears to be an epistemic requirement—the pieces an object X is disassembled into must be *identifiable* as X-pieces if we are to identify an object rebuilt from them as X, or if we are to claim that X continues to exist while the pieces are spatially scattered. He compares a disassembled watch, which presumably does have pieces that are

"identifiably *watch*-parts"[152], with a model bridge made from building blocks. The pieces of the latter are not identifiable as 'model bridge parts, and thus Lowe does not want to identify a merely 'similar' model bridge built later with the bridge that existed originally. The pieces are too "anonymous".[153]

350.   But I am unsure how our epistemic states regarding the pieces are to be used in determining the identity of the object. In a society wherein those kind of blocks are only ever used to build model bridges, the blocks *would* be recognizable as model bridge parts. Similarly, a sufficiently primitive culture—or sufficiently advanced beyond our own—might easily fail to recognize watch parts as watch parts. I suspect that this is entirely too obvious to be charitable, however. Perhaps the claim is less about our recognition of the parts than about how the parts may be used. One might argue that the number of objects that *can* be constructed from simple square blocks (whether a society recognizes this or not) far exceeds the number of objects that can be constructed from watch parts—it is not about our recognition of the parts as parts of an object, but instead that watch parts only go together into watches. Square blocks may go together into buildings, cars, bridges, tables, etc.

351.   This, however, should also be rejected, for indeed watch parts might be put together into as many configurations as square blocks might be. To be sure, not all of those wildly varying objects built from watch parts will *do* anything, nor will people recognize many of them as anything. Many will be 'abstract' structures. Still others might be recognizable as 'things built from watch parts'—one can imagine constructing a full-size replica (non-functioning) espresso machine out of watch parts, for example. Sculptural artists working with 'found material' know all about these sort of constructions. But we have reverted to 'recognizing' here at the end—epistemic issues. People who do not know watches will see only a diverse number of objects made from

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[152] Ibid, p 329
[153] Ibid, p 330

the same kind of parts. Those parts are not inherently 'watch-parts', outside of a recognized standard use for them. We cannot even claim that no other working machine that is not a watch can be built from watch pieces. Given a container of springs, gears, screws, and the like, enterprising mechanical engineers might construct for us any number of machines that work, and perform functions other than telling time—small drills, jack-in-the-boxes, toy cars, etc.

352.   It is only our recognition that allows for any difference between the watch parts and the blocks—we consider simple blocks to be 'less specialized', more basic, more utilitarian, than the typical watch parts—but this only comes from our human sort of way of looking at the world. Thus, only if Lowe wishes to grant that identity issues depend on our psychological states and ways of looking at the world can he rely on 'non-anonymous' parts to preserve identity of disassembled objects. For the moment, at least, I will reject this sort of claim.

4.2.4. Convention and Art

353.   We might think that there is something to Lowe's connection of our recognition or parts—of our psychological states—to identity criteria, and we might think this because of what are commonly accepted to be our intuitions about works of art. Consider: fifty years from now, a graduate student inquires about an interlibrary loan of a particular book. The library in another state which has the book agrees to send 'their copy' of the book to him, via their new matter transmitter. The book is placed into the machine, which proceeds to collect information about the book down to the subatomic level. The machine then sends this information to the student's library, where another machine takes *different* subatomic parts and begins to assemble a book according to this information. Immediately after the information is sent, and prior to the assembly of the book at the student's library, the book at the first library is disassembled into subatomic parts, due to copyright and publisher requirements.

354.　　　In the end, the student gets his hands on a book that is physically identical to the book at the first library, meaning that all observable properties are shared, down to the stains and pencil marks on the inside pages and the bent corners of the cover—some of the stains even still smell like coffee. I believe that many people will find it unproblematic to say that the book the student now holds is identical to, is 'the same book' as, the book that had been on the library shelf prior to this process. But consider what happens to our intuitions when we discover that the book is a one-of-a-kind copy of *Principia Mathematica*, signed by both Whitehead and Russell, containing an argument between the two men written in the margins, and had lain in Russell's casket with his body during his visitation—a priceless treasure indeed. Given that the book the student now holds was assembled from *different* constituent parts as the one in the library, would we now consider this the same book, identical? Consider if we proposed transporting the *Mona Lisa* across the solar system in this same manner.

355.　　　Lowe gives some consideration to the treatment of the identity of artwork, stressing that we value the *work* the artist put into the piece, and that a painting that has been 'restored' beyond a certain point will no longer be considered to be 'the same painting'[154]. Consider a mural painted on a wall—over the years most of the paint has been worn away, so that it is barely visible. Another artist, a 'restorer', uses a picture of the original mural to repaint the wall, arriving eventually at a mural that is qualitatively identical to the original, down to the brush strokes (the restorer was *very* dedicated to the project). I agree here that most would not consider this to be 'the same mural', and I believe that this is the sense in which we do not consider a given performance of Handel's *Messiah* to be identical (not qualitatively) to a performance of the same piece of music on a previous night. We do consider the music played to be 'the same piece of music', but the performances are distinct. Similarly, although we do not typically talk this

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[154] Ibid, pp 231-2

way, the restorer might have painted 'the same mural' in the 'same piece of music' sense, but did not restore 'the same mural' in the 'same performance' sense.

356.		But while I do agree with Lowe regarding this intuition, there is more to the 'matter transmitter' case involving the *Mona Lisa* or the signed *Principia Mathematica* than to the music case. It is true that, like the restored mural, it is through the efforts of someone other than da Vinci or Whitehead and Russell that the 'new' object has been created. It is through the efforts of the people who designed and operated the matter transmitter. And while these efforts were enough to cause Lowe to reject identity, I must point out that at least in the case of the *Principia Mathematica* in the library, it was through the efforts of the printer and publisher that the library had that copy of the book. Now of course it is only through the efforts of Whitehead and Russell that the printer and publisher could do what they did—but isn't this similar to the mural? It is only through the efforts of the original artist that the restorer was able to do what he did. The point is that the *content* of the book is the creation of Whitehead and Russell, and we might equally say that the *content* of the mural and of the *Mona Lisa* are the creations of the original artists. If in the case of a book the content that is the creation of person X can be *presented* by another person Y but still be *identical* to the content created by X, why is this not true in the case of paintings? Is it just that, although we could, we do not talk of 'content' and 'performances' of paintings? Could a matter transmitter transmit the *content* of a painting within a different *performance*?

357.		One reply to this difficulty is to point out that we are attached to both the content *and* the particular performance of a painting—as Lowe has stressed, the *work* of the painter is important to us. Another reply is to simply claim that we are *irrationally* attached to works of art in this way—that we intuitively believe that there is some sort of *essence* of the artwork, some sort of embodied originality, that would be lost in this process. And there is much to advance this claim. First, as I suggested above, there would be less concern over using the matter transmission method on a garden variety book—a

particular copy of a particular book that is not particularly important to anyone. Second, we might be more comfortable transmitting the *Mona Lisa* in this way if the *same* subatomic particles were used to reconstruct it at the end. I grant here that there is currently significant controversy over the identity of subatomic particles. Various theories take them to be as distinguishable as ordinary objects, other theories claim that such particles are similar to waves on an ocean—distinguishing 'this particle' from 'that particle' makes as much sense as distinguishing 'this wave' from 'that wave'. However, my intuition is that theories in the latter camp will either not face a disparity between 'the same' or 'different' particles used to transmit the *Mona Lisa*, or will face the same problem as theories in the former camp, but to an even more significant degree. So we shall consider here theories of the former camp, wherein subatomic particles can be distinguished.

358.   To expand on this point—that using the same particles in the reconstruction would bring about a different identity result than using different particles—one could ask whether, even if we would be more comfortable with the 'same particle' method, does it make sense to be more comfortable? Is there anything inherently '*Mona Lisa*-ish' about a given electron, atom, or quark? Is there anything about the properties of a subatomic particle that identify it as having been part of the *Mona Lisa*? I suppose it is possible—some property as-yet-undetected of subatomic particles might tell us something about the past interconnections between particles—but I am still not convinced that it's *important*. I would claim that the burden of proof is on those who would claim that the same subatomic particles are necessary for identity of objects in these cases—some explanation of what it is *about* those particles that's important needs to be given, and 'there might be something we don't know about' is certainly not enough.

359.   We might say instead that it's something about the causal history of the parts of the *Mona Lisa* that make them necessary for recreation of the same piece of art— pieces of the same type, even put into the same states and the same configuration, will not

be the same. But this also is going to need a rather sophisticated explanation, for we can note that different subatomic particles being put into a '*Mona Lisa'* configuration in these instances are being put into *that particular configuration* because of the way the *Mona Lisa* is. The sort of cases were are talking about involve an end product that was assembled with purpose and intention, based on the *plan* or *modeled on* something that previously existed—these are not cases of random assembly. The causal chain of the reassembled painting will be traced directly back to the pre-disassembly painting, and what we will want is an explanation: why is the sort of causal connection existing when a plan is used not sufficient for the identity we will get from the sort of causal connection we will get from using the same particles?

360.   Now here is a claim: one might reply that we wouldn't *really* treat the unimportant object differently from the important object. Instead, we might say offhand that it is 'the same book' only *because we do not care* whether it is the same book or not. When I purchase a book from the bookstore, I typically do not care whether I purchase the first or second book on the shelf. It is only when a particular book has become important to me that I care. And this, the reply might go, would cause us to say that the book transmitted using different particles is 'the same book'—although when pressed we would admit that in fact it is a different copy of the 'same book' ('same book' in terms of content)…but we just don't care. According to this reply, there is no actual special metaphysical treatment of artwork—all objects are acknowledged as being metaphysically equally. It would just be a psychological fact about humans that we object more to the transmitting of objects that are valuable to us than objects that are not. Would this mean that Lowe's claim that it is the work put into the object by the creator that we find important would then extend to every object—or at least to every manufactured object (what are we to say about 'found art objects', or ordinary rocks, when stuck into a matter transmitter?)? At the least, it would seem to indicate a belief on our part that no objects in fact *survive* a complete and simultaneous replacement of all of its parts—for

when pressed, I suspect we would be likely to admit not that the *Mona Lisa* actually survived, despite our reservations, but rather that the ordinary object *did not survive*, and it just does not matter.

361.   Intuitions, however, can only take us so far—at least that will be the claim of the Perdurantist. As I have indicated, the Endurantist position is the intuitive position in large part, at least intuitive pre-philosophically or pre-scientifically. What is intuitive is a relative notion, and if one were to accept the findings of STR not as a mathematical model of a 3D spacetime but as a more-or-less accurate description of a 4D spacetime, Perdurantism then may strike one as the intuitive position—similar to how our intuitions about what Clark Kent may think in a given situation will change depending upon whether or not we accept the 'Clark Kent=Superman' hypothesis. We are also then faced with a prior question: if object X is not identical to object Y when Y is 'reassembled' according to X's 'plan' with different parts, has X in fact not survived, or merely *not survived as Y*? If an object's parts being scattered is itself not enough to end its existence, we may be faced with a future reconstruction of X that is identical with Y in every aspect other than not being made of 'the same'—and yet otherwise indistinguishable—parts. This would be a Williams-like *defeater* of the identity of X and Y. But as I claimed above, the possible existence of defeaters does not necessarily indicate a lack of identity.

362.   It appears that we can at least claim that artwork and 'special' objects tend to evoke from us an impulse to treat such objects differently in our metaphysics. But it appears we can analyze this into component parts. The *Mona Lisa*, transmitted with different particles, if rejected as identical, might be so rejected because the *performance* of the piece is not the same. This is a recreation, using the *content* of the painting, of the original performance, and thus it is not identical. In the same way, an audio recording of a musical performance is not identical to the performance, and neither is the *playing* of that recording. And I see no reason why we cannot accept this conclusion, while pointing

out that rocks, and Captain Kirk, do not have 'performances'. The performance we are so concerned about is not really a metaphysical matter.

4.3. Perdurantism and Scattered Parts

363.   As suggested above, Perdurantism appears on the surface to be able to accommodate gappy existence more readily than Endurantism, and the same might be true of Perdurantism regarding the problem of 'scattered parts'—what, if any, difference is there between Captain Kirk's scattered parts after disassembly and prior to reassembly and the unfortunate crewmember's parts after disassembly (given that the crewmember is never reconstructed)? What if any difference is there between the existential status of the two men?

364.   Consider a possible Perdurantist reply: objects, the standard sort of objects we are limiting the scope of this investigation to, are things which 'drag their parts around with them'. Necessary for being an object, then, even if we accept the ability of an object to be disassembled and reassembled while remaining in existence, is *being assembled* at a significant time, or perhaps for a significant duration. If being assembled is central to being an object, then the Perdurantist who accepts a 4D spacetime could make the following claim: an object ceases to exist at such a time when there is no time later than that time when the object's parts are assembled. Or to put it another way, an object is not in existence whenever there is no future time (relative to that time) wherein the parts (or what *used to be the parts*) of that object are assembled.[155]

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[155] As I have mentioned above, I believe this conversation can fit into a Scaltsas-ian metaphysics if we ask instead what the difference is between a *destroyed* object and a *terminally destroyed* object. Perhaps the difference, goes the answer, is that the latter is never reconstructed?

365.   In this way, then, the future reassembly of an object *is in fact* a necessary condition for the continued existence of a disassembled object. A watch taken apart and never put back together again ceases to exist as the time it is taken apart—granting of course that there is likely no clearly demarcated point at which the watch ceases to exist, but rather a duration of time sufficiently large to be able to unproblematically indicate that the watch ceased to exist 'during that time'. The watch continues to exist now, following its disassembly, only if there is a future time when it is reassembled. This leads us to several conclusions:

1. We cannot know at any time following an object's disassembly and before any reassembly whether or not the object continues to exist. Our epistemology is dependent on our metaphysics, not the other way around.

2. It also makes sense to say, for the same reasons, that objects do not exist disassembled prior to their first instance of being assembled. Again here we grant that the beginning of an object's existence will likely be a very broad duration of time, not sharply demarcated.

3. Objects are *bounded* by durations of being assembled.

I must admit that this view of objects also vaguely suggests the potentially worrisome conclusion that objecthood is merely a matter of convention. The universe, if I may risk personification for a moment, *does not care* about assembly or disassembly of things, or parts, or objects. That we distinguish a specific conjunction of smaller objects over a duration as 'an object' matters not to the actual ontology of the world—it only matters in how we *describe* the ontology of the world. And this I think is no trivial point. If true, it means that we should, as Hales and Johnson have advocated, make our ontology fit our observations rather than the other way around, which they charge the Endurantist with.

366.   The very fact that we had to specify what we were to be discussing with the word 'object' at the beginning of this investigation seems to illustrate this point. Many Perdurantists have already accepted as 'objects' in their own right the sort of

scattered collections of parts that we have rejected for our purposes—for some, 'my arm plus your leg plus that lamp' is *no less legitimate an object* than is 'that chair'. The question that is now presupposed is whether the distinction made at the beginning of this investigation is useful, worthwhile, or aids in clarity at all. Should we accept that there are no 'objects' outside of our perception of the world—a pseudo-Kantian approach in which our methods of perception force the world into categories that otherwise are meaningless?

367.　　　　I shall put this to rest by stating simply that I believe such questions to be non-starters. If subjectivism is to be carried this far, to the point at which we as human beings are unable to proceed past an inherently subjective manner of doing *anything*, then we should accept that our knowledge is subjective in this way, and move on. An exploration into the noumenal world should never be attempted. We *do* distinguish 'normal objects' from random or scattered and otherwise 'unrelated' collections of matter, and this is as important a distinction for our functioning as humans as exists. We cannot shed our inherent human perspective—every area of study is a *humanity*.

368.　　　　But what may be the case is that our notion of a 'normal object', as yet either unproblematic or rife with problems ignored, is likely to be more vague than we might wish. Consider two watches kept running by swapping, every other day, one key spring, of which the owner of the watches only has one. Is the spring a proper part of either watch? Of both watches? Of neither of the watches? Of one watch one day and the other watch the next day? We may be tempted to be guided by our previous metaphysical commitments—proper parts belong only to one thing, someone might believe. But the spring was ordered from the manufacturer and is not native to either watch—there seems to be no non-arbitrary reason to declare the spring a part of one watch over the other for the whole duration of the sharing. And if the spring were a proper part of one watch on one day, our hypothetical proper part commitment plus an ontology of objects existing disassembled (partially or entirely) should lead us to claim that the spring cannot be part

of one watch on one day and the other watch on the next day. All of this plus this hypothetical commitment to certain restrictions on proper parts leaves us with the distasteful conclusion that the spring is part of neither watch—that a small piece of precisely shaped metal purposefully and carefully crafted to do a specific job in a specific type of machine is not part of the machine it is attached to while it does the job it was created to do.

369.   It is no coincidence that this issue of identity and parthood is so intricately tied to spacetime physics, for there we have experienced the same conflict between new data and considerations and old intuitions and metaphysical commitments. Those who were deeply committed to absolute space, an absolute present, and all motion being consistent between frames of reference quickly ran afoul of relativistic physics, as those who were committed to Aristotelian physics ran afoul of Newtonian physics. It's hard for us to consider a celestial sphere as an *intuitive* notion, to be shattered by both argument and observation, and relativity is still relatively new—too new for our intuitions to have been unseated by new intuitions.

370.   However, by accepting the claim that objects are *bounded* by durations in which they are assembled, the Perdurantist seems to be able to not only accept an ontology of disassembled objects remaining in existence, but to also have an explanation for when and how those objects are no longer considered to be existing. This is not to say that there are not yet problems to confront. Of particular interest in the next section will be the sort of problem illustrated by the watches above—what must we say about parts of existing objects that (seemingly) end up as parts of other objects?

CHAPTER 5 — PARTS AND IDENTITY THROUGH GAPS

5.1. Part Sharing and Gaps

5.1.1. Two Examples Of Shared Physical Parts: Spock/Scotty and Conjoined Twins

371.   Consider an accident onboard the *Enterprise* which leaves no atmosphere in the ship, and only one working space suit. The crew enters the transporter and 'saves' themselves, disassembling their bodies but having the computer store the pieces rather than reassembling them[156]. Only Spock remains assembled, wearing the suit, for the trip back to Earth. When he needs engineering assistance, Spock 'saves' himself with the transporter in the same way and programs the computer to reassemble Scotty from his 'saved' state—Scotty then puts the suit on and gets to work. The process repeated reassembles Spock and 'resaves' Scotty. The pieces themselves are stored, not just the 'pattern' or data needed to recreate the body. So far—so long as we accept an ontology of objects existing while disassembled[157]—so good.

372.   But a collision with a small asteroid results in a portion of the 'Scotty' particles being lost, unrecoverable, scattered through the void of space. Following the collision, Spock once again needs to reassemble Scotty, but can't do so with parts missing. A quick reprogramming of the computer allows Scotty to be reassembled, using some of the particles obtained when Spock is disassembled—and we are assuming here that there *may* indeed be an inherent 'Spockness' about the subatomic particles Spock is made up of.

 Chapter Five will include attempts to reconcile gappy existence with both the Perdurantist and Endurantist positions, including a discussion of the necessary or sufficient conditions that allow an object to be properly considered a part of another object.

[156] A situation like this was included in the episode "Relics" of *Star Trek: The Next Generation* (1992).

[157] Or able to be recreated after destruction, as we saw from Scaltsas in chapter 4.

373.   Not all of Spock's particles are used, only a percentage. I suspect that if *all* of Spock's particles were used to attempt to reassemble Scotty, the impulse will be much stronger from some camps to simply claim that it is *Spock* who has been reassembled, just in a 'Scotty-like' way—if we assume as we have that it is possible for subatomic particles to be 'Spock-particles' in a significant way. So we will start with a small percentage—a percentage small enough for Spock or Scotty to *lose* those particles and still be Spock or Scotty respectively if either could be reassembled without them. For technical reasons unknown to those of us unfamiliar with starship technology, however, the transporter onboard the *Enterprise* is unable to reassemble 'partial' people—the computer demands the same number of particles for reassembly as it obtained in disassembly.

374.   This is akin to one of the problems of the watches sharing a single spring in the last chapter, but different in a significant way. I stipulated there that a spring being switched between two watches was *not* a part of either watch prior to the switching. The Spock-pieces, even if they had no inherent Spock-ness about them while disassembled, *were* proper parts of Spock prior to this. Perhaps significant as well is that, given that a less restrictive transporter computer on Earth is able to reassemble both Spock and Scotty *without* the missing particles, we would now have two *working* objects which seem to be unproblematically deemed to be identical with the objects that existed prior to the accident in space. Where software limitations prevent the *Enterprise's* computer from reassembling Scotty with fewer particles than it received while disassembling, the computers back on Earth put him back together with whatever remains, perhaps leaving off a large patch of hair or his little toe when it runs out of particles.

375.   Now surely if we accept that Scotty (the physical object) reassembled 'normally' (relative to the typical transporter procedure) is identical to Scotty prior to disassembly, and we accept that Scotty (the physical object) after having his little toe chopped off by a Klingon is identical to Scotty before the run-in with the Klingon, we

should accept that Scotty reassembled without his little toe is identical to Scotty prior to being disassembled *with* his little toe. Neither the Perdurantists nor the Endurantists tend to want to claim that objects cannot change in this sort of way—even if the definition of 'change' will differ dramatically.

376.   So we should accept, were the computer to reassemble Scotty sans one little toe, that the object is indeed Scotty, the physical object that was disassembled onboard the *Enterprise*. And furthermore, if the computer were to *remove* some of Spock's particles from the reassembly process, the same amount of particles as in Scotty's case, the resulting physical object will be identical to Spock before his disassembly. Spock without a little toe is still Spock. Now we use a small parcel of Spock-parts to rebuild Scotty. Will we want to claim that Scotty is a different physical object if he now has a little toe attached to him that is made of Spock-parts? Surely not, we might reasonably claim, for transplant patients are typically considered to be identical to the physical objects they were prior to the transplant. The same holds for other objects, at least as long as the parts transplanted represent a small enough percentage of the whole. Replacing the CPU fan in my computer does not leave me with a computer that is not *the same computer* as I previously owned, Heraclitus' objections noted.

377.   The same should hold if Spock were to gain a mechanical toe, or the toe of a corpse—or if I were to build my own CPU fan from a soda can and a rubber band and install it in my computer. So we should have no problems accepting the identity of both Scotty and Spock when, upon their return to Earth, the computer solves the dilemma by using a mix of the 'shared' Spock-pieces and some randomly obtained other particles (perhaps just grabbed from passing space dust) to rebuild both men with whole bodies, little toes included.

378.   But let us now consider the *ownership* of all of the various parts involved in this situation. Captain Picard, years later, captains the *Enterprise* with an artificial

heart that was installed in his youth[158]. Is the artificial heart *part of* Picard? I see no good reason to reject the heart as a proper part of the physical object that is Picard. Certainly we should embrace no theory that does not allow for 'non-original' proper parts, given that transient nature of the cells and subatomic particles in our own bodies. What about a hypothetical theory that claims that proper parts must be *like* the original parts in significant ways? There seems to be room for the intuition that a lump of plastic inside one's chest is, while *attached* to you, not a part of you. I do not know if any such theory has been formally advanced, but I suspect that it would be open to a criticism that the cut-off for materials that are 'like' the original material will be arbitrary. Are vat-grown heart tissues 'like' the tissues grown in Picard when he was a fetus? What about vat-grown tissue with a chemically-enhanced structure to make them more resilient? Tissue using a different isotope or allotrope of carbon? Tissue made with silicon or germanium, elements similar to carbon in many ways?

379.   I believe the reasonable claim is that Picard's artificial heart is a part of the whole physical object that is Picard's body. If so, then Scotty's new toe should be a part of the physical object that is Scotty, and Spock's new toe should be a part of the physical object that is Spock. That is, the new toes should be parts of the objects *unless* there is a defeater of parthood involved. The obvious candidate for a possible defeater would be the fact that some of the material used to make Scotty's toe was, at least until recently, unproblematically considered to be a proper part of Spock.

380.   But let us assume that, of course unknown to both Spock and Scotty, the former pieces of Spock used to assemble Scotty's toe are *never again* reunited with the rest of Spock's physical body. Now let us consider that, almost assuredly, my physical body right now contains particles that were previously proper parts of the physical bodies of other humans—or possibly of pigs, computers, rocks, and etc. We are talking of

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[158] As revealed in the episode "Tapestry" (1993).

subatomic particles, not cells. If we accept that *new* particles do not come into being in the universe *ex nihilo,* then the particles composing my body existed before my body existed. It seems likely then that at least some of those particles were parts of other objects—my parents physical bodies, for instance.

381.　　　Surely what I have been considering to be 'all the parts of my body' are indeed proper parts of my body. I personally have no transplants with which to be concerned, only the normal 'human body parts'—heart, liver, skin, spleen, etc. If these objects are indeed parts of the physical object which is my body, *and* these objects are made in part of parts that *used to be* parts of other objects, we should accept that the *former* parthood of objects plays no role in defeating the *current* parthood of the objects. Spock's new toe is *his*, Scotty's new toe is *his.*

382.　　　But what about onboard the *Enterprise*, when a small collection of particles—formerly considered unproblematically to be 'Spock-parts'—is being passed back and forth between Spock and Scotty? Let us establish that Spock and Scotty took turns being assembled as described above such that, starting with Spock, each one was reassembled (while the other was disassembled) five times, ending with a final (fifth) reassembly of Spock as they return to Earth. The Scotty pieces that are lost are lost between Scotty's first and second reassembly. So, when Scotty is reassembled the second time of five, some of the Spock-parts are used. But are those parts *formerly* Spock-parts? A claim can be made that they are *currently* Spock-parts, as much as any of the other stored Spock-parts are while Spock is disassembled. And some of those parts, but not all, are returned to Spock when they reach Earth, and never used to reassemble Scotty's physical body again.

383.　　　Unlike in the case of the watches sharing the same spring, I do not think there is much logical space for us to claim that those parts are parts of *neither* Spock nor Scotty as soon as they begin being shared. Lowe, if we recall, wanted to claim that the shared part is part of neither watch. But some of those pieces are returned to Spock, and

continue to be, to all appearances, parts of his body following this incident in just the way that the rest of his parts continue to be. So the shared parts, at least those returned later to Spock, *are* parts of Spock. The question is whether they should *also* be considered to be parts of Scotty during the durations when he is reassembled.

384.   If we say that they are not parts of Scotty, presumably it is because they are still parts of Spock's body, and two physical objects cannot have a part in common. But what leads us to this last claim in the first place? I suspect that most of us will share this common pre-philosophical, pre-scientific intuition. But it is an intuition that faces a serious threat the moment we encounter conjoined twins—certainly conjoined twins are two *people*, but are there two *objects* present? Consider twins joined at the shoulder—there are, to speak commonly, two otherwise normal physical bodies, with the exception of the right shoulder area of one and the left shoulder area of another. There the bones, muscle, skin, and tendons run together, such that it is difficult for either to move the associated arm—not due to an inability to control the muscles, but rather due to the interference of the nearby (attached) 'other' body.

385.   Is there a clear distinction between what belongs to one twin's body versus what belongs to the other? I suspect not. I suspect, for example, that the surgeon performing the operation to separate them must simply choose at some point where to separate the two. And that surgeon's choice seems to be all that determines whether this particular square millimeter of bone is part of one twin or the other following the surgery. What then, before the surgery, do we say about that square millimeter of bone? What do we say during the trip back to Earth of the Spock-parts that are being used to reassembly Scotty?[159]

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[159] I should point out that it might be said by way of objection that I am trading on illegitimate intuitions in this discussion. I stated early on in Chapter 1 that I am not concerned with the identity requirements of *persons* as anything above and beyond the physical body. However, one might object, as I am blatantly appealing to our intuitions in this discussion, I am in the end appealing to intuitions about *persons*, which may in fact differ from our intuitions about mere objects. This is certainly a concern, but my reply would be to point to the earlier discussion (section 4.2.4) regarding 'valuable' objects and convention. I believe my

5.1.2. Determining Ownership of Spatial Parts

386.   On the one hand, it might seem that we should pass over similarity as a determiner of part ownership—as what makes a physical part a part of a particular object rather than a part of another object. Chipping away a particular bright green inclusion from a larger piece of agate may leave you with a part—the bright green piece of rock— that is remarkably dissimilar from the rest of the whole—a whitish-gray rock. And yet there is still a part-whole relationship. But of course there are more similarities than just color—both the part and the whole are still *rocks*, both are hard, dense, etc. But many of the other properties, such as opacity or actual hardness, will vary. The rind of a wheel of cheese may have different properties than the middle, and yet there are still more similarities between the rind and the inner bits of cheese than between either of the parts of the cheese and the agate.

387.   More complex objects will test similarity—either of appearance or structure—as significant. The hoses that are part of a car engine are very unlike most of the rest of the engine parts, much more so than the agate or cheese/rind part examples. The distinction isn't necessarily between 'natural' and 'man-made' objects, but between simple and complex objects. An eyeball is rather dissimilar to a fingernail. Worse yet are the examples of dramatic similarity in the usual fission/teleportation cases of metaphysics—similarity is no certain indicator of parthood.

388.   Of importance seems to be the already-mentioned notion of the part's *causal history*. We determine (at least hypothetically) the parthood of an object by examining its past—but what about its past, specifically? I think the most obvious candidate for examination is what the object has been *physically attached to*. If I order a simple four-legged chair to be shipped to my house, and upon opening the box discover a

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arguments above will hold if we were to replace Scotty and Spock with two valuable vases or paintings, thus removing personhood from the discussion entirely.

fifth chair leg in the bottom, not attached to the chair in any way, I would be more than a little confused if customer service told me when I called that the detached leg was part of the chair—a chair with no obvious or intended way to attach a fifth leg. But what do I want to say when I receive the chair with only three legs, and a space where a fourth leg obviously should be? When customer service apologizes and says that the fourth leg was never attached but is being shipped separately, should I hold that the as-yet-unattached leg *is* part of the chair, right now?

389.　　　　　I believe that this is what many a metaphysician will want to claim—the leg that has not yet arrived is not yet part of the chair, due entirely (or primarily) to the fact that it has never been attached to the chair. Now of course we speak commonly in a manner contrary to this. Upon looking in the box, I might very well say that 'a part of my chair is missing'. But I do not take it to mean necessarily that *there is a part* of the chair that is not currently attached. For all I know, the leg was never even manufactured, in which case there cannot be literally a part that currently has the property of being missing/not in the box/etc., for there is no part to have any property at all. We should also reject for our purposes common talk of 'parts' that allows us to refer to a plastic Monopoly house as 'part' of the game. A particular game of Monopoly is not a single object in the sense we are discussing, and a plastic house is 'a part' of the game in much the same way that an individual player is 'a part' of the team. A Monopoly game, or a team of people, is not a thing that 'drags its parts around with it'.

390.　　　　　If physical attachment is a necessary condition for parthood, we will of course at some point have to specify what exactly it means to 'be attached', or 'be connected'. Given the understanding that things like rocks, tables, and chairs are (we are told) essentially very dense fields of charged particles, we will face any number of questions regarding what it means for one particle to 'be touching' another particle, for two particles to be 'connected', etc. But I do not believe this is a matter we must hash out here. It is enough, I believe, that we can understand 'attachment' at a macro level.

391.   There will, however, have to be something said about what other conditions must or must not hold for parthood—'being attached' may be necessary, but it is not sufficient, given that a remora is 'attached' to a shark, but is not a part of the shark. And I believe we do need to explore this here, given what we have seen Lowe claim about the watch piece that is not a part of either watch. One might think that being in the intended place inside a watch and moving about in the intended way in concert with the other parts of the watch would count as being 'attached' to the watch. If so, attachment is not sufficient for parthood—either that, or it *is* enough unless there is a defeater of parthood.

392.   Again looking for the obvious reply, I would look to *original* parthood, or original ownership, as the important factor. Those wishing to deny that the Spock-parts being used to temporarily partially constitute Scotty are *parts* of Scotty presumably deny this on the grounds that those bits were parts of Spock *before* they were ever used in a part-like way with Scotty. If the spring being shared by both watches had originally been attached to one of the watches (from the day it was created, perhaps), this should lead those who deny dual parthood to claim that the spring remains part of the first watch even while being shared. A spring never attached to either watch and brought in to be swapped between watches begins as a part of neither watch—it might then become a part of the first watch it is attached to and remain part of that watch, or perhaps its parthood switches back and forth, or is undetermined until we stop switching it back and forth. Lowe is fairly noncommittal on this point—in talking of two ships sharing a rudder that is supplied when both are lacking rudders, he writes that "it might be preferable to say that at any given time the rudder belonged to whichever ship it happened to be fitted to, and that it belonged to neither at other times."[160]

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[160] Lowe. 1983. p. 225.

393.   What the last clause of that statement would imply is that being attached is not enough, and that what is also needed is a *more significant attachment* to one thing than to all others. A rudder being shared equally between two ships, or a spring equally between two watches, belongs to neither. But Spock-parts being used in a Scotty-object remain Spock-parts because they have had a more significant attachment to Spock—perhaps years, perhaps decades of parthood—prior to being used in the Scotty-object.

394.   The specter of vagueness rears its head here again, though. What constitutes a significant enough attachment for parthood? If the spring is left in one of the watches for a year, should we now consider it a part of that watch? What about a decade? A month? If the shared rudder is attached to one of the ships for the duration of a dramatic and historic sea battle—a total of twenty-four hours—and plays a pivotal role in the battle, and later has 'The Ballad of the Rudder of Ship 1' written about it, would that be sufficient for parthood? Is parthood so subjective, a matter of convention?

395.   At any rate, 'significant attachment' does seem like, at least for the moment, a reasonable necessary and sufficient condition for physical parthood—physical attachment, where we at some point define what 'being attached' means as opposed to 'merely touching', what 'significant' indicates, etc. And seeing that we are discussing only physical parts, presumably both the Perdurantist and Endurantist will agree (or disagree) to the same extent—what it means for a physical thing to be a proper part of a temporal part (of a perduring object) is the same as what it means for a 'part simpliciter' to be part of an enduring object.

5.1.3. Determining Ownership of Temporal Parts

396.   Here it might seem like the Endurantist may relax for a cup of coffee—there *are no* temporal parts, only spatial parts, and we have just laid out a reasonable explanation of what it takes for a thing to be a part—a physical part—of a whole object. It might appear that our job qua Endurantist here is done. As we will see later, this

assumption may be too quick. For the moment, however, the Perdurantist certainly has a bigger job to do. What makes a physical object existing during a particular duration a part of a larger four-dimensional object, as opposed to a part of another object, or perhaps as opposed to being its own whole four-dimensional object and *not* a part of any other object?

397.　　　　Yet again we can start with intuition, which may point us to spatial location, appearance, and behavior. Why do we say that the temporal part of a Formula One car existing during a given lap is a temporal part of a particular whole that also includes the temporal part that is the physical thing speeding around 'the next lap'? To begin with, the car, at the beginning of temporal part P1, was *at*, or *very near*, the location where a physical object was immediately before the start of the duration of P1. Right before we mark the beginning of the duration of temporal part P1, there was a physical object that looked *just like* P1, and was acting very much like P1 acts while it exists. Perhaps the speed or direction changes slightly when we compare what we take to be P0 and P1, but the similarities of structure, appearance, and behavior are great—much greater than between P1 and any other object existing prior to the beginning of P1's duration. Similarly, immediately after the end of P1's duration, we find another physical object, also appearing and behaving either exactly like or very similarly to P1, in a space either right at or very near where P1's existence ended.

398.　　　　We do not, for example, tend to believe that the yellow car-stage at the outside edge of the track traveling at 180 mph at the start of lap 2 is the next temporal part in an object that included the red car-stage at the inside edge of the track traveling at 190 mph at the end of lap 1. But are there conditions in which we might find ourselves accepting 'unusual' gaps between temporal parts?

399.　　　　Consider a yellow car speeding towards the starting line of the track at the end of a particular lap. It is at the outside edge of the track, traveling at 180 mph, and sports a distinctive shamrock logo on the hood. As the car crosses over the line, you

blink, and when your eyes open again that barest fraction of a second later, there is a yellow car, traveling at roughly the same speed, sporting a shamrock logo, at the very inside edge of the track—and no such car at the outside edge of the track. Neither was there a car like this at the inside edge of the track before you blinked. If we consider the range of reasonable responses to such a situation, certainly "How did *that car* do that?" would be one such reasonable response. And in saying so, we would be indicating a belief that the two temporal stages, disconnected in a significant way, are in fact two parts of 'that car'—of a larger four-dimensional whole object. Or at least, we would be indicating that this is a more plausible notion than the alternatives available to us, such as the belief that one car and driver suddenly ceased to exist at the same moment that an *entirely different* car and driver suddenly began to exist several yards away.

400.   In such a case, the 'gap' that we are considering is a spatial gap between two temporal parts, as opposed to a temporal gap between the parts. We would be assuming, of course, that the car continued to exist during our blink. But assume now that we did not blink during the process, that one of the two car-stages was on the track at every given moment, and that the car did not exist in the physical space between the inside and outside edges of the track at any time in between. There is no duration of time between the existence of the two stages in which no car-part existed, but rather a gap between the space where one part stopped existing and the other part started existing. But do our intuitions about the identity of these car-parts allow the Perdurantist to claim that there is therefore no problem in accommodating such spatial gaps in his theory? Intuition is not supposed to be the Perdurantist's forte.

401.   There are still quite a few options for the Perdurantist to appeal to in order to establish the connection between the proper parts of a four-dimensional whole. For example, although the locations of the boundaries of the parts were not adjacent, the two physical objects, parts, under consideration shared every important physical property regarding size, shape, color, composition, velocity, etc. And yet all of this alone may not

be enough, when for example two aliens intent for some alien reason on controlling the outcome of the race compete against each other by in turn atomizing certain cars while the competing alien creates a car with the 'same' properties halfway across the track. Fission cases present similar difficulties—what do we say when we blink and find *two* cars with the same properties racing halfway around the track from where there had previous been *one* car with those properties?

402.   One alternative is to claim that identity rests with whatever existing object, hopefully within certain limits of similarity, is the *best candidate* for identity with the previously existing object. I, for example, as I speed down the highway in my car, am identical with the person bearing the same name, height, weight, etc, who was speeding down the same highway in a car of the same color, make, etc., thirty seconds ago simply because there is nothing else existing now that is remotely close in total properties to the thing that was previously existing. Such a position can be used to establish identity in normal cases, and also to solve fission sort of cases by defeating identity requirements we would normally consider sufficient. If there are now *two* objects that have just as strong a claim to identity with a previously existing third object, the best candidate theorist is free to claim that *neither* is identical, given that there is no *one* best candidate.

403.   Gaps, whether spatial as above or temporal—wherein an object seems to have *no spatial location* for a time prior to 'returning'—also presumably present little trouble for a best candidate theory, once we establish some sort of limits to what qualifies as a candidate at all. Without minimal requirements for best candidacy, we run afoul of problems such as the following: after the collapse of our sun into a black hole and the disappearance of the solar system, the best candidate for identity with *me* may be a non-sentient plant existing half a galaxy away. I assume we do not want identity to hold in such a case, and if so then candidates for *best* candidacy must have some sort of minimum requirements for identity. Once again, properties like size, shape, material composition, and the like seem like reasonable guidelines, although of course much more

will have to said in the way of specifics. Once that further information has been specified, there seems to be conceptual room for best candidates to include objects that suddenly appear across the room immediately following an object's suddenly disappearing, or even objects that appear *years after* an object suddenly disappears.

404.   But there seem to also be good reasons to be suspicious of best candidate theories. The cars being created and destroyed by the competing aliens above, for example, seem to have all that we need for best candidacy. 'But', says a particular best candidate theorist, 'there is a defeater of identity, namely that we know something about the causal history of the cars. They are not being created *in the right way*.' This would imply that we need more than just a certain degree of similarity of properties—we need a proper causal history as well. But if that's the case, do we need similarity of properties at all? Can't we imagine a powerful alien taking objects apart and putting *the same objects* back together in new and interesting ways?

405.   The Perdurantist needs to be careful to specify that 'best candidacy', if it is to be its own theory, doesn't just come down to whether a thing exists in or has been through the 'proper' sort of circumstances—i.e., 'best candidacy' is presumably a distinct theory from one of causal histories. Best candidacy also implies *multiple candidates*, or at least the potentiality for multiple candidates. And if a certain sort of causal history is needed for a thing to be a candidate in the first place, we conclude that there can be multiple 'qualifying' causal histories for an object to have. Are there multiple sorts of causal paths between two temporal parts that could result in an identity relationship (barring in each case a better candidate)? This seems likely—I could have crossed the room along several different paths to reach where I am now, for instance. But note that in fission cases we have exactly a challenge to such best candidacy: there exist two (or more) objects that have reached different positions from a shared starting position via branching causal histories—and each causal history qualifies the object as a candidate. Furthermore, there seems to be no reason to consider one of them to be the *best*

candidate. If I underwent fission at the beginning of my walk across the room, there seems to be no reason why we should claim that either of the objects existing at the end of the walk does not have the proper sort of causal history to be a candidate for identity—I, without fission, could have walked along either path. Similarly, neither of the remaining objects possesses the sort of physical properties that alone would make us deny an identity claim, or seems to lack any properties that would cause us to deny identity.

406.　　　　What best candidate theories often come down to—whether they appeal to properties or causal histories or both—is a claim of some sort of requisite similarity *plus exclusivity*. A temporal part y must not only be sufficiently similar in such-and-such ways, or sufficiently connected in such-and-such ways, to a temporal part x—it *must be the only object so similar or connected* in order for y to be identical to x. There is a great amount of attention in the literature paid to this issue. Mark Heller describes the balancing act in best candidate theories as being between two conditions for identity of something like the Ship of Theseus, an object disassembled and reassembled to varying degrees with various new and old parts. One condition for 'survival' of an object who's parts are replaced is (Condition 1) if the parts are replaced *gradually*, within a continuous form. The general shape of the object remains, and the pieces are not replaced all at once. We might consider identity in this case as being 'passed along' from the old parts to the new, and then from those parts to the even newer parts, and etc., all bound by the same form of the object. Heller's other condition for survival of an object is (Condition 2) the reshaping of matter into a previously possessed form. An object taken apart and reassembled, using all the original parts, retains its identity.[161]

407.　　　　The initial problem as Heller sees it that best candidate theorists must address is which candidate qualifies as *best* when two competing candidates exist, each

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[161] Heller, Mark. 1987. The Best Candidate Approach to Diachronic Theory. *Australasian Journal of Philosophy* 65. p. 435

having fulfilled one of the two conditions. In other words, does one condition for identity take *priority* over the other? In his example, Theseus' ship, Original, has its parts slowly replaced over the course of a year. The ship that results, which Theseus calls Original but which we will call Newplank, satisfies Condition 1. At the same time, in secret, crewmembers use the discarded parts of Original to build a ship in the same form as Original. The ship that results is called Original by the crew, but we shall call it Oldplank. And Oldplank satisfies Condition 2. Of course, Oldplank and Newplank are obviously not identical to each other, and while each independently satisfies what appears to be a valid condition for identity, the claim is that both cannot be identical to Original, for this would violate the transitivity of identity.

408.   What Heller claims is that best candidate theorists weigh the two conditions unequally—either Condition 1 or Condition 2 is seen as taking precedence over the other condition *when both are independently satisfied.* For example, we might claim that Oldplank *would* be identical to Original, except for the fact that Newplank exists, and Condition 1 takes priority over Condition 2. The reshaping of the same matter into a previous form allows for identity *only if* the object has not undergone a gradual replacement of parts within the same form. Objects that are candidates for identity under Condition 1 would be on this interpretation *better* candidates than those qualifying under Condition 2.[162]

409.   But without further support, this is an entirely ad hoc sort of claim. Harold Noonan, who attempts briefly to pair a best candidate theory with a four-dimensional 'time-worm' Perdurantist theory of persisting objects, seems to accept that the best candidate theorist will give priority to Condition 1 as well[163], and B.J. Garrett agrees that "we regard spatio-temporal continuity (under a sortal) as the most important criterion of

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[162] Ibid, pp. 435-6
[163] Noonan, H.W. 1985. Wiggins, Artefact Identity and 'Best Candidate' Theories. *Analysis* 45 (1): p. 6.

artefact identity, outweighing the identity of original parts criterion"[164]. But I am not sure at all that there is an obvious reason to do so—aside from temporal gaps. An object qualifying for identity under Heller's Condition 1 (e.g. Theseus' ship undergoing total part replacement during the month of June qualifying as best candidate for identity with his ship in May) appears to have no temporal gaps in the story of its existence. At whatever point we wish to establish Newplank as 'coming into existence'—i.e. at whatever time we decide to demarcate the 'end' of Original and the 'beginning' of Newplank—if we have identified Newplank with Original then there will be no time from May through June that 'the ship' would not have been in existence. However, if we identify Oldplank with Original (whether or not Newplank exists), then there will, or at least can, be a time during which 'the ship' does not exist. If the ship is entirely dismantled before rebuilding starts, there will be a duration of time through which Original/Oldplank will either not exist *or* will exist in pieces.

410.   If, as Scaltsas would have us claim, the ship *ceases to exist* during that time, then we might understand why Condition 1 takes precedence over Condition 2. The former includes no time of non-existence, while the latter does. But should we come to the same conclusion if we claim instead that the ship never ceased to exist in the first place? If we follow Lowe on this matter, there is no temporal gap in the existence of a ship simply taken apart and reassembled—like the watch in the shop. Neither condition involves such a gap. I will concede, perhaps, that a thing's ceasing to exist for a time is more intuitive than its remaining in existence while disassembled—and if this is conceded, I would claim that Condition 1 then will intuitively seem to grant a priority in identity claims.

411.   But I remain uncomfortable with intuition appearing to play a deciding role in metaphysical issues. Consider a ship in a museum. We read the display, which

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[164] Garrett, B. J. 1985. Noonan, 'Best Candidate' Theories and the Ship of Theseus. *Analysis* 45 (4): pp. 212-3.

informs us that this ship was found, in pieces, at the bottom of the sea. Archeologists studied the remains carefully and rebuilt the ship, including the still legible nameplate, which declared the ship to have been called 'Original'. Now consider that, as we are gazing at the display, the curator approaches and takes down the sign, a disappointed look on his face. When asked, he remarks that he has just been informed that this is in fact *not* the famous Original—this ship in front of us was built from the discarded pieces of Original. It was taken apart by Theseus in one night, on a drunken dare, and entirely rebuilt with new pieces. The old pieces, what we see before us, were laid out on the sand in the general outline of the ship, and were later covered over by the rising sea. Original, rebuilt that night by Theseus and satisfying Condition 1, sailed on for another decade, and was lost to time. Are we to accept the curator's claim that the ship before us is *not* Original, when we were so ready to accept it before hearing the story?

412.   We know why the Endurantist holds to exclusivity in identity claims—in order for both y and x, the result of x's fission, to be identical to x, we must deny the transitivity of identity, a prospect which as we have seen is believed to be strictly *verboten* to many. But the Perdurantist faces no such difficulty. Recall the difference the Perdurantist finds between *synchronic* and *diachronic* identity—synchronic identity, or identity *at a time* (at the *same* time), is the sort of identity the Endurantist is speaking of, indeed the only sort of identity the Endurantist admits of. Synchronic identity, on the other hand, is a relationship between two distinct entities—between temporal parts of the *same four-dimensional object*. We might even say, if pushed by the Endurantist, that synchronic identity is not *really* identity, for it is not the claim that x and y are *the same thing*, but merely the claim that they are *parts* of a *larger thing*.

413.   Following fission of x into y and z, temporal part z is not *synchronically* identical to y, for they are distinct physical objects and distinct *cotemporaneous* temporal parts. *Both* z and y are *diachronically* identical to x, for both have the requisite properties and/or causal history to be successive temporal parts of the same four-dimensional whole,

W, as x. And these claims are not contradictory. No property is being denied any level of transitivity, at least not yet. Garrett, interestingly, attempts to come extent to convince us (as I suggested might be plausible earlier) that we should solve the problem by rejecting the transitivity of identity.[165] But for the moment at least, I do not believe for the reasons given that the Perdurantist must make such a bold leap[166], for the distinction between diachronic and synchronic identity does the same job.

414.   And without the denial of transitivity as a problem, I see little support for an exclusivity claim, and thus little support for a best candidacy theory. It is strange, to be sure, but not fatally problematic to claim that z and y are *both* diachronically identical to x. What this leaves us with is a four-dimensional whole that *branches* in a way that other four-dimensional wholes do not, and with the unintuitive claim that 'the *same* object is (exists) now in two places at the same time'. But this only *sounds* unintuitive if we equivocate on 'same object', or on 'is (exists)'. When we say that an object (non-branching) exists 'here', we are not claiming that the four-dimensional object is *entirely located* at a particular x,y,z,t set of coordinates, for four-dimensional objects do not occupy such coordinates, but rather a *path* of such coordinates. Neither are we necessarily claiming that *all* of the current temporal stage of that four-dimensional object is located in one particular place, any more than pointing to where my hand is located and saying 'I occupy this space' is meant to indicate that *all of me* occupies that space.

415.   What we would mean when we speak of z and y (having branched from x) as being 'the same object' is that they, as different parts of a branching four-dimensional whole, W, occupy different areas of space during the same duration of time (as much as we can make sense of 'the same duration' in STR). The parts of my own unfissioned

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[165] Garrett. 1985. pp. 213-5.
[166] I consider it bold because many philosophers, such as Noonan in a later reply to Garrett, consider the transitivity of identity to be "an undeniable fact, and that it is no more open to the best candidate theorist to deny it than it is open to him to deny the Principle of Non-Contradiction". (from Noonan, H.W. 1986. Reply to Garrett. *Analysis* 46 (4): p. 206.)

body do exactly this right now, as do the parts of a rock, or a loaf of bread. The significant difference with z and y is that they are spatially unconnected, in a way that my body parts are not, and each part taken alone is intuitively considered to be an assembled whole—unlike the unconnected watch parts. And this is indeed an unintuitive bullet of a certain size to bite. But it seems reasonable to think that *fission* of objects is an unintuitive event to begin with, justifying unintuitive conclusions.[167]

416.   Consider that the alternative to a single branching four-dimensional object is also unintuitive. If we do not accept a branching four-dimensional object, and we accept that both y and z are diachronically identical to x, what is left is a sort of overlapping objects rejected by Roderick Chisholm[168]. If z is a part of a four-dimensional object that x is a part of, and y is *also* part of a four-dimensional object that x is a part of, *and* z and y are not parts of the same four-dimensional object, then *x must be part of **two** four-dimensional objects*. As we look at x prior to the fission, we are unknowingly looking at *two* four-dimensional objects—and if there have been no fission or fusion instances in x's past, then we are looking at *two* four-dimensional objects that have been occupying the same spaces throughout their existence up to that point . The question then becomes which sort of unintuitive object do you find less offensive to your ontology. We are *trying* to talk about 'common sense' objects, about the sort of things we see around us all the time—toasters, forks, rocks, albatross. And yet we have the choice to accept either *branching* objects and the consequence of pointing to what appear to be two rocks and claiming that they are one, or to accept *overlapping* objects, pointing to what appears to be one rock and claiming that there are two. Is there reason to prefer one unintuitive option over the other?

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[167] Although perhaps the existence and dividing of single-celled organisms amounts to a regular fission of objects that requires similar treatment (see Prior, Arthur. 1966. Time, Existence, and Identity. *Proceedings of the Aristotelian Society*:183-92.).

[168] Chisholm, Roderick. 1971. Identity and Persistence. In *Identity and Individuation*, edited by M. K. Munitz. New York: New York University.

417.	If we accept the disassembled existence of the watch—and I think we have good reason to—then we have already accepted the existence of a temporal part of a four-dimensional whole that exists with spatial gaps in between the physical parts of that temporal part. The watch exists *as those unattached pieces*, and it exists this way regardless of where we place those pieces in the world. We must simply accept the same condition with z and y as branches of x—z and y are, *together, 'the single* currently existing temporal part of the whole object'. Either way, we must remember that intuition will only take us so far, particularly when we speak of hypothetical instances of fission which frankly none of us have ever been witness to[169]. Indeed, it may even appear to some that, upon accepting either overlapping or branching objects into our ontology, it makes sense to accept the other sort of object as well. We will have done away with the 1:1 ratio of temporal parts to four-dimensional objects (the notion that each temporal part is part of only one four-dimensional object)—why then accept that the ratio stands in only one direction, rather than there being *no* strict relationship of this sort? In other words, it may be that, being forced to accept *either* overlapping or branching objects, one finds that the most reasonable conclusion is to accept *both*. The worry here, of course, is that we are back to having no answer to a question regarding four-dimensional objects: how many are present at any given time when we point to 'an object'? But this is an epistemic matter.

418.	One last note: if we accept overlapping objects instead of branching objects, it seems like there is room to charge us with denying the transitivity of *diachronic* identity. Temporal part y is diachronically identical to temporal part x, which is diachronically identical to temporal part z—and yet the overlapping object theorists will reject that y is diachronically identical to z, resulting in a problem we will not get from the branching object theorists. What we must keep in mind, however, is that

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[169] Excepting perhaps observation of the division of single-celled organisms.

diachronic identity is not *really* identity, not in the way the Endurantists use the word, and therefore not in the way which it would be abhorrent to use and deny the transitivity of. It is a relation between parts of wholes—x and z are diachronically identical if there exists *at least one* four-dimensional whole which they are both parts of; x and y are diachronically identical if there exists *at least one* four-dimensional whole which they are both parts of. But there is no requirement that those four-dimensional wholes are the *same* object. Child M is on the same team as Child N, and Child M is on the same team as Child O. And yet there are any number of situations such that Child N is not on any team with Child O, so long as Child M may belong to (at least) two different teams. This is a simple analogy, but I do not believe it is a misleading one.

419.   So the Perdurantist seems to be able to embrace spatial gaps between locations of successive temporal parts, even abrupt and dramatic spatial gaps, and as a bonus also embrace an answer to fission problems. At the same time, I hold that we should reject 'best candidate' approaches to identity as unnecessary, ad hoc constructions. Furthermore, it is problematic to consider that y *would be the same thing as x* if only z didn't exist. There are good reasons, not explored here, to think that identity of, or among the parts of, one object should not depend on the existence of other distinct objects.[170]

5.1.4. The Endurantist and Spatial 'Jumps'

420.   For the preceding discussion the Endurantist may have been relaxing, scoffing at talk of temporal parts and four-dimensional wholes. But hopefully he was paying attention, for we do require an explanation from their camp—what is the Endurantist explanation for the 'yellow shamrock racecar' situation above? We described this in Perdurantist terms as one temporal part of an object being immediately succeeded

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[170] Heller seems to indicate something along these lines in his discussion of best candidacy (Heller. 1987. p. 440.)

by another temporal part that began to exist in a location other than where the previous temporal part ceased to exist. But of course this language is not available for the Endurantist to use. So what has happened to the yellow car(s) with the shamrock logo(s)? Has one car continued to exist, persisted through time, or is the story one of two cars?

421.   The two options are to claim either that 1) the *same* object 'jumped' across several yards of space without existing in that intervening space, or 2) the car that exists after the so-called 'jump' is not identical to the car that existed before the 'jump'—in fact there was no 'jump' of an object, but a strange confluence of destruction and creation of two objects respectively. What we need to see is whether there is any good reason to embrace one of these two possibilities over the other.

5.1.4.1. The Car-After-Jump is Identical to the Car-Before-Jump

422.   An Endurantist who embraces this horn of the dilemma may be doing so after consideration of the same sort of identity requirements we have been discussing all along—both 'the car before the jump' and 'the car after the jump' (and we say this here not meaning to claim that they are distinct, but only failing to have another way of clearly expressing the situation in Endurantist language) share the significant sort of properties we commonly use to identify objects, lacking only several yards of space. The car speeding around the track after the jump is made of the same sort of material, weighs the same, looks the same, acts the same, etc. as the car that was on the track nearby before the jump.

423.   Furthermore, we might be temped to add that the car after the jump is there on the track with those properties because of the decisions made by the driver, pit crew, and etc. prior to the race—just as was the case with the car before the jump. In other words, the causal history of the 'two' cars is the same. But to claim this now may be a mistake of the circular sort. In order for us to claim that the car after the jump has the same causal history, it seems like we should have to know that the car after the jump *is*

the same car as the car before the jump, a fact we don't have access to. Perhaps some sort of dimensional wormhole is responsible for the disappearance of one car and the appearance of another, in which case we would deny identity claims. But in this case our knowledge of the diversity of causal histories is contingent upon our knowledge of the diversity of the two cars. We cannot assume that the latter car-entity has the same causal history until we assume that it is *the same car*, and thus we can't base the identity on the causal history. This is because the causal history that is the most likely candidate for the car after the jump would include this strange 'jump', which is itself the cause of our questioning regarding the car's identity.

424.   Now, what we *might* say is that we simply cannot *know* the facts about the identity of the car(s) unless and until we know about the causal history, but that our knowledge regarding the facts of the situation are not terribly important for the objective determination of the facts of the situation. And I think this distinction is in fact a reasonable one. But it leaves us with a question that it turns out is rather difficult to formulate in Endurantist terms: what we want to know is the Endurantist analog of the Perdurantist's requirements for temporal stages to be parts of the same whole.

425.   Perhaps the question can be asked from the opposite direction: under what conditions does an enduring object cease to exist? With this question on the table, if we find that one answer is 'when that object leaves an area of space without entering the immediately surrounding areas', we will at least know what happened to the car before the jump. So we turn to the second horn of the dilemma for a better explanation.

5.1.4.2. The Car-After-Jump is not Identical to the Car-Before-Jump

426.   What I would like to avoid in this section, if at all possible, is the characterization of the Endurantist position as one of shrugging shoulders and claiming things either "just are" or "just aren't" facts. It's true that the Endurantist position is supposed to be the intuitive position, and that is supposed to be one of the strengths of the

position. But there is only so far you can take a "doesn't it seem that way to you?" reply, and given that Endurantism is a reasonably popular theory, I will assume that we can say more than that about it here.

427.   Assuming then that an Endurantist would arrive at the conclusion that the 'jump' defeats identity claims, we want to know why. Let us take as given that there is a cause for the jump (whether the jump be in fact a single event or two separate events). And furthermore, let us take as given that the jump *is* in fact a single, interrelated event. In other words, let's discard—for the moment only—a story that includes no significant connection between the car after the jump and the car before the jump—swamp-man sort of random causation, for example. The 'creation' of the car after the jump is directly related or dependent upon the car before the jump, or upon the 'destruction' of the car before the jump. The exact cause can be as is required by the reader to satisfy this basic requirement.

428.   If there is no temporal gap between the car before the jump's disappearing and the car after the jump's appearing, we may be able to avoid any trouble from Locke and his claim that a thing cannot begin to exist twice. Even thought I believe we have dealt successfully with this issue previously, it is a non-starter here—there is *no time* at which or during which either the car before the jump or the car after the jump does not exist. In order to say that a thing *begins* to exist at a time, it seems there must be a time prior to that when the thing does not exist. And in order to say that the 'car after the jump' does not exist prior to the jump, one must already *assume* the diversity of the 'two' cars. If in fact the 'two' cars are identical, are the same car, then it *did* exist prior to the jump, and thus did not *begin* to exist after the jump. If they are not identical, then each car began to exist only once, and the issue is again avoided.

429.   Issues of 'beginning' to exist are issues of *time*, and this is not a situation where *time* is the problematic dimension. *Space*, *distance*, is the issue here. In order for there to be a denial of an identity claim here, we might turn again to the claim, discussed

in the previous chapter, that identity requires some sort of 'spatial contiguity' during motion—motion that is 'fluid' or 'unbroken'. And indeed, such motion does fit our intuitions of motion. We don't typically observe objects 'jumping' from place to place without existing *between* those two places. We see such 'jumpy motion' when we observe the frames of movies at slow speeds, but we understand that movie frames present 'motion' merely because of the operation of our eyes—we are fooled into thinking that we are seeing smooth, continuous motion, simply because our eyes function by taking successive 'snapshots', and thus are fooled by filmstrips. But we also believe that the *real motion* of the object that was filmed was smooth and continuous, and that the camera only captured successive frames of the motion because of the limitations of the camera.

430.   But one very real possibility is that motion of objects is in fact *not* smooth and continuous. Consider again theories, like the loop quantum gravity theory, according to which both space and time are divided up into smallest possible intervals—indivisible intervals of space and time. According to such a theory, one might consider space to be essentially *digital*—an object is in one place, and then is in the next possible place, a location which *is* a measurable distance away. And yet the object did not exist *between* those two places—halfway along that measurement—at any time. Movement in such a world, at the smallest distances, is not smooth, fluid, or continuous—not *analog*—but happens in 'fits and starts'.

431.   And this is only the beginning. Consider two particles moving in the same direction, and both moving at the rate of 1 'smallest unit of space' per 1 'smallest unit of time'. If such a rate of movement is not the *maximum possible speed* of a particle, then either particle may travel faster than this current 1:1 speed. So let us consider what happens when one of the particles speeds up to twice that speed. One of the two particles now begins to move 2 'smallest units of space' per 1 'smallest unit of time'. Both particles start side by side, and after one smallest unit of time, the slower particle is 1

smallest unit of space away. Where is the faster particle? 2 smallest units of space away, of course. But importantly, it was *never* 1 smallest unit of space away, for it would have had to have been there in *half* of the time—half of the *smallest*, *indivisible* unit of time. But nothing can happen *during* that time, for then *that* would be the smallest unit of time. Therefore, the particle 'jumped past' that particular region of space.

432.   Thus, if the world does include smallest indivisible distances, then either normal, 'continuous' motion involves spatial gaps and 'jumping', or a 1:1 speed (1 smallest spatial unit per 1 smallest temporal unit) is the fastest possible speed in such a world, and non-uniform motion comes from some things traveling *slower* than this speed. But a 'fastest possible speed' is quickly becoming a dubious notion, given the theoretical possibility of particles that travel faster than the speed of light.

433.   Of course, the world may not be this way. Space and time may indeed be infinitely divisible, in which case smooth, continuous motion is not only possible (Zeno's troubles aside, considering that motion is *actual*), but also seems to happen around us all the time. Is there, however, a good reason to reject the *possibility* of motion that is not smooth and continuous? Another consequence of Einstein's revolutions in physics is the conclusion that spacetime is *curved*—that gravity, for example, is a bending and warping of space and time by masses. And if space and time can be bent and warped, it appears possible that space may be *folded*. The analogy is to a piece of paper—'accordion fold' a piece of paper, and then draw a line from one end of one side to the other. Now unfold the paper, and observe that the continuous line you drew is now broken. Two 'ends' of the line that were joined are now separated by a length of blank paper. Theoretically, if space may be warped to this degree, objects could 'jump' distances by traveling from one point to another point that is *usually* not adjacent to it.

434.   Now, we should note that if we accept this sort of 'gap' or 'jump' in the motion of an object, what we have accepted is *not* the motion of an object from one point to a *nonadjacent* point—instead we have accepted the motion of an object between points

that *do not appear adjacent* from another viewpoint, but *are* adjacent from one frame of reference. We have merely accepted 'normal' motion through perhaps 'abnormal' space. Can the Endurantist accept a spatial gap in existence from *every* viewpoint? I do not know that there is any easy answer to this question, and I suspect that the individual Endurantist's reply will be guided by the balance of their metaphysical commitments—I do not know that Endurantism alone commits the Endurantist to one claim or the other here. Consider that, were one to see such apparent motion involving an easily recognizable object, it might be simultaneously unintuitive *that it should have happened*, but intuitive that the object *is the same object* given that the unintuitive appears to have actually happened. At any rate, we may learn more about this once we turn to the more interested question: can the Perdurantist and/or the Endurantist accept *temporal* gaps in existence?

435.   I will remain here briefly before moving on to formulate another question. Above, when framing the hypothetical situation for the Endurantist, we assumed that the 'jump' was a single event—that the disappearing of the one car and the reappearing of the other car were related. This allowed us to focus on spatial contiguity, which seems to have led us to a dead end, or at least to the possibility that there is no Endurantist commitment here apart from other metaphysical committments. However, is there a commitment regarding the cause that we have assumed? If we are faced with two 'car-entities' or 'car-candidates', and we are left to make our decisions about identity based on properties alone, there seems to be no reason to not allow 'swamp man' sort of cases into our speculation, in which the thing that appears after the jump has nothing we would call a significant connection to the thing before the jump—the first car-candidate is destroyed by an angry alien, just as a cloud of fuel emissions is hit by gamma rays and assembles itself into the second car-candidate. I believe there are competing intuitions in cases like this, and intuitions have to now played a large role in the Endurantist theory. The one intuition is to deny that an object created by random gasses and gamma rays could have

anything to do with ordinary objects, no matter their appearance. The other intuition is that an object suitably similar—down to individual scratches—is of course the same object, no matter the odd circumstances surrounding its appearance. Here the Endurantist, it seems, might either appeal to causal histories and thereby deny identity, or accept identity even in such cases—or, perhaps, turn to the one remaining bogeyman of a theory I have rejected very early on in this work: haecceities. These will be discussed in more detail in the following section.

5.2. Temporal Gaps In Existence

5.2.1. True Temporal Gaps

436.   Previously, I described a situation in which an object persists in a manner which *appears* to involve a spatial gap, or at the very least will appear to involve a spatial gap *from some frames of reference*—travel through so-called 'wormholes' is an example of such an apparent spatial gap. From the frame of reference of the object itself, there is no gap. Given such possibilities and the relativity of time and the present under the Special Theory of Relativity, it seems entirely possible that objects might also persist in such a way as to have, or *appear to have*, temporal gaps in their persistence from certain frames of reference and not from others. In order to avoid confusion, then, I will restrict the discussion here to what I will call *true* temporal gaps—temporal gaps in the persistence of an object, or *between* the distinct persistences of distinct objects, that exist in *every* frame of reference.

437.   As an aside, it may be that the four-dimensionalist will make no significant distinction between these stipulated true temporal gaps and a temporal gap in persistence that is not observed from another frame of reference. This may be the case given that the relativity of time and the present is not only about appearances—the

temporal ordering of events from a framework, any framework, is as *real* as the temporal ordering of events from any other framework. Thus, the four-dimensionalist or STR theorist might simply claim that *any* temporal gap is as 'real', and thus significant for our investigation, as a temporal gap that is observed from any number of, or even all, frameworks. But again, to simplify, we shall discuss here what I have called *true* temporal gaps, even if in the end four-dimensionalists may want to classify *all* temporal gaps as what I am calling *true* temporal gaps.

438.   Given our preceding discussion regarding disassembled existence and the likelihood that continued existence for disassembled objects is a reasonable theory, we must specify that a true temporal gap is a duration wherein an object *does not exist*. Thus if the existence of the object's parts is enough to establish the existence of the object itself, we must specify that in a *true* temporal gap *no parts of the object* exist. Or, at the very least, not *enough* parts exist during that duration for the object to be said to exist— we have not here discussed the complicated issues of composition of an object relative to *how many parts* need to be present to constitute the same object, and we will not enter into that discussion. So again to simplify, we might as well consider true temporal gaps to be durations in which *no* parts of the object(s) in question exist.

439.   And again, we must play a little fast and loose with our language in order to be able to discuss these gaps at all. If you accept true temporal gaps within the duration of an object's existence, then you will be comfortable speaking of the parts of *that object* not existing during the gap. If you do not accept true temporal gaps with preserved identity across the gap, then you must speak of the parts of the earlier object *and* the parts of the later object—separate objects, separate parts—not existing during that gap. Hopefully, then, we can move ahead with the discussion without having to specify at every turn the distinction between the parts, parthood, and identity of all of the various objects we are considering.

5.2.2. Conditions Required for Denial of Identity

440.   As with spatial gaps, I believe it will bear fruit to investigate the issue

from the 'negative' side—under what conditions will a Perdurantist or Endurantist *deny*

that objects appearing on either side of a temporal gap are the same object? I suppose the

most obvious sort of situation allowing for such a denial would be a situation in which

the later candidate is a) dramatically physically dissimilar to the earlier object, and b) is

unconnected in any significant way via causal histories to the earlier object. E.G. a

wooden spoon created by an 'instant wooden spoon machine' a million light years from

the Earth several thousand years after a particular diamond disappeared from a museum

on Earth would be such a situation. We can stipulate that there are also no extenuating

circumstances, such as meddling space aliens or mischievous deities. I can myself

suggest only one reason why identity might be said to hold between these particular

objects—involving the existence of haecceities—which I will return to later. Otherwise, I

believe both Perdurantists and Endurantists will hold the spoon and diamond to be

distinct objects.

441.   If the above is true, then presumably we might find identity relations by

addressing either the similarity requirement or the causal connection requirement. In

other words, an identity relation might hold if the object that appeared a million light

years away and several thousand years later was a qualitatively identical diamond, or

perhaps if meddling aliens attempted to recreate the diamond, but 'in a different form'.

442.   The most obvious and least problematic pairing would seem to be

Perdurantism with the qualitatively identical objects. Previously, I have characterized

STR and four-dimensional space as effectively *uncaring* (to risk personification) where

diachronic identity is concerned. There are events happening here, events happening

there, some of those events involve objects that are qualitatively identical or near-

identical to various degree, some events involve objects dramatically different. But as all

times 'exist' in the four-dimensionalist's tenseless way, similarity of properties seems to

be all we can really appeal to when we try to tie these objects together into persisting wholes. It is *us*, not space and time, who does the assembling where four-dimensional wholes are concerned. And I suspect that a Perdurantist stumbling across a book that is *qualitatively identical* to their favorite book from childhood—down to the stains and dog chewing on the cover and the crayon scribbled words inside—will make an identity claim between *this* book and the book from their childhood, and will persist in this claim even if they are shown via video evidence the complete disappearance and sudden reappearance, respectively, of the 'two' books.

443.　　　　On the other hand, I am not sure it would be wise for the Perdurantist to claim an identity relationship between the spoon and diamond, even with the knowledge that meddling aliens intended to recreate 'the diamond' in the shape and atomic structure of a wooden spoon. Should the Perdurantist admit that a agent's *intent* is by itself sufficient to bring about an identity relationship? Would a child, distressed at her breaking of her mother's favorite ceramic vase, be able to recreate *the same vase* by building a vase out of clay with the *intent* of recreating the old one?

444.　　　　Where the Endurantists are concerned, I am not sure that the picture is clear on either account, and the lack of clarity comes from the still mysterious nature of the 'thingness' of an object. If an object is not made out of temporal parts suitably related to each other, but instead is made of only physical parts suitably related to each other, and it is admitted that objects can gain and lose these physical parts, then we seem to be faced with an object that keeps its identity independent of its physical parts, at least to some extent. There would be two general options: 1) that objects can retain identity only through a sufficiently gradual change of physical parts, or 2) that objects can retain identity through radical changes of their physical parts.

445.　　　　Consider a house made of building blocks according to a specific pattern. We then remove all of the blocks except for one, which we leave in place for a minute before replacing the previous blocks with entirely new blocks, according to the same

pattern. Now in one sense, we have rebuilt the same house—but this is in the same sense as contractors will build 'the same house' twenty times within the same subdivision. The *plan* is the same, but in the case of the subdivision the *houses* are not identical. But what about the block house? The majority of the physical parts have been replaced, with only one left—is that one enough to establish identity?

446.   We might immediately object by claiming that a house made of blocks is not 'an object' in the everyday, ordinary sense we have been discussion throughout. A house of blocks does not drag its parts around with it, not if it consists of blocks simply set one upon the other. But I don't believe there is a clear distinction to be made here, for adding some glue to the process will now allow us to bring all the parts along by pulling on one of them, and yet we might still disassemble and reassemble it as described given that there are products which can dissolve glue. We might also imagine a suitably advanced nuclear bond manipulator that would allow us to remove parts of *one solid block* and replace them with other bits of other blocks, connecting them together with the same bonds that connected the molecules of the block before we began messing with it. Given this, I think we can continue to discuss the block house as a single object—the reader may feel free to add stipulations regarding glue or molecular bond manipulation as is necessary to make him or her comfortable. We may be forced to admit that our notion of 'ordinary object' is vague around the edges, but I suspect the majority of our concepts are similarly vague when put to the test.

447.   So if the block house is an object, and the one block that might possibly serve to preserve identity at least *used to be* part of that object, will a house built according to the same plan around that block be identical to the house that we do know consisted of that block? If the Endurantist does not want identity to turn on convention as I have suggested may be the best answer for the Perdurantist, the remaining claims must reference the *percentage* of participation of the original object's parts in the 'new' object—either the percentage of 'original' parts is important, or it is not. If it is important,

then presumably there would be a percentage of original parts which would guarantee identity, and below which identity would not hold. If percentages of original parts are not important, then either all parts are essential parts, or identity is not tied to parts at all.

448.			The difficulty with the first option is of course that a specific percentage of original parts as a requirement for identity will seem arbitrary—if A is identical to B only if X% of B's parts were part of A, why is it that X-0.1% is not enough? If we were to rely on convention, this could be understood. We are not likely to claim that B is identical to A if enough of the parts are different. But we are attempting to avoid identity as mere convention for the moment, and particularly for the Endurantist. Without convention, we must ask what is suddenly gained or lost by passing that percentage in one direction or the other? I do not believe there is a good answer to this, and I will claim that the burden of explanation will be on the Endurantist who offers a specific number as the required percentage. [171]

449.			We might say, however, as a moderate position between the two positions described above, that a *specific* percentage of original parts is not required, but merely that there be *a percentage* of original parts. 0% of A's parts participating in B will surely indicate a real distinction between A and B. The other extreme of this position—that only 100% of A's parts will identify an object with A—is a familiar claim from Heraclitus, but as this claim combined with what we currently know of physical objects does not preserve the existence of ordinary objects, we should discard it as a viable position. But what about the "more than 0%, but no specific percentage" claim? As this position would allow us to identify nearly any object with any other object over time (given the vagrant tendencies of electrons), we must of course say more—likely something about the

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[171] Of course, Endurantists and those discussing this issue to do attempt to offer this kind of precise description. 'Gradual replacement' of parts is often mentioned (see the Heller, Noonan, and Garrett articles referred to earlier in this chapter), but is undefined.

properties of the objects in question. Block house B is *surely* not the same block house as A if it is three times the size and a completely different shape than A.

450.   To be thorough, the *speed* or *gradualness* of the change of parts in a situation *not* involving gaps does indeed seem intuitively to be important. For example, I have been told by biologists that *all* of my cells are entirely replaced over the course of X number of years, in a very Ship of Theseus manner. In this way, object A is identified as object B even though 0% of A's physical parts are part of B, and the identity is presumably achieved by a chain of >0% part participation over an extended period of time. But we begin to question the identity of an object if it's cells/molecules/particles were entirely replaced over the course of a second, and all at once. I likewise might question the identity of these latter sort of object(s) even if a very small percentage of the original parts were retained. In other words, if meddling aliens replaced all of the blocks in block house A—except one—with different blocks in the blink of an eye, I am intuitively tempted to claim that block house B is distinct from A. If we are to accept this intuition for our investigation, what we seem to have shown is that it is in fact *not* the percentage of parts alone that is important—rather it is a *chain* of durations involving small percentages of change that preserves identity. 0.1% of original parts remaining is not enough for identity, says the intuition, if the change is too abrupt. But that same 0.1% of original parts is acceptable if there are *stages* between A and B in which there are *significantly more* of A's parts present.

451.   But now the Endurantist faces a bigger problem—namely that he will have started to speak in Perdurantist terms. What are these *stages* between A and B? If A and B are in fact identical, then there is nothing between A/B besides the thing that has been labeled both A and B. Perhaps, we should admit, we have been approaching the Endurantist's problem from the entirely wrong perspective, or with the wrong syntax. There is some 'selfhood' that an object has that is retained over the course of slow change, and not retained over the course of abrupt change—at least if our intuition about

abrupt change is to be accepted. What is the 'carrier' of selfhood? It may be a mistake to approach Endurantist identity from the outside-in, as we have with Perdurantist theories—by picking out thing A and 'later thing' B, and poking around to see what they have in common. If the Endurantist is right, and we *are* talking about one object, then it's not necessarily unanswerable but is potentially misleading to ask what A and B have in common, as misleading as it may be to ask what I have in common with myself, or what that particular rock has in common with itself.

5.2.3. Haecceities

452.   We have now come to the group of theories I have mentioned previously but have put off discussing in depth—those employing haecceities to individuate. The word 'haecceity', or a version of it, is commonly attributed[172] to Duns Scotus for the purposes of clarifying the very questions we have been addressing here: what is it that individuates two objects that are qualitatively identical? Is there more to an object being *that particular object* than the properties it has, either relational, nonrelational, or both?

453.   Scotus answered this question by proposing that objects are *not* individuated by their qualitative properties—because it seems entirely possible, although perhaps not probable, for two rocks to be exactly identical in every qualitative way, and it seems absurd to claim that those obviously distinct rocks are *one rock,* something other than qualitative properties must individuate. One option would be to turn to *relational* properties: *this* rock has the property of being held in my left hand, and *that* rock has the property of being in my right hand. And even if I held both rocks in one hand, we would be able to individuate simply by spelling out with more precision exactly where each rock is in relation to other things in the world. As long as we maintain that two objects cannot

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[172] As throughout Rosenkrantz, Gary S. 1993. *Haecceity: An Ontological Essay*. Edited by K. Lehrer: Kluwer Academic Publishers..

be in the same spatial location at the same time, every object should have a unique set of *spatial* relational properties.

454.　　　　　Or will they? Max Black infamously has us consider a world consisting only of two qualitatively identical spheres[173], floating in a void. Each sphere has the same set of qualitative properties as the other, and problematically each also seems to have the same set of *relational* properties as the other—each is 'such-and-such distance from a sphere with such-and-such properties', for example. If we stipulate that neither sphere ever accelerates (as acceleration is not relative as constant motion is), we should find that neither has a relational property the other does not have. Relational properties are also difficult to use as individuators over time—certainly I possess a different set of relational properties now than I did even five seconds ago.

455.　　　　　Scotus' solution was to propose that, while qualitative (and relational) properties do not individuate, objects are still individuated by a property—a non-relational, non-qualitative property called *haecceity*. This property, being non-qualitative, cannot be detected by sensory mechanisms. It imparts no *quality* to the object. It also does not arise from the object's position in the world, as we might say relational properties do (at least those of a spatial nature). This property is simple a 'thisness', a property not responsible for an object's qualities but rather responsible for establishing that object *as that object*.

456.　　　　　Haecceities are non-qualitative, non-verifiable, and thus a theory that employs them as individuators will almost certainly eventually run aground in epistemic waters—questions of whether one particular designated object is identical to a later designated object may be unanswerable. A is identical to B if B has the same haecceity as A. This sounds like little more than the claim that A is identical to B if B is *the same thing* as A, but there is more to the claim—the haecceity is a property, as much as an

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[173] Black, Max. 1952. The Identity of Indiscernibles. *Mind* 61 (242):153-164.

object's size, color, shape, rigidity, etc. Object A has a particular property, a property that no other object has—its own haecceity. If later object B has *the same* haecceity, then it is A, regardless of what it looks like, where it is, etc.

457.   We should note that such a theory may require a particular view of properties as themselves individuals in one sense, for each object is to have its own individual haecceity. Similarly, r*edness* may be a label for a color we see in many places, but *that* red object has a redness all its own, a property that no other object has—even objects that are the same color. But this alone is no hurdle for haecceity theories. We would merely require a view of universals and particulars that allowed for instantiations of qualities to be distinguished. If *that redness* in *that object* is distinct from the qualitatively identical *this redness* in *this object*, then haecceities can be similarly distinct.

458.   This opens a door through which the Endurantist can pass through into clouds of vagueness—identity across temporal gaps would be a matter of objects possessing various individuating haecceities, and this is nothing we can determine by means of qualitative or relational properties. We could assume that the usual methods of determining identity will work most of the time. But this is just an assumption. We might think that we could have established certain rules by now which we can apply to temporal gaps. For example, we might think that we have never experienced a single object moving in the ways that temporal and spatial gaps would require. But to say this would be a mistake, a mistake that is related to what I consider to be the fatal flaw of haecceity theories.

459.   Because haecceities are non-qualitative, there is simply no way we could have established rules about such properties by means of experience. Frankly, we have *no idea* whether, under a haecceity theory, objects routinely bounce around the universe in a haphazard fashion, perhaps seamlessly leaving behind duplicates in their place. We have no idea whether the glass sitting on the table for five minutes is even *one glass* during

that five minutes. If the qualitative properties do not individuate, and all we can see are the qualitative properties, it becomes entirely possible that what appears to be one object is multiple objects, and vice versa. *All* questions regarding identity become unanswerable. This is more or less an objection raised by John Perry's Gretchen Weirob against using souls to establish identity between otherwise disconnected bodies—if we can't know anything about the behavior of souls, we can't have established any sort of rules regarding the correspondence of souls to bodies.[174]

460.   It is possible that this will be an acceptable condition, if the payoff is big enough. If haecceities help us avoid the unpleasantness of some of the identity options we have been considering, some may consider this a fair tradeoff. But such considerations begin to make the notion of haecceities appear fatally ad hoc. Suppose we ask the haecceity Endurantist what individuates objects. "Haeccceities," we are told, "non-qualitative properties that individuate." *A non-qualitative property*? We ask the Endurantist to tell us more about non-qualitative properties. "There are no more," is one reply. "Haecceities are the only properties that are non-qualitative." We then consider that we can *detect* qualitative properties, and thereby become informed about them. I cannot be *told* what yellow is, but if I have sight I can *see* yellow, and (if Frank Jackson is right) thereby gain some bit of information I did not have before. But we cannot detect haecceities, so we ask if there is anything more the haecceity theorist can tell us about them. "No…not really. They are there, even though we can't detect their existence, and they do the job of individuating."

461.   A second haecceity Endurantist might reply that there are indeed a number of other non-qualitative properties—'being an instance of justice', for instance. But even if we grant this example the status of 'property', isn't it true that we can detect such instances through certain associated qualitative properties? I cannot perceive justice

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[174] See the First Night in Perry's *Dialogue*. 1978.

directly, like a color or a feel. But I perceive actions, via qualitative properties, and those so-perceived actions are labeled in various ways *because* of those qualitative properties. Haecceities would, if they are the individuators, presumably not be necessarily tied to any other properties (or else those other properties would be just as strong candidates for individuators), making them non-qualitative in a more problematic way.

462. 		This leads us to ask how the haecceity theorist *knows* that haecceities are really there. And I am not sure there is a charitable answer to be given here. Haecceities exist because *something* has to individuate, and the other options we have been presented with come with unfortunate baggage. What doesn't come with all of that baggage? Why, a new sort of property—a property we cannot say much about, a property entirely unlike any other property we *do* have evidence of, and a property which forces (or allows) us to shrug our shoulders when presented with daunting identity questions.

463. 		Now certainly this is an uncharitable presentation, but such are the sort of concerns raised when charging a theory with being ad hoc. The Endurantist who appeals to haecceities appears to have no good answer to the Perdurantist who throws up his own hands and claims that she simply does not understand what the Endurantist is talking about[175]. What the Endurantist has described, argues the Perdurantist, is a property that exists, individuates, and about which nothing more can be said. But is that even a fully-formed concept? *That rock*, the Perdurantist presses, has this property, or *one of* these properties, and *this rock* has a different, distinct property of the same kind. And that is all that can be said, shown, or discovered. Compare this to an object's shape—shape is a qualitative property, and we can demonstrate and discuss examples of the various *kinds* of shapes that objects can have. We can say that *this rock's* shape is *more like that rock's* shape than it is like *that tree's* shape. We can describe dodecahedrons to people who have

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[175] Much as we have seen, for example, Van Inwagen reply regarding diachronic identity.

never seen one before, relating that shape to other shapes. And when that person finally sees something of that shape, more information will be possessed.

464.   But there are no *kinds* of haecceities. They are truly *primitive*, in an unfortunate sense. Rocks do not have *similar* haecceities—this is nonsensical. If we have thrown out qualitative properties as individuators and are relying on a property that is non-sensible and non-physical, then what individuates *this rock* from all other objects is no more *like* what individuates *that rock* than it is like what individuates *me*, or *that train car*. What the haecceity theorist has presented is something very worrisome—a *simple* that is unanalyzable and largely indescribable.

465.   Now it may be challenged that this is a *verificationist* objection—that it is unreasonable to reject the existence of something because we are unable to detect it, sense it, etc. But the problem is not one of verification, but one of coherence. To say what a property *does* is not to describe the property. Of course, we cannot properly describe *yellow* with words, but we can in effect describe yellow by way of demonstration—by pointing at yellow things. And this is not to describe yellow by way of describing the effects in my eyes, optic nerves, or brain when certain wavelengths of light are encountered—for such is not the property of yellow. But haecceities are not the sort of property that can be pointed at. They are properties that perform a function, but about which themselves we can say nothing. This is simply *unlike* anything else that we call a 'property'. And therein lies the ad hoc nature of haecceities. The only way we can call haecceities 'properties' is by radically changing *what it is we mean* by 'property'—and changing it for this one concept only. The Perdurantist may very well take her cue from van Inwagen and state that she simply does not know what the Endurantist who appeals to haecceities is talking about—'individuating property' is a vacuous term.

5.2.4. Same Parts and Distinct Parts Across Gaps

466.   What we have, then, is still at the most basic level an intuition that objects should be identified based on the properties those objects have, and the competing intuition that *two* objects at two different times might deceive us by sharing all the observable properties when they are not, in fact, identical. There is also the motivation to discuss the constituent *parts* of objects—sharing the same parts as a previous object may bring with it identity where similar properties being instantiated by diverse parts will not. And I believe that the Perdurantist, taking four-dimensionalism and the conclusions I have reached here about parts and duration at face value, can comfortably accept a theory of identity as conventional, and based in part on qualitative similarity, in part on causal history.

467.   The Endurantist, however, I do not believe has yet been satisfied. And to attempt to arrive at such satisfaction, let us consider once again a meddling alien. This particular alien's favorite game, for alien reasons, is to float in space while zapping objects into and out of existence. Sometimes he waits mere fractions of a second before zapping the object back into existence, and sometimes he waits up to a thousand years. Sometimes he plays around with the shape, color, and other qualitative properties of the objects, sometimes he does not. For our purposes, we will simplify the example by considering only those times when he does not adjust the properties in any way. The Endurantist then asks us: has the alien recreated the *same* object each time?

468.   The properties are the same, and the *intention* is there to create the same object. We might then ask the Endurantist whether the alien has used *the same parts* to recreate the objects. Previously, I asked us to imagine true temporal gaps as durations when no 'part' of the object exists—when no part of the object has a location in space. The Endurantist replies that the alien, when he takes apart (or destroys) the object initially, also removes all the *parts* from space, for the duration of the gap. So, the Endurantist asks us, is this what we are concerned about—whether or not the alien is

using *the same parts* to build the object when those parts themselves ceased to exist for a time?

469.   We are immediately faced with a regress, for 'parts' of a physical object are themselves made of 'parts'. When we previously visited the question of the continued existence of a normal object, we found that disassembly, to some extent, played a role in the 'ceasing to be' of objects. Scaltsas, for example, and those in agreement with him will claim that disassembly will cause an object to cease to exist, *even if* the right conditions exist for that object to be returned to existence in the future. The conclusion that struck me as the most reasonable, at least for the Perdurantist, was to claim that disassembly alone does not lead to the destruction of the object, unless the object is *never again* reassembled in the proper ways (whatever that happens to entail—properties, form, parts, etc.). This seems reasonable if we wish to avoid arbitrary distinctions between technology that is 'available' or 'unavailable', between parts that are 'scattered' or 'shared' or 'lost', etc. And, I believe, the sort of distinction Scaltsas draws between an object that has been 'destroyed' and *is* able to be rebuilt and an object that has been destroyed and is unable to be rebuilt ('terminally' destroyed) can be mapped onto the 'disassembled and existing' vs. 'disassembled and non-existing' distinction, even if Scaltsas' requirements are different (and I think unfortunately so).

470.   So we end up asking of the *parts* of the physical objects destroyed by the alien whether 'ceasing to exist' means that *their parts* have simply been scattered yet still exist themselves, or whether *each successively analyzed part* is also destroyed, ad infinitum. Suspecting that the Perdurantist will be able to satisfy himself with a continually existing object as long as parts-of-parts (of-parts-of-parts etc.) continue to exist, the Endurantist takes the latter approach. There is nothing left, he says, nothing existing at any coordinates of space, that was part of that object immediately before the alien destroyed it. No parts, no parts-of-parts, etc.

471.　　　　In such an instance, the Perdurantist seems forced to concede that the object does not exist during the gap—whether he takes his stance on continued existence from Lowe or Scaltsas. Surely some part, some small part whatsoever, must exist for an object to exist. But our Perdurantist remains undaunted regarding identity after the gap. When the object—*an* object, to be fair—is assembled after the gap by the alien, we notice that the properties do not differ in any way from those of the object that was destroyed. When we look at the properties of the *parts* of the object, we find the same conclusion. And we find no difference in properties at *every level of analysis*, at every subsequently smaller level of parthood of the object.

472.　　　　The Perdurantist is asked: is the object the same object? The Perdurantist replies that *all* of the detectible properties (and, by hypothesis, allows the Endurantist, all *possibly* detectible properties in a very broad sense of 'possible') are no different. But, asks the Endurantist, are the *parts* that have those properties the same parts? To the Perdurantist, this is a dead end street. The answer is the same—the properties of everything we find, all of the parts of the physical object (which are themselves physical objects, although quickly in the analysis will not have the status of 'normal' objects), have identical properties. The causal history—a mischievous alien—is suitable for identity (let us assume). Why would the object *not* be the same object?

473.　　　　Because, says the Endurantist, we can imagine the alien creating a qualitatively identical object—at every level—using the same parts, *as well as* a qualitatively identical object using *different parts*. We can imagine, in other words, the alien bringing into existence the requisite *kinds* of particles needed to rebuild the object, and creating those particles with the proper states and properties—and we can pair this hypothesis with *both* the hypothesis that the particles are the same particles *and* with the hypothesis that those are different, brand new particles.

474.　　　　Now certainly the Endurantist should reject the identity of the new object if the alien has used qualitatively identical but numerically distinct parts. But what about

when the same parts are used? We might claim that, as long as the Endurantist has a good explanation of how normal objects in normal situations seem to 'gain and lose' properties and parts without violating Leibniz's Law, there is no reason to deny the identity claim if the same parts *and* properties are used to construct the object after the gap.

475.   I must admit here, however, that my sympathies lie with the Perdurantist in this matter, and with the objection that immediately comes to mind—namely that I *cannot* imagine the distinction above. I cannot make sense of the alien destroying—by removing entirely from space—a physical entity (of whatever kind) and then causing to exist *both* the same entity with the same properties as the original (at every level of analysis) *and* a distinct entity with the same properties (at every level of analysis). This does not make sense because there, to the Perdurantist, is no difference between the 'two' objects existing after the gap. The Endurantist, in order to make this distinction, needs to distinguish between qualitative or observable properties and 'identifying' properties or haecceities of some kind, which is a discussion that we have already seen.

476.   This is a serious difficulty, because the Endurantist may very well see this as a *strength* of his theory—that he can make and understand this distinction that the Perdurantist cannot. The Perdurantist theory is *lacking*, and the proof is that the theory cannot account for these two possibilities. But of course the Perdurantist's position will be that it is no strength to see distinctions where there are *none to be made*. This, it must be noted, is a criticism the Perdurantist has himself heard, for example when attempting to tell the Endurantist of 'branching' or 'overlapping' objects.

477.   There is much belonging to the discussion between Perdurantism and Endurantism that may very well come down to semantics. When both camps are attempting to discuss how objects 'change' without violating Leibniz's Law, for example, an endurnatist speaking of a single object existing at every moment and yet having at all moments every property it will ever have uses much the same sort of language as the Perdurantist speaking of a series of objects existing at distinct moments somehow

combining into an object with all the properties of all of the parts. But there appear to be some fundamental points about which neither side can make much sense of the claims of the other. The Perdurantist, even when limiting himself to 'normal' objects, is drawn to a world of disassembled objects, branching objects, overlapping objects, and in the end perhaps the claim that all objecthood is a matter of convention, a way of chopping up the world that we see around us. The Endurantist should prefer to discuss 'normal' objects, rejecting the unintuitive sort of objects Perdurantists speak of, while being led to hold what I believe are unfortunate claims about mysterious individuating properties.

478.   And even if the Endurantist puts his foot down and refuses to accept numerical identity claims over temporal gaps, we have still seen that the Endurantist is faced with the dilemma of either rejecting many of the claims of relativity theory, or with explaining away the apparent difficulties by appealing to ad hoc or unintuitive notions of the present. The Perdurantist, on the other hand, is not so bound by intuition, having already embraced a theory of the physical world in STR that is not overly couched in intuition in the first place. Temporal gaps in the existence of a single object, then, seem to present no insurmountable problems for the Perdurantist, while they may be in the end simply be unacceptable for an Endurantist.

CHAPTER 6 — CONCLUDING THOUGHTS

6.1. A Summary of the Preceding

479.   What I have attempted to lay out here has been an analysis of
Perdurantism and Endurantism and their comparative success at explaining the world we
see, or seem to see, around us. And in the end I believe it has turned out to be a very
front-loaded attempt—the explanations of space and time that each theory seems to work
most reasonably with, when brought to bear on a discussion of objects, time, and the
present, appears to commit both metaphysical theories to many of their answers regarding
spatial and temporal gaps.

480.   We saw in chapter 2, for example, that the Endurantist, if he accepts a
three-dimensional spacetime as described by the Presentist, will have serious difficulties
in defining 'the present' as something that a) is compatible with the findings of the
Special Theory of Relativity and b) still allows for there to be objects and events with the
sort of durations necessary for them to be called 'objects' and 'events'.

481.   The Perdurantist, on the other hand, has often been faced with the
challenge of being able to accommodate our intuitions—intuitions about objects
changing, about the present, about objects being 'entirely present', and about the past and
future 'existing'. I do believe, however, that the Perdurantist has been able to answer
these charges, in part by pointing out where our intuitions simply fail in the face of
commonly accepted science, and in part by clarifying distinctions—such as the
distinction made between a single temporal part changing, and the object as a whole

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Chapter Six will conclude the dissertation, summing up the previous findings and briefly exploring a
number of possible consequences of embracing the theories that have appeared to have the most successful
answers to the problem of gaps: four-dimensional spacetime and Perdurantism.

being observed to 'change' as a result of observing a passing series of qualitatively different temporal parts.

482.   It then became necessary to discuss objects and parthood in more detail, specifically the necessary and/or sufficient conditions for ownership of the latter by the former. It is still possible following all of this, of course, for a Perdurantist or Endurantist to reject a metaphysics of objects existing across temporal gaps. But what we were interested in determining is what sort of conditions would have to be the case *if* either theory would be able to accommodate such gaps.

483.   And it is my contention that we have found in this investigation that the Endurantist will face much less success when attempting to absorb identity across gaps into a coherent whole with the rest of his metaphysics. And perhaps more importantly, in the process of reaching this point, we have uncovered several more problematic difficulties with Endurantism—more problematic than gappy existence because the problems are problems with the basic tenets of the theory. Endurantism seems to match only our most basic of intuitions, and when pushed any harder, quickly fails to accommodate even additional intuitions, much less reasoned conclusions, that arise from further consideration of the issues.

6.2. The Usefulness of 'Normal' Objects, A Final Note

484.   From the outset, I have made it clear that in this investigation I would be discussing for the most part 'normal' objects: rocks, trees, books, bodies, etc. The discussion has at times turned to the identity of quanta, computer programs, and other entities that do not fit so well into the category. But the purpose of this limitation was to

explore what sense could be made of the theories regarding ordinary items, the ordinary world, and what common sense has always told us exists.

485.   One difficulty with this stipulation—and it's quite possible that a Perdurantist reader will have been voicing this objection from the start—is that such 'common sense' objects seem to bias the investigation towards the Endurantist. Endurantism is sold to us as the common sense position: objects exist fully whenever they exist, persisting through time by being entirely present, just as we, when introspecting, believe ourselves to be entirely present at any given time. It is Perdurantism, both sides seem to agree, that is forced to shake us from the (mere) appearances that intuition gives us. Thus limiting the discussion to common sense objects appears to limit the Perdurantist's ability to 'rock the boat' with a truly expansive theory.

486.   And there is merit to this objection. I have mentioned previously that a four-dimensional universe *does not care* about objecthood—there are x,y,z,t points in spacetime, and there is content in those points. The intuitive, Endurantist notion of a universe of 'becoming' is cast aside, an objective moving *present* is stripped away, and in some difficult-to-describe tenseless sense everything that is *just is*. There may be event-points wherein matter and energy are collected in a way very similar to how they are collected at other event-points. But it is *the observer* to makes the further claim that those event-points represent different parts of 'one object', and that others do not. That is the claim that could be reasonably made.

487.   From there, the Perdurantist can conclude that objects are entirely a matter of convention, perhaps arising from practicality or from the inherent ordering of our sensory apparatus. The only reason that the Eiffel Tower, my nose, Richard Feynman's bongos, and the moon are not parts of *one* object is that *we* do not hold them up as such. Objects, if we were to accept this progression of the Perdurantist theory, might have no limit to the ways they are composed—there might even be an infinite, or uncountable,

number of objects in existence, if we are allowed to combine any number of entities with any others, in any way.

488.   But of course to even be able to 'combine entities' presupposes that we have established entities with which to begin our combining. "There is an object," someone says, "made up of the Eiffel Tower, your no-". "Wait," another Perdurantist shouts, "What object are you picking out with 'the Eiffel Tower'? That lump of metal over there? What duration of the existence of that lump of metal? What boundaries are you taking to be the boundaries of that lump of metal? Are you including the ions scraped off by leaves blowing by in the Fall? The bolts that hold it down? How are you picking out a single bolt, or a single ion?"

489.   Given the suddenly unrestricted use of 'object', it may be dramatically, perhaps impossibly, difficult to even begin a construction of objects without *some* assumed starting point. Perhaps 'the contents of a specified event-point' will do. Perhaps allowing us to use those passé 'intuitive objects' as the starting point will work. Let us assume that we can in fact begin and progress with our unrestricted object construction. We will find that, very quickly, any notion of 'ordinary' objects will be left behind. We as humans will still recognize and use and buy and sell and make such ordinary objects, but the theory will not award them any special kind of status. And *this*, it may seem to some, is a detriment.

490.   We are speaking now of *convention*—convention among language-users regarding the word 'object'. It might be, then, that our best course of action would be to play the role of the Wittgensteinian. We have recognized that it is of practical use to us to have a more-or-less clear concept of 'object'—at least one that is far clearer and more useful than this new unrestricted sense we are confronted with. When someone points and asks me whether I see 'that', it is difficult enough to determine whether she is indicating a color, an ordinary object, an event, or some combination. I will not do to add further to

my task by wondering, if it is an object, what manifold of unconnected parts is she referring to. We, by *convention*, have a much clearer meaning of 'object'.

491.   But also importantly, we must admit that our conventional meaning of 'object' is not terribly precise. There are no distinct lines to be drawn between what count as objects and what does not—the single Lego, the house made of Legos, the disassembled Lego house, the cloud in the sky, the puddle of mud, the mound of wet cement, the mound of modeling clay, the quantum particle, the light wave, the sound wave, the art piece, the atmosphere. As with a great many, perhaps all, of our words, we have arrived, via convention, at a word which we may apply regularly with accuracy, yet which we struggle to use with precision. And it's off the mark to regard this as a flaw, or even as a strength, of our language, for it is all we have.

492.   At some point, we simply draw lines when we undertake to define words and to use them to categorize various entities. *This* is an object, *that* is not, etc. We will disagree, and we will discuss, and perhaps some will draw new lines. But we will continue to have a practical, working definition for a word.

493.   The strength of Perdurantism, it may be argued, is that it can play to this feature of our existence. It may even be true that one *must* appeal to convention when, as discussed above, one even attempts to describe the objects that Perdurantism leaves us with. Will we be forced to accept an open-ended meaning of 'object' and the incredibly varied 'objects' that will result? Perhaps. But we will also be able to discuss the persistence and identity requirements for those ordinary objects that we have defined by convention. The true Wittgensteinian might even argue that we *cannot fail* to preserve as more important the ordinary usage of the word, given that ordinary objects are far more useful to us as we go about our business.

494.   It may be that Endurantism can also account for the imprecision we find in attempting to define a word like 'object'—but Perdurantism appears to *embrace* that

imprecision. And elegance is, even if we don't always say it, an important feature of a theory, whether it be scientific of philosophical.

495.   For the same considerations I believe this investigation, turning as it does around 'gaps' that may or may not already occur or may possibly occur in the future, is worthwhile for comparing the relative success of Perdurantism and Endurantism. If we were to experience a gap in the existence of an object, or *what appeared at first glance* to be a gap in the existence of a single object, our convention *would* lead us intuitively to claim that the same object continues to exist after the gap. When my favorite book disappears before my eyes, with no traces remaining, and a book that is in every sensible way identical to that favorite book reappears later—regardless of the duration—I would be very inclined to identify the later book with the earlier book, and would naturally be skeptical of attempts to prove the diversity of the 'two'. And I do not believe that I am abnormal in this—Perdurantists and Endurantists alike, I believe, will share this intuition.

496.   Given that, I must therefore conclude that Perdurantism represents the most reasonable justification for this immediate intuition, while not carrying along with it any objections which cannot be reasonably answered. Some of Endurantism's problems come from the rather mysterious (relative to Perdurantism) ways that Endurantism goes about identifying objects, while the theory's arguably inherent unfriendliness to four-dimensional spacetime only further weakens the position—at least in a world that seems best explained by four-dimensional spacetime.

REFERENCES

Ansell-Pearson, Keith. 2006. *A Companion to Nietzsche*. Oxford: Blackwell.

Asimov, Isaac. 1996. *The Relativity of Wrong*: Kensington.

Atwell, John E. 1995. *Schopenhauer on the character of the world : the metaphysics of will*. Berkeley : University of California Press.

Audi, Robert. 1976. Eschatological Verification and Personal Identity. *International Journal for Philosophy of Religion* 7:391-408.

Augustine. 1998. *Confessions*. Translated by H. Chadwick. New York: Oxford University Press.

Balashov, Yuri. 2007. Defining 'Exdurance'. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 133 (1):143-149.

Black, Max. 1952. The Identity of Indiscernibles. *Mind* 61 (242):153-164.

Bohr, Niels. 1987. *The Philosophical Writings of Niels Bohr*. Woodbridge, Conn: Ox Bow Press.

Braun, David. 1993. Empty Names. *Nous* 27 (4):449-469.

Brink, David O. 2002. Sidgwick and the Rationale for Rational Egoism. In *Essays on Henry Sidgwick*, edited by B. Schultz. Cambridge, UK: The University of Cambridge.

Broad, C. D. 1923. *Scientific thought*. International library of psychology, philosophy, and scientific method. New York: Harcourt, Brace.

Brooks, Michael. 1999. Quantum Foam. *New Scientist*, 28.

Cartwright, Helen Morris. 1982. Book Review: Sameness and Substance. *The Philosophical Review* 91 (4):598.

Chisholm, Roderick. 1971. Identity and Persistence. In *Identity and Individuation*, edited by M. K. Munitz. New York: New York University.

Coburn, Robert C. 1960. Bodily Continuity and Personal Identity. *Analysis* 20 (5):117-120.

Craig, William Lane. 2000. *The Tensed Theory of Time: a Critical Examination*. Norwell, MA: Kluwer Academic Publishers.

Davies, Paul. 1995. *About Time: Einstein's Unfinished Revolution*. New York: Simon & Schuster.

Dyson, Freeman J. 1979. *Disturbing the universe / Freeman Dyson*. New York :: Harper & Row.

Ehring, Douglas. 1997. Lewis, Temporary Intrinsics and Momentary Tropes. *Analysis* 57 (4):254-258.

Fitch, G. W. 1993. Non Denoting (Volume 7: Language and Logic). *Nous-Supplement: Philosophical Perspectives* 7:461-484.

Garrett, B. J. 1985. Noonan, 'Best Candidate' Theories and the Ship of Theseus. *Analysis* 45 (4):212-3.

Geach, P. T. 1967. Identity. *Review of Metaphysics* 21:3-12.

Hales, Steven D., and Timothy A. Johnson. 2003. Endurantism, Perdurantism and Special Relativity. *Philosophical Quarterly* 53 (213):524-539.

———. 2007. Time for Change. *Southern Journal of Philosophy* 45 (4):497-513.

Heisenberg, Werner. 1958. *Physics and Philosophy: The Revolution in Modern Science*. New York: Harper and Brothers Publishing.

Heller, Mark. 1984. Temporal Parts of Four Dimensional Objects. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 46:323-334.

———. 1987. The Best Candidate Approach to Diachronic Theory. *Australasian Journal of Philosophy* 65 (435).

Hick, John H. 1976. *Death and Eternal Life*. New York: Harper & Row.

Hinchliff, Mark. 1996. The Puzzle of Change. *Nous* 30, Supplement: Philosophical Perspectives, 10, Metaphysics, 1996):119-136.

———. 2000. A Defense of Presentism in a Relativistic Setting. *Philosophy of Science* 67 (3 Supplement):S575-S586.

Hobbes, Thomas. *The Elements of Philosophy, Section I: On Body, Part II, Chapter 11: The Same and the Different*. Available from http://www.philosophy.leeds.ac.uk/GMR/hmp/texts/modern/hobbes/decorpore/decorp2.html#c11.

James, William. 1890. *The Principles of Psychology*. New York: Henry Holt and Co.

Klein, Charles J. 1999. Change and Temporal Movement. *American Philosophical Quarterly* 36 (3):225-239.

Kuhn, Thomas. 1996. *The Structure of Scientific Revolutions*. 3rd ed. Chicago: University of Chicago Press.

Lango, John W. 2000. Time and Strict Partial Order. *American Philosophical Quarterly* 37 (4):373-387.

Langton, Chance. 2007. *I'm Better than Them*: Old Green Records.

Leclerc, Ivor. 1975. *Whitehead's metaphysics : an introductory exposition*. Bloomington :: Indiana University Press.

Lewis, David. 2001. Survival and Identity. In *Metaphysics: Contemporary Readings*, edited by M. J. Loux. London: Routledge.

Locke, John. 1849. *An Essay Concerning Human Understanding*. 30 ed. London: William Tegg and Co.

Lowe, E. J. 1983. On the Identity of Artifacts. *The Journal of Philosophy* 80 (4):222.

Markosian, Ned. 2004. A Defense of Presentism, *Oxford Studies in Metaphysics,* Volume 1, Zimmerman, Dean W (ed); Zimmerman, Dean W.

McKinnon, Neil. 2003. Presentism and Consciousness. *Australasian Journal of Philosophy* 81 (3):305-323.

Minkowski, Hermann. 1952. Space and Time. In *The Principle of Relativity: A Collection of Original Memoirs on the Special and General Theroy of Relativity*, edited by H. Lorentz, A. Einstein, H. Minkowski and H. Weyl. Mineola, NY: Dover.

Nabais, Nuno. 2007. *Nietzsche and the Metaphysics of the Tragic*. Translated by M. Earl. London: Continuum Publishing Group.

Nagel, T. 1976. Moral Luck. *Aristotelian Society: Supplementary Volume* 50:137-152.

Noonan, H.W. 1985. Wiggins, Artefact Identity and 'Best Candidate' Theories. *Analysis* 45 (1):6.

———. 1986. Reply to Garrett. *Analysis* 46 (4):206.

Pages, Joan. 2002. Structural Universals and Formal Relations. *Synthese: An International Journal for Epistemology, Methodology and Philosophy of Science* 131 (2):215-221.

Parsons, Josh. 2004. *Distributional Properties*. Edited by F. Jackson, *Lewisian Themes: The Philosophy of David K. Lewis*. Oxford: Oxford University Press.

Perry, John. 1972. Can the Self Divide? *Journal of Philosophy* 69 (7):463-488.

———. 1978. *A Dialogue on Personal Identity and Immortality*. Indianapolis: Hackett.

Plantinga, Alvin. 1993. *Warrant and proper function*. New York : Oxford University Press.

Prior, Arthur. 1966. Time, Existence, and Identity. *Proceedings of the Aristotelian Society*:183-92.

Putnam, Hilary. 1967. Time and Physical Geometry. *Journal of Philosophy* 64:240-247.

Quine, W. V. 1950. Identity, Ostension, and Hypostasis. *Journal of Philosophy* 47:621-632.

Rosenblum, Bruce, and Fred Kuttner. 2006. *Quantum Enigma: Physics Encounters Consciousness*. New York: Oxford.

Rosenkrantz, Gary S. 1993. *Haecceity: An Ontological Essay*. Edited by K. Lehrer: Kluwer Academic Publishers.

Scaltsas, Theordore. 1981. Identity, Origin, and Spatiotemporal Continuity. *Philosophy* 56 (217):395-402.

Sider, Theodore. 1999. Presentism and Ontological Commitment. *Journal of Philosophy* 96 (7):325-347.

Thomson, Judith Jarvis. 1983. Parthood and Identity Across Time. *The Journal of Philosophy* 80 (4):201-220.

Tooley, Michael. 1997. *Time, Tense, and Causation*. Oxford: Oxford University Press.

Van Inwagen, Peter. 1981. The Doctrine of Arbitrary Undetached Parts. *Pacific Philosophical Quarterly* 62:123-137.

Weyl, Hermann. 1949. *Philosophy of Mathematics and Natural Science*. Princeton: Princeton University Press.

Wheeler, John, and Kenneth Ford. 1998. *Geons, Black Holes, and Quantum foam: A Life in Physics*. New York: W.W. Norton and Co.

Whitaker, Andrew. 2006. *Einstein, Bohr, and the quantum dilemma : from quantum theory to quantum information*. Cambridge: Cambridge University Press.

Wiggins, David. 1980. *Sameness and Substance*. Oxford: Blackwell.

Williams, B. A. O. 1957. Personal Identity and Individuation. *Proceedings of the Aristotelian Society* 57:229-252.

———. 1960. Bodily Continuity and Personal Identity: A Reply. *Analysis* 21 (2):43-48.