The Metaphysics of Ordinary Things

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Table of Contents

Abstract

Theories of metaphysical nihilism claim that there are no (or nearly no) objects with parts: no chairs, houses, mountains, and perhaps even no people. The philosophers who make these claims have trouble explaining why we nonetheless believe there are such things. The only successful explanation is compatible both with nihilism and with metaphysical universalism. Universalism claims that for every set of things, there is something else made up of those things; this thesis is intuitively more plausible than nihilism. But if we assume that universalism is true, and if we do not presuppose four-dimensionalism, we have to choose between two unintuitive versions of universalism: one that posits a plurality of co-located (entirely overlapping) objects, or one that denies that things can change their parts.

Introduction

It is true that there are chairs. This, as far as I'm concerned, is obvious. If someone denies that there are chairs, then it seem to me that somehow they have gone astray. If they have an argument for this conclusion, there must be something wrong with the argument. There must be something wrong because it is true—obviously true—that there are chairs.

In many parts of what follows, I will often say things such as "I believe that there are chairs". This is not due to an unwillingness to assert the stronger claim—that there are chairs. The stronger claim is, I have said, obviously true. But I will use the weaker claim—"I believe that there are chairs"—because while the philosophers I am criticizing deny that there are chairs, they do not deny that I believe that there are chairs. And this fact alone—that I believe that there are chairs—causes some trouble for their views, and gives us reason to doubt their extraordinary conclusions.

So I believe that there are chairs. I also believe that there are desks, and desk lamps, and doors, and doorways, and houses, and gardens, and plants. Such things, and many others, are commonly referred to as "ordinary things". This phrase is extremely vague in its application, but may be taken to designate macroscopic objects, such as those listed above, that are parts of our everyday lives.

Many philosophers have denied that ordinary things exist. Until recently, such a denial was generally a consequence of the philosopher's views on other matters. If a philosopher claims that there is no external world, or that the world is not at all like it appears, then she might deny that there are any physical things, or any things that exist outside the mind, or anything at all. It follows from such a claim that there are no ordinary things like chairs. But such a philosopher is not specifically interested in denying that chairs exist. She is interested in denying that *anything* exists; the denial of chairs is a minor consequence.

In the past 30 years, however, certain philosophers who we will refer to collectively as *nihilists* have constructed arguments specifically designed to show that there are no

ordinary things. (Peter Unger was one of the first, with the aptly titled paper, "There are no ordinary things".) These philosophers do not deny that there is an external world, or that it contains many physical things; these propositions are readily granted to be true. But they are unwilling to admit that such a world does—or even possibly could—contain chairs.

Most philosophers making this sort of claim admit that it is strange and unintuitive. But they believe that the benefits of denying the existence of ordinary things outweighs the costs. Different philosophers cite different benefits: consistency with regard to our notion of composition, theoretical simplicity, or greater coherence with our other beliefs.

The benefits do not outweigh the costs. Moreover, I am unable to imagine that any argument could convince me that there are no ordinary things. I believe that any argument that has the nonexistence of chairs as a consequence is flawed. Whether or not we can immediately identify the flaw in the argument, the fact that it entails a falsehood shows that something has gone amiss.

It will be objected that this is merely a fact about myself; other philosophers are perfectly willing to deny that there are chairs. It may be argued that since I consider 'There are chairs' to be true no matter what, I must consider it to be some sort of conceptual truth. It may be further argued that, since there are philosophers willing to deny that 'There are chairs' is true, what I mean by 'There are chairs' is something different than what these philosophers mean by 'There are chairs'. We may be thought to be using our words in different ways.

In Section 1 I will argue that we are *not* using our words in different ways. When I say "There are chairs" and someone else says "There are not chairs", we are having a real disagreement. Moreover, we are disagreeing in English; there is no special "ontological language" in which we do metaphysical philosophy.

In Section 2 I will argue that any philosopher who attempts to deny that there are chairs should be able to explain why we nonetheless believe that there are chairs. This seems to be a reasonable request, but it is surprisingly hard to satisfy. The difficulties that nihilistic philosophers have in explaining why we believe that there are chairs should make us suspicious of their conclusions.

But even if we show that there are problems with the arguments of philosophers who deny that ordinary things exist, we have not thereby proved that they *do* exist. The nihilistic philosophers who deny that there are chairs are motivated to do so by a number of puzzles about the nature of ordinary things. For example, why are there chairs and tables, but not chair-tables (single objects composed of an adjacent table

and chair)?

In Section 2.5, however, I will argue that some of the considerations that philosophers take to be good reasons to deny that chairs exist are not good reasons at all. In effect, these philosophers take the apparent non-existence of chair-tables to tell against the existence of chairs and tables. On the contrary, as we will see, the obvious existence of chairs and tables tells *for* the existence of chair-tables, dogbushes, and other strange things.

In Section 3 I will examine three theories that seek to make sense of all these different objects. I will argue that all have the consequence that there are a *plurality of overlapping objects*—that where we might think there is just one thing (a lump of clay), there are actually millions or more. I will suggest that this unwelcome consequence should encourage us to look for a different sort of theory.

In Section 4 I will attempt to defend the claim that ordinary things are *mereological sums* which cannot change their parts. What we take to be a chair with a new leg, for instance, is really a new chair. The most interesting consequence of this is that the "persistence conditions" for things over time—the conditions in which a certain thing is the referent of a term like 'the Washington Monument'—are wholly conventional.

Throughout this thesis, there are certain things I will *not* presuppose. First, I will take no stand on whether or not things have *temporal parts*. I am not sure I fully understand the doctrine of temporal parts, but it is often summarized thus: if a thing has temporal parts, then for each time at which it exists, there exists at that time (and only at that time) another thing—a temporal part or "slice" of the larger object. The (temporally) larger object is somehow "built up" from these temporally smaller parts. If a thing does not have temporal parts, then it is not divided into temporal slices—it is "wholly present" at every moment of its existence. Whatever this debate comes to, I will try to avoid relying on the truth or falsity of the doctrine of temporal parts.

Second, I will not presuppose *eternalism*. Eternalism is, roughly, the view that past and future time are just as "real" as the present. An analogy is often drawn with space; what's behind me and in front of me is just as real as what is under me. There is nothing special about *here* rather than *there*. Likewise the eternalist claims that *now* is no more special that *then*. Eternalism is generally opposed to *presentism*, which is the view that only the present is real. The presentist and the eternalist both agree that there *were* dinosaurs, but for the eternalist there is a sense in which there *are* dinosaurs (they just don't exist now). I will attempt to avoid committing myself to the reality of anything but the present.

1

What do I mean when I say there are chairs?

Philosophers such as Eli Hirsch have argued that metaphysical disputes—such as whether there are chairs—are verbal disputes that have no real import. Hirsch claims that 'There are chairs' is obviously true in English. If a philosopher says "There are no chairs" as part of her claim that there is nothing in the world but partless atoms, Hirsch will *interpret* them as meaning something like 'there are no partless atoms that are also chairs'. This interpretation allows Hirsch to maintain that both philosophers are saying true things, and are not really disagreeing at all. Ted Sider has replied by attempting to invent a new language, Ontologese, in which it is not obvious that 'There are chairs' is true. In this section I will argue that Hirsch's argument relies upon a controversial theory of meaning, and that Sider's response, valid or not, is unnecessary.

1.1 Verbal disputes

Some philosophers maintain that the recent disputes over the existence of ordinary things are *merely verbal disputes*. Suppose one philosopher claims that nothing is part of something else. This philosopher will say things like "It is not true that there are chairs" Suppose another philosopher rejects this view. This philosopher will say "There are chairs". It appears that these philosophers are disagreeing. But according to some, this appearance is an illusion.

Eli Hirsch claims that our two philosophers are engaged in a *verbal dispute*. A verbal dispute is one that is somehow not substantive; Hirsch's paradigm case of a verbal dispute is over whether glasses are cups:

> I know someone, whom I'll call A, who claimed that a standard drinking glass is a cup. "Just as a cat is a kind of animal," she said,"a glass is a kind of cup." Everyone else whom I've asked about this agrees with me that a glass is not a cup. Clearly, this dispute is, in some sense, merely about language (2005, 69).

To see that this dispute is verbal, Hirsch instructs us to do the following:

1. Take what each disputant says.

2. Postulate a community that agrees with that disputant.

3. Interpret each community's language so that the relevant utterances come out true.

4. Interpret each disputant as speaking the language of their community.

For example, when A says "There is a cup on the table", Hirsch would say instead "There is a cup or there is a glass on the table". Postulating a community that agrees with A (the A-community) and imagining a community that agrees with Hirsch (the H-community), we may assign the truth-conditions this way:

> (T) "There is a cup on the table" is true in A-English if and only if "There is a cup or glass on the table" is true in H-English

(A-English is the dialect of English spoken in the A-community and H-English is the dialect spoken in the H-community.)

One might object that we have not shown that A and H are in fact speaking different languages. "All you have shown," H might say, "is that we can imagine A speaking a language in which what she says is true. But you have not shown that she *is* speaking such a language. What A says sounds like normal English to me, and in English, what she says is simply false."

What justifies us in postulating A- and H-English is simply that what A *means* by 'cup' is not what H means by 'cup'. A uses 'cup' to refer to all the things that H uses 'cup' to refer to, but she also uses 'cup' to refer to those things that H refers to exclusively by 'glass'. What A means by 'cup' is what H means by 'cup or glass'.

It is this difference in *meaning*, as well as in truth-conditions, that allows us to postulate A-English and H-English and to conclude that the dispute between A and Hirsch is verbal. If we understand A to mean by "There is a cup on the table" what we mean by "There is a cup or a glass on the table", then A is not saying something false. We thought that they were disagreeing over what was on the table, but they simply meant different things by their words.

Hirsch does not explicitly claim that meaning is reducible to truth-conditions, but he is clearly relying on a close connection between the two:

> When I speak throughout this paper about interpreting a language this is always to be understood in the narrow sense of assigning truth conditions. I leave it open what there is to understand a language beyond knowing the truth conditions of its sentences, but, whatever this additional element may be, it will have a bearing on my argument only insofar as it might affect the plausibility of certain truth-condition assignments (2005, 72).

Having given this warning, Hirsch speaks freely of meaning instead of mere truth-conditions. When imaging himself as David Lewis interpreting Roderick Chisholm, he suggests that we "reject the assumption that the RC-speakers [Roderick Chisholm's "community language"] mean what we [speakers of the David Lewis language] mean" (2005, 76) and advocates "*semantically restricted quantifiers*" (2005, 76, his emphasis). When discussing these "RC" quantifiers, he goes on to say this:

> The RC-speakers will, of course, make the platitudinous disquotational assertion, "If something exists it is referred to by the word 'something'." Given what they *mean* by 'something' this sentence is trivially true (2005, 77, my emphasis).

Without committing Hirsch to exactly the following thesis, I think he would accept some claim along these lines: *if it is necessary that propositions p and q have the same truth-value (either true or false), then p and q mean the same thing.* Hirsch seems at least sympathetic to some modification of this. We can express it more formally as (M):

(M) If $\Box$(p is true if and only if q is true), then p and q mean the same thing.

This is a stronger thesis than Hirsch needs to accept. Moreover, it is probably not true; it seems to entail that there is only one necessary proposition. But *something like this* underlies Hirsch's argument.

1.1.1 Charity

But Hirsch's conclusion that A means by 'cup' what he means by 'cup or glass' does not follow from (M) alone. To see why this is so, recall the dispute between A and H over whether a glass is a cup. Suppose that H accepts (M). He might say, "We are both speaking English. In English, 'cup' does not mean the same as 'cup or glass'. Therefore, by *modus ponens*, it is not necessarily true that 'There is a cup on the table' is true if and only if 'There is a cup or glass on the table' is true. For when there is a glass on the table, the latter proposition is true and the former false. And yet A insists on treating these as somehow identical. She affirms one if and only if she affirms the other. Evidently, she is deeply confused."

H could accuse A of making fundamental mistakes about language or perception, and A could level the same accusation at H. But Hirsch thinks that this is a poor way of understanding the debate. Instead of supposing that "the other has some incurably irrational tendency to make a priori mistakes about what they perceive in front of their faces" (Hirsch 2005, 78), we should pursue a policy of *interpretive charity*:

> Why is it plausible to suppose that in the A-language the word 'cup' doesn't mean what it means in our language, so that the sentence 'A glass is a cup' is true in that language? The basic answer to this question comes out of a widely accepted principle of linguistic interpretation that has often been called the "principle of charity". This principle, put very roughly, says that, other things being equal, an interpretation is plausible to the extent that its effect is to make many of the community's shared assertions come out true or at least reasonable (2005, 71).

We can see the correctness of this principle by imagining a resolution to the dispute between A and H. Any neutral arbitrator should sit them down and explain things thus: "Now A, you said that just as a cat is a kind of animal, a glass is a kind of cup. The set of glasses is a *subset* of the set of cups. H, you probably disagree; you think cups and glasses are like cats and dogs—the set of one is *not* a subset of the other. But given that A thinks of cups and glasses like she does, you should remember when she says 'cup', that she just means anything that you'd call either a cup or a glass. And A, when H talks about cups, remember that he means only the cups that aren't glasses."

Unless A and H are simply looking for something to bicker about, they will agree that they each mean these different things by 'cup'; having recognized this, the argument dissolves. The only question remaining is which meaning is shared by the majority of English speakers (Hirsch 2005, 70).

Hirsch diagnoses verbal disputes by applying his principle of interpretive charity alongside a version of (M). If he can interpret the propositions of two disputants so as to make all come out true, and if these equivalences in truth-conditions correspond with equivalent meanings, then Hirsch has shown a dispute to be verbal. Unfortunately, while this method works well for his test case involving A and H, it does not appear to succeed when applied to the metaphysical disputes that are his primary subjects. He does manage to interpret the apparently conflicting propositions of the competing metaphysicians so that neither contradicts the other; however, his truth-conditional interpretations fail to preserve meaning.

Consider Hirsch's analysis of the dispute between a four-dimensionalist and a mereological essentialist. Hirsch uses David Lewis and Roderick Chisholm as mascots for these respective positions. We are to suppose that Chisholm (RC) and Lewis (DL) are sitting at a table. Upon the table is a pencil. DL claims that objects have temporal parts, and that any set of objects and/or temporal parts has a *fusion* (in other words, for any set of objects and/or temporal parts, there is another object composed of the things in that set). RC, on the other hand, claims that objects do not have temporal parts (there are no such things); the only physical objects are masses of matter.

DL and RC obviously have different things to say about the pencil on the table. DL claims that a temporal part of the eraser from t_1 fuses with a temporal part of the wood from t_2; thus DL says that "There is something on the table that is pink, then brown. RC denies this asserting that "There is nothing on the table that is pink, then brown". Both, however, will say that "There is something that is pink, then there is something that is brown".

Hirsch imagines himself as DL trying to interpret RC, and then as RC interpreting DL. He claims that from the point of view of DL, the quantifiers in RC-English are *semantically restricted*; "the rough idea seems to be that the range of the RC-quantifiers excludes any physical object that is composed of matter but is not itself a mass of matter" (Hirsch 2005, 76).

Hirsch then adopts the perspective of RC. He finds that speakers of DL-English consider the sentence 'There is first something that is F and later there is something that is G' to be "(a priori necessarily) equivalent" to 'There is something that is first F and later G'. He says that "we should make the charitable assumption that in DL-English these sentences really are equivalent" (2005, 78).

Given the mereological axioms that DL has adopted, it is uncontroversially true that whenever there is something that is pink, then something that is brown, they

fuse to create something that is first pink and then brown. Given *RC*'s doctrines, it is also true that everything (every physical thing) he claims to exist is a mass of matter.

Having completed his "charitable" interpretation, Hirsch applies his version of (M) and claims that these truth-equivalent propositions *mean* the same thing. He claims that *DL* means the same thing by 'There is first something that is F and later there is something that is G' and by 'There is something that is first F and later G.' He also claims that *RC* uses 'something' to mean 'something that is either a mass of matter or is not composed of matter' (2005, 76).

Hirsch concludes that when *DL* says "There is something here that is first pink and then brown", he should be taken to mean that there is something that is pink and then something that is brown. And *RC* can agree with that. Hirsch also claims that when Chisholm says that "There is nothing here that is first pink and then brown" he means that there is no mass of matter that is first pink and then brown. *DL* will not deny that. So Hirsch concludes that *DL* and *RC* are engaged in a verbal dispute; they are simply talking past each other.

Hirsch's analysis of *DL* is dubious. *DL* will of course admit that these sentences are truth-conditionally equivalent, but we can imagine him saying "Do they mean the same thing? Well, no. The second proposition—'There is something that is first pink and later brown'—entails that there is one thing that is pink then brown; the first—'There is first something that is pink and later there is something that is brown'—does not (in fact, it suggests that they are not the same thing)."

If that seems dubious, Hirsch's analysis of *RC* seems downright false. "Does 'something' *mean* 'something that is a mass of matter or not composed of matter'?" *RC* might ask. "Of course not! If I meant that, then by 'There is not something that is not a mass of matter' all I would mean would be 'There is not something that is a mass of matter that is not a mass of matter'. That's trivially true, and thoroughly uninteresting. But I'm not speaking in tautologies; I'm expounding a controversial metaphysical thesis; namely, that *everything that exists is either a mass of matter or is not composed of matter*. Only after having done some rigorous metaphysics can we affirm that 'Something exists' is true if and only if 'Some mass of matter or immaterial object exists'. That claim reports a discovery about the world, not about what I mean by my words."

1.1.2 Hostile interpretations

Hirsch's claim, that ontological disputes like the above are merely verbal, relies on a controversial theory of meaning. If a truth-conditional theory of meaning is correct (or largely so), then Hirsch's interpretations of the disputing metaphysicians would also be correct. But there would still be a sense in which the verbal disputes as to whether there are chairs differs from the disputes as to whether glasses are cups. Above I said that two people arguing over whether glasses are cups will agree that they do not mean the same thing by 'cup'. They will agree that they are engaged in a verbal dispute.

The metaphysicians are not so cooperative. Even after Hirsch has diagnosed their dispute as verbal, the disputants maintain that they are *not* engaged in a verbal dispute. Hirsch's interpretations are therefore *hostile*. They diverge substantially from the expectations of the speakers. Even if our ontologists tell Hirsch "we're *not* engaged in a verbal dispute", Hirsch will be unmoved:

> The presumption of charity is supposed to be an a priori principle that is partially constitutive of linguistic meaning. Insofar as the disputing ontologists assert the sentence, "We are not engaged in a verbal dispute," this sentence will figure, together with all the other asserted sentences, in arriving at the most charitable interpretation. I would suspect that meta-level, quasi-technical (self-aggrandizing) assertions probably have low priority as supplicants for charity. In any case, it can't be seriously suggested that the charitable presumption in favor of the correctness of this one assertion threatens to trump the presumption in favor of all of the other assertions made by the ontologists (2008, 515).

As long as Hirsch can produce truth-condition assignments that make the relevant assertions of both sides true, there seems to be nothing they can do to convince him that they are having a real argument (other than convince him that his truth-conditional theory of meaning is mistaken).

1.2 Ontologese

Or isn't there? Sider's strategy for dealing with Hirsch is to stipulate—in concert with other metaphysicians—that they use quantifier phrases like 'there are' and 'there exist' in a special sense:

> [The philosophers] should stipulate that their quantifiers are to be understood as theoretical terms (and so are not subject to the same level

> of metasemantic pressure from charity that governs terms like 'sofa' and 'game') that stand for whatever joint-carving notion is in the vicinity (2011a, 9).

By explicitly *intending* to mean by their quantifiers whatever "joint-carving" notions are "in the vicinity", Sider hopes to evade Hirsch's argument from interpretive charity. The idea is that charity can be put on hold. Sider hopes that when *he* says "There are no chairs", it will be true (if it is true) only because a "joint-carving" quantifier does not range over chairs.

Whether valid or not, what is curious about this response is that it involves *conceding that Hirsch's theory of meaning is correct.* Sider implicitly grants that some sort of truth-conditional theory of meaning is true. There is no other reason why Sider should feel the need to build a language with the specific purpose of avoiding interpretive charity. As I pointed out above, Hirsch's conclusion—that metaphysical disputes are verbal—requires not only a principle of interpretive charity, but a truth-conditional theory of meaning—something like (M).

A principle of charity alone cannot secure Hirsch's conclusion. When Hirsch charitably interprets the metaphysicians, it is because his "charitable" interpretations involve only the assignment of truth-conditions that he can claim that the metaphysicians mean different things. We saw above that Hirsch recommends David Lewis and other universalists to interpret Roderick Chisholm as using 'something' to mean 'something that is a mass of matter or not composed of matter'. This is a bizarre and uncharitable interpretation, *unless* we assume a truth-conditional theory of meaning.

I do not subscribe to a truth-conditional theory of meaning. There are a number of powerful arguments against such theories, and I do not know how to argue against them. (For example, they entail that there is only one necessary truth, and that 'I have a cat' means 'I have a cat and $2 + 2 = 4$'.) I therefore reject Hirsch's motivation for interpreting metaphysical utterances as being spoken in different languages. I think it is most charitable for the philosophers to interpret each other as speaking English. I have (or so I claim) been writing in English this whole time. When I said "There are chairs", that was part of an English sentence. If 'There are chairs' is true in English, then there are chairs. That is, the truth condition for 'There are chairs'—what makes 'There are chairs' true, if it is true—is that there are chairs.

This seems perfectly obvious, but it is something that both Hirsch and Sider reject. Without explicitly endorsing Hirsch's theory of meaning, Sider sometimes tries to motivate the idea that English quantifiers are "nonfundamental" by claiming that "There are chairs" might not mean that there are chairs (2011b, 171). He suggests

that instead "There are chairs" might mean that there are things arranged chairwise. He thereby makes room for a notion of "fundamental quantification"; only by using "fundamental terms" like $\mathcal{F}(\exists x Cx)$ can we express the proposition that there are chairs (where '$\mathcal{F}$' means 'it is fundamentally the case that').

But this notion of fundamental quantification is unnecessary and even unintelligible if we reject the idea that 'There are chairs' doesn't mean that there are chairs. The only reason we would suppose in the first place that 'There are chairs' means anything other than that there are chairs is if we held a truth-conditional or otherwise nonstandard theory of meaning. If we do not subscribe to such a theory, then we should naturally suppose that 'There are chairs' means that there are chairs; any sort of appeal to a more fundamental or "joint-carving" kind of quantification becomes wholly mysterious.

1.3 Aren't English quantifiers restricted?

One might claim that there is another sort of precedent for what Sider is doing. It is sometimes supposed that English quantifier phrases like 'there is' and 'all' are *semantically restricted*. A "fundamental quantifier" would be *un*restricted. The idea of unrestricted quantifiers is perfectly sensible, so I cannot claim that Sider's proposal is "wholly mysterious".

There is some temptation to think that ordinary uses of quantifier phrases like 'there is' are somehow restricted. Suppose I am having a party and you say "There is no beer". One might think that here 'there is' is restricted to my house; you are quantifying only over objects in the building. The conclusion is then drawn that English quantifiers are therefore not "fundamental", and that there is a need to postulate a *totally unrestricted quantifier* that ranges over *absolutely everything whatsoever*.

But as a counterexample to this thought, consider the following exchange:

YOU There is no beer.

ME I'll go get more.

YOU Aren't you listening? There is no beer.

ME Anywhere?

YOU *There is no beer.*

ME Oh my. I thought you just meant that there is no beer in the house.

The philosopher claiming that English quantifiers are restricted would have us believe that you are actually *saying different things* each time you say "There is no beer". But that does not seem to be true. What you *say* is the same. What I take you to *mean* is different. The philosopher who claims that English quantifiers are restricted is confusing saying and meaning. If I say that there is no beer, and there is beer (say, at the corner store), then *what I say* is false. But in *most* cases, *what I mean* is that there is no beer in the house.

The utterance "There is no beer" and the example below illustrate what Kent Bach calls *expansion*:

MOTHER *(treating her child's cut)*
Be quiet, you're not going to die.

What is said in both cases is a complete proposition, but the speaker means something *more* than what she says; "where expansion is involved, what is meant is closely related to what is said . . . but is not identical to it" (Bach 1994). These are therefore cases of nonliterality; what is meant is not what is said. In Bach's example,

> the mother is using each of her words literally but is omitting an additional phrase that could have made what she meant fully explicit. If her son had replied, "You mean I'm going to live forever, Mom?", it would not be because she was being obscure but because he was being obtuse—he would be taking her utterance strictly and literally, not as she meant it (1994).

We can represent what is implicit in brackets like this:

MOTHER *(treating her child's cut)*
Be quiet, you're not going to die {from that cut}.

What is implicit depends on the context, and may even change within a short stretch of dialogue. For example, the exchange between the mother and child might continue thus:

MOTHER *(treating her child's cut)*
Be quiet, you're not going to die {from that cut}.

Scientist *(runs in)*
I've done it! I've discovered the secret of immortality! This child will be the first to be cured of Death!

Mother *(to her child)*
You're not going to die {ever}!

A parallel treatment may be given of the "There is no beer" example:

Me There is no beer {here}.

Lauren *(enters)*
Prohibitionists have destroyed all the beer everywhere!

Me *(horror-struck)*
But then . . . there is no beer {anywhere}!

The first time I say that there is no beer, what I mean is that there is no beer in the house. The second time I say that there is no beer, what I mean is that there is no beer. What I say does not change, but what I mean does.

1.4 Lessons

Henceforth I will assume that the debate over whether there are chairs is conducted in English. But even some philosophers who agree to this will deny that "There are chairs" is a conceptual truth. Nor will they admit that it is obviously true (they are denying that it is true, after all). Such philosophers will object that so far, the only objection I have raised against the view that there are no chairs is that I cannot bring myself to believe it.

However, there is another reason to resist their conclusions, one that is independent of my inability to believe that there are no chairs. As we will see in Section 2, philosophers who deny that there are chairs have a difficult time explaining why we believe that there are chairs. To the extent that they cannot explain why we hold this belief (and others concerning ordinary things), we have reason to suspect that their denials might be unfounded.

2
Why do I believe that there are chairs?

A nihilistic metaphysical thesis should be accompanied by an explanation of why people nonetheless believe that there are chairs and other ordinary things. Peter van Inwagen and Trenton Merricks each have the beginnings of such an explanation. The explanation offered by van Inwagen is flawed, but Merricks has a more promising strategy. I expand on what I take to be Merricks explanation of why we believe that there are chairs, and conclude that it is successful, given one other assumption. That assumption is the denial of metaphysical universalism. However, universalism is independently plausible, and *its* unintuitive consequences can be satisfactorily explained using Merricks' own strategy.

2.1 Explaining the beliefs of others

Many people have false beliefs. These beliefs misrepresent how the world is. For example, some people believe that ghosts exist. These people each hold a false belief, for it is not true that ghosts exist. There are no ghosts in the world. Despite this fact—that there are no ghosts—some people believe that there are. Why? What explanation can we give as to why someone believes a falsehood like this?

In explaining why someone holds a belief, we appeal to *reasons*. Even people who hold beliefs that we may consider irrational (like the belief that there are ghosts) have reasons for holding these beliefs. They may not be good reasons; someone might believe that there are ghosts because her older sister told her that there are ghosts,

or because she read ghost stories as a child and took them seriously. Someone who believes in ghosts might even think that she has *seen* a ghost. This too would be a false belief; there are no ghosts, so nobody can have seen one. But here too there will be a reason why she holds this false belief. Perhaps she saw a strange play of light on a distant wall, or the reflection of the moon filtered through an attic window. What she actually saw was perhaps one of these things, but she somehow took what she saw to be a ghost. Probably she already believed that there were ghosts, and so, when confronted with a deceptive or confusing sight, was predisposed to form the mistaken belief that she was seeing a ghost.

Here and in what follows, when I say that there is a reason why someone believes something, I mean that there is some *cause* that produced the belief. Above, I told a causal story about why the person who believes that she saw a ghost holds that belief. She had been told that there were ghosts by a person who she thought trustworthy, so she came to believe that there are ghosts. Holding that belief caused her to be predisposed to interpret unusual phenomena as ghosts. This disposition caused her to believe that she was seeing a ghost when she saw a reflection of the moon.

My use of the word 'reason', therefore, should be taken in this causal sense. There are other ways that people use the word 'reason'. If someone asks "What reason do you have to believe that $((P \to Q) \wedge P) \to Q$?" I might reply that it is a theorem of first-order logic. Here I am not telling a causal story. I am rather *justifying* my belief that $((P \to Q) \wedge P) \to Q$. But in this case it is perfectly correct to say that I am giving a reason as to why I hold a belief. It is just not a *causal* reason. A causal reason would be something like the following: $((P \to Q) \wedge P) \to Q$ is true, and I have done the proof.

(Another example: suppose someone falsely believes that $((P \to Q) \wedge Q) \to P$ is a theorem of first-order logic. There will be some (causal) reason why they hold this belief; probably they attempted to deduce it from no premises and believe that they succeeded. There will, in turn, be a reason why they hold *this* false belief; maybe they were not concentrating on the proof steps, or they forgot certain rules of deduction.)

An example involving an obviously true belief might help clarify the distinction between causal reason and justifying reasons. If someone were to ask me why I believe that the sky is blue during the day, my answer would be "Because it is!" There's not much else I can say to *justify* my belief. But this not a *causal* explanation. The fact that something is true (the sky *is* blue) does not cause me to believe it. Otherwise I would believe every truth, and I do not. There are doubtless many truths that I do not believe. There must therefore be another (causal) reason why I believe that the

sky is blue, other than the fact that the sky is blue.

I believe that the sky is blue because, first, it is blue, and second, I have *seen* that it is blue. My vision is generally reliable (or at least seems to be), so the fact that my eyes "tell" me something is good reason to believe it. The same is true of my other senses: they are generally reliable, so the fact that they "tell" me something is a good reason to believe it. It does not follow that it is *true*, however (though no doubt we believe that it is true); our eyes can be deceived.

A skeptic might claim that we cannot rule out the possibility that we are *constantly* deceived. They attempt to undermine the reliability of our senses. I will not be addressing such arguments. Rather, in what follows I will examine arguments that deny (or appear to deny) that many of our beliefs about ordinary things are true. The philosophers making these denials do not claim that our eyes are unreliable sources of information. Their arguments are metaphysical rather than epistemic; they deny that certain objects are *possible*.

For example, Trenton Merricks believes that chairs do not exist. He relies on a number of metaphysical arguments to motivate this claim. If he is right, however, then it seems to follow from this that beliefs like "There are chairs" are necessarily false. I, however, believe that there are chairs. Even if Merricks is right, and my belief is (necessarily) false, there are reasons why I believe this.

If someone were to ask me why I believe that there are chairs, I would probably answer "Because there are, and I have seen them (and sat upon them)!" It seems obviously true, just like the fact that the sky is blue. I have seen lots of chairs, and I can't have been confused or deceived *every* time.

Nonetheless, Trenton Merricks, Peter van Inwagen and other philosophers say that I am mistaken. They claim that I have not in fact seen lots of chairs, though I believe that I have. There are several different arguments by which nihilists seek to establish that chairs (and other "ordinary things") do not exist; we will examine some of these arguments below. Having made these arguments, however, the nihilists must reject our causal explanation of why we believe that there are chairs. Our explanation was that there are chairs and we can see them. But the nihilist denies that there are chairs, and so should admit that, if we believe that there are chairs, there must be a different explanation as to why we hold this belief.

2.1.1 Paraphrasing beliefs

Trenton Merricks denies that chairs exist, and claims that, if we believe that chairs exist, we are mistaken. His task will be to explain why we form these false beliefs. But not all nihilistic philosophers deny that we are, in fact, mistaken. They deny that there are any chairs, but maintain that beliefs like the following might still be true:

- There are two chairs in the next room.
- I own some very nice 17th-century chairs.
- Some chairs are heavier than some tables.

Peter van Inwagen is one of these philosophers. He denies the existence of tables, chairs, apples, and all other inanimate composite objects (van Inwagen's technical definition of 'composite' will be discussed below in Sections 2.2.2 and 3.1.1). He allows that the sort of propositions listed above may be true, but insists that this does not mean that there are chairs (or tables):

> I want to do what I can to disown a certain apparently almost irresistible characterization of my view, or of that part of my view that pertains to inanimate objects. Many philosophers, in conversation and correspondence, have insisted, despite repeated protests on my part, on describing my position in words like these: "Van Inwagen says that tables are not real"; "... not true objects"; "... not actually *things*"; "... not substances"; "... not unified wholes"; "... nothing more than collections of particles." These are words that darken counsel. They are, in fact, perfectly meaningless. My position vis-à-vis tables and other inanimate objects is simply that there *are* none (1990, 99).

Van Inwagen asserts, quite seriously, that "there are no tables or chairs or any other visible objects except living organisms" (1990, 1). But van Inwagen cannot deny that we at least *believe* that there are chairs. He admits that many of us hold beliefs that we would express as "There are two chairs in the next room" or "I bought a new chair today". Indeed, he admits that such beliefs are often *true*: "when people say things in the ordinary business of life by uttering sentences that start 'There are chairs ...' or 'There are stars ...', they very often say things that are literally true" (1990, 102).

Van Inwagen, when denying that we have beliefs about chairs, appears to maintain that the beliefs that we (erroneously) take to be about chairs are not, in fact, beliefs

about chairs. If a belief expressed as "That is a fine chair" was actually about a chair, then it could only be true if there was at least one chair (and a fine one). But van Inwagen denies that there is at least one chair, but nonetheless says that such a belief might be true. He accordingly recognizes the need to explain what our beliefs really are about. If he explains what the *content* of our beliefs is, then he will also be able to explain *why* we hold such beliefs.

2.2 Paraphrases

Van Inwagen attempts to maintain that there are no chairs while rejecting the further claim that "There are chairs" is false. He claims that such discourse is *compatible* with the nonexistence of chairs. According to van Inwagen, "when people say things in the ordinary business of life by uttering sentences that start 'There are chairs . . . ' or 'There are stars . . . ', they very often say things that are literally true" (van Inwagen 1990, 102).

One might assume that if such statements are true, then it follows that there are chairs and stars. But van Inwagen denies that chairs and stars exist. How can he claim, then, that what was said was true? What van Inwagen does is attempt to show that the statements in question can be *paraphrased*—they can be reformulated to show that they have no "ontological commitments". According to van Inwagen, one can assert that there is a chair without being committed to the existence of chairs.

Section 2.2.1 will summarize the motivation for van Inwagen's denial. Section 2.3 will introduce and criticize van Inwagen's paraphrasing strategy.

2.2.1 Composition

Van Inwagen's conclusion that there are no chairs is a consequence of his views on *composition* (or "constitution"). Some things are said to compose another thing if the former are *parts* of the latter; the latter is "made up of" the former. Van Inwagen believes that "the metaphysically puzzling features of material objects are connected in deep and essential ways with metaphysically puzzling features of the constitution of material objects by their parts" (van Inwagen 1990, 18). One case often used to illustrate these puzzling features is that of the Ship of Theseus. The Ship of Theseus is an object—a ship—composed of many parts, including planks of wood. As the planks (and other parts of the ship) wear out, they are replaced. These replacements happen each by themselves; the entire ship (or even a large section) is not replaced

all at once. But eventually no part of the original ship remains; it is built of entirely different planks, nails, rigging, etc. And yet we would no doubt say that it is still the same ship. But why should we think that the present ship is identical with a past ship with which it shares no parts?

2.2.2 The Special Composition Question

Answering the question "why is this ship identical with that past ship?" requires first figuring out how these planks (and rigging and sails) compose a ship in the first place. Van Inwagen asks "in what circumstances do planks compose (add up to, form) something" (1990, 21)? (For simplicity's sake, van Inwagen ignores the rigging and sails.) For some xs, van Inwagen is asking us to consider when

$$\exists y \text{ the } x\text{s compose } y$$

is true.

Less formally, van Inwagen asks: "suppose one had certain (nonoverlapping) objects, the xs, at one's disposal; what would one have to do—what *could* one do—to get the xs to compose something" (1990, 31)? This is the Special Composition Question.

('Composition' is used in a technical sense with regard to the Special Composition Question. Van Inwagen defines it thus: "the xs compose y" means that "the xs are all parts of y and no two of the xs overlap and every part of y overlaps at least one of the xs . . . a thing *overlaps* a thing—or: they overlap—if they have a common part" (1990, 29). For van Inwagen, everything is a part of itself; some x is a *proper* part of some y only if $x \neq y$. I discuss the technical notion of composition in more detail in Section 3.1.1.)

2.2.3 The usual answers

There are several prominent answers to the Special Composition Question, including the following (these formulations are from Markosian (1998)):

Nihilism Necessarily, for any xs, there is an object composed of the xs if and only if there is only one of the xs, i.e., the only objects that exist are simples (1998, 219).

Universalism Necessarily, for any xs, there is an object composed of the xs if and only if no two of the xs overlap (1998, 227).

Van Inwagenism Necessarily, for any xs, there is an object composed of the xs if and only if either (i) the activity of the xs constitutes a life or (ii) there is only one of the xs (1998, 221).

Contemporary nihilists include Ted Sider and Cian Dorr—these philosophers deny that *anything* has parts. However, the arguments I will be making against van Inwagen and Trenton Merricks—who allow that people exist and have parts—will apply equally to Sider and Dorr, for both factions deny that there are chairs and other ordinary things.

Universalism raises a number of issues, some in connection with Trenton Merricks' explanation of our beliefs. I will therefore postpone discussion of this view until later. (See Section 2.7).

Van Inwagen examines and rejects universalism and the version of nihilism given above. He also rejects a number of other answers to the Special Composition Question. Some are too strong: *some xs compose a y if and only if the xs are in contact* would entail that two people shaking hands will result in a new object coming into being. Others are too strong in some ways and too weak in others: *some xs compose a y if and only if the xs are fastened together* would entail that two people being glued together would result in a new object; and it would deny that an object can be composed without fastening its parts together (such as when building a house of cards). The only answer van Inwagen finds acceptable is what we have dubbed *van Inwagenism*, which entails that tables and chairs do not exist.

Because of this consequence, van Inwagenism should include an explanation why we nonetheless believe that there are tables and chairs. Happily, van Inwagen recognizes this and is prepared with a *paraphrasing strategy*. This strategy aims to show that the beliefs that we take to be about tables and chairs—such as "There are two fine chairs in the next room"—are actually very often true. They are true not because there are chairs (in particular, two fine ones in the next room), but because such beliefs are not actually *about* chairs to begin with. They are about something else.

If such beliefs are true, then, once we know what they are about, it should be relatively easy to explain why we hold them: they are true, and we learn of them through some reliable means (like our eyes).

Unfortunately, van Inwagen's paraphrasing strategy does not work.

2.3 Van Inwagen's paraphrasing strategy

Van Inwagen admits that "when people say things in the ordinary business of life by uttering sentences that start 'There are chairs . . . ' or 'There are stars . . . ', they very often say things that are literally true" (van Inwagen 1990, 102). It does not seem unreasonable to assume that if what people say with "There are chairs . . . " and the like are true, then chairs exist. But van Inwagen denies this entailment.

How can van Inwagen maintain this? We may first observe that someone can say, truly, "There are simples arranged chairwise . . . " without committing oneself to the existence of chairs. Van Inwagen might then claim that when someone says "There is a chair . . . " she *means* "There are simples arranged chairwise". This is, of course, a bold hypothesis about the speech practices of ordinary speakers. Certainly very few speakers would, if asked, affirm that what they meant to say had anything to do with simples; they would say that when they said that there was a chair, they meant just that. Van Inwagen recognizes that this is not a viable position: "The only thing I have to say about what the ordinary man really means by 'There are two valuable chairs in the next room' is that he really means that there are two valuable chairs in the next room" (1990, 106).

One might then assume that van Inwagen is thinking in analogy with Russell. He could attempt to claim that, despite the surface appearance of language ('There is a chair . . . '), the underlying logical form does not make any mention of chairs (or tables); the offending concept is analyzed away, leaving 'There are simples arranged chairwise . . . '. Van Inwagen notes that his "suggested technique of paraphrasing enables us to escape some of the more embarrassing consequences of this position. When someone says 'Some tables are heavier than some chairs,' there is obviously something right about what he says. Our technique of paraphrasis enables us to capture what it is that is right about what he says" (1990, 111). This approach is similar to that of Ted Sider and Eli Hirsch (Sections 1.1 and 1.2); both are sympathetic to the idea that 'There are chairs' means (at least in some circumstances) that there are things arranged chairwise, *not* that there are chairs. Such a position is, as I argued in Section 1, correct only if one adopts a truth-conditional theory of meaning.

However, van Inwagen does not defend this position. He admits that the original proposition and his paraphrased version are different: "When the ordinary man utters the sentence 'Some chairs are heavier than some tables' (in an appropriate context, and so on and so on), he expresses a certain proposition, and one that is almost certainly true. But I do not claim that this proposition *is* the proposition that, for

some xs, those xs are arranged chairwise and for some ys, those ys are arranged tablewise, and the xs are heavier than the ys" (1990, 112). So van Inwagen is not making an appeal to some notion of "logical form", and he is not proposing, like Hirsch and Sider sometimes do, that 'There is a table' just means 'There are things arranged tablewise'. But then what is the purpose of the paraphrasing project?

Van Inwagen attempts to justify his method of paraphrasis by asserting the following parallels between the original and paraphrased propositions:

1. The paraphrase describes the same fact as the original.

2. The paraphrase, unlike the original, does not even appear to imply that there are any objects that occupy chair-receptacles [a chair-receptacle is a region of space said to be occupied by a chair].

3. The paraphrase is neutral with respect to competing metaphysical theories, *viz.* the "received" theory, that there are objects that occupy chair-receptacles, and the theory I have proposed, according to which there are no such objects.

4. The original, though it doubtless does not express the same proposition as the paraphrase, has the feature ascribed to the paraphrase in (3): It is neutral with respect to the question whether there are objects that fit exactly into chair-receptacles (1990, 113).

I am willing to grant that (1)–(3) are true, but I am quite sure that (4) is false, and van Inwagen's thesis appears to depend on it. He admits in (2) that the original proposition ('There are chairs . . . ') *implies* that there are chairs, but claims in (4) that it does not *entail* this. But why wouldn't it?

2.3.1 Propositions and ontological commitment

Let us review the situation. First, van Inwagen agrees that when someone says something like "There is a chair . . . " they mean just that. Second, he admits that his "paraphrases" of such propositions are not so faithful to the original that they can be called the same proposition; the original and the paraphrase are two different propositions. Third, he claims nonetheless that *neither* the original nor the paraphrase entail the existence of chairs.

This seems obviously untrue. How can he claim that when someone says "There is a chair . . . " and means just that, that the proposition they express does not entail

the existence of chairs? To defend his claim, van Inwagen appeals to his "Copernican analogy":

> I accept the Copernican Hypothesis. One day you hear me say, "It was cooler in the garden after the sun had moved behind the elms." You say, "You see, you can't consistently maintain your Copernicanism outside the astronomer's study. You say that the sun moved behind the elms; yet, according to your official theory, the sun does not move." I reply that the proposition I expressed by saying "It was cooler in the garden after the sun had moved behind the elms" is consistent with the Copernican Hypothesis (1990, 101).

That is, van Inwagen claims that the proposition he expressed with 'It was cooler in the garden after the sun had moved behind the elms' does not entail that the sun actually moved. And he argues that this is analogous to our talk of chairs: most propositions expressed with 'There is a chair . . . ' do not entail that chairs actually exist.

Does the proposition van Inwagen expresses with 'The sun moved behind the elms' entail that the sun moved? I am inclined to say that it does. If I were to say simply "The sun moved" (meaning just that), I think I would have committed myself to the movement of the sun. Why should we think that the addition of "behind the elms" removes this entailment? Without some explanation of what the difference is, I see no reason to think that saying "The sun moved behind the elms" (and meaning it) does not entail the movement of the sun. Likewise, if 'There are chairs in the next room' does not entail that there are chairs, then it would appear that 'There are chairs' does not entail that there are chairs.

Before we dismiss van Inwagen's paraphrasing strategy, we should examine another, perhaps more plausible, analogy. This analogy involves an imaginary planet called Pluralia where there is a "creature" known as a bliger. The bliger, according to van Inwagen, is what happens when four monkeys, an owl, and a sloth attach themselves together temporarily. The conglomeration appears to the untrained observer to be a single animal. Gullible farmers have designated this type of conglomeration with the word 'bliger'. Van Inwagen's point is that there are no bligers, but that a farmer saying "There's a bliger" when pointing at such a conglomeration would be saying something true. Even though there are no bligers (according to van Inwagen), someone saying "There's a bliger" says something true because she "reports a fact". The fact being reported by 'There's a bliger' is the fact that a monkey, four owls, and a sloth are there. If she has instead said "That bliger just exploded", what she said would be false, because there is no fact that her proposition reports.

People believe that there are bligers because they mistake the group of animals for a single thing, which has been dubbed 'bliger'. Likewise, van Inwagen maintains that people mistake chairwise arrangements of simples for chairs. When someone says "There's a chair" what she says is true because it reports a fact. The fact being reported is that there is a chairwise arrangement of simples there. People believe that there are chairs because they mistake the things arranged chairwise for a single thing, which has been dubbed 'chair'.

I agree with van Inwagen that these cases are analogous. However, where van Inwagen takes this analogy to show that there are no chairs, I take it to show that there *are* bligers in van Inwagen's imaginary scenario. When it is discovered that bligers are built up from six other creatures, we are learning something about bligers:

> . . . *of course* there are bligers in [van Inwagen's] story. Bligers are what the story is about. The zoologists do not report that there are no bligers. Rather they tell us what a bliger is. They explain that a bliger is not a single large carnivorous animal but a transient symbiotic union of six animals (Rosenberg 1993, 704).

In short, van Inwagen's analogy does not provide us with an explanation of why we would believe in chairs even if there were none. All it should be taken to show is that just as we believe that there are chairs because there are chairs, so we would believe there were bligers if there were bligers.

2.3.2 Unforeseen consequences

Van Inwagen should be glad that his paraphrasing strategy does not succeed. If he showed that 'There are chairs' does not entail that there are chairs, then the whole notion of ontological commitment would be undermined. If 'There are chairs' did not entail that there are chairs, then why should any proposition of the form 'There are xs' entail that there are xs?

It is surely true that van Inwagen would affirm "There are simples arranged chairwise". And no doubt he thinks that it follows from the truth of that proposition that there are simples arranged chairwise. But how can he affirm this, if he denies that 'There are chairs' entails that there are chairs?

If 'There are chairs in the next room' does not entail that there are chairs and if 'The sun moved behind the trees' does not entail that the sun moved (nor that it exists), then how can van Inwagen maintain that 'There are simples arranged chairwise' entails that there are simples, or that they are arranged chairwise? He has given us no reason to believe one and not the other.

(And when he says, of tables and chairs, that there are none, what follows from that? Surely that there are no tables or chairs. But if van Inwagen denies that 'There are chairs' entails that there are chairs, why should he think that 'There are no chairs' entails that there are no chairs? The only reasonable conclusion here is to reject van Inwagen's paraphrasing strategy in full.)

2.4 Lessons, part 1

Van Inwagen has not succeeded in explaining why we believe that there are chairs when (according to him) there are none. This explanatory deficiency should give us hope that what seems obviously true—that there are chairs—really is so, and that van Inwagen's argument against that truth is faulty.

If van Inwagen's conclusion is false, there must be something wrong with his argument. One possibility is that he has overlooked a better answer to the Special Composition Question (in Section 2.7 I will suggest that some version of universalism is true). But it is also possible that the Special Composition Question is itself the wrong question to be asking. Jay Rosenberg brings out this worry nicely. Van Inwagen's informal version of the question is this: "Suppose one had certain (nonoverlapping) objects, the xs, at one's disposal; what would one have to do—what *could* one do—to get the xs to compose something" (1990, 31)? This is how Rosenberg replies:

> To me it just seems obvious that the answer to such a question will always depend on what sorts of things one has at one's disposal and what sort of thing one is trying to get them to compose. If the xs are, for example, "a lot of wooden blocks that one may do with as one wills", then to get them to compose, for example, a wall, it may be sufficient to stack them up in the manner we call "building a wall." To get them to compose a wooden raft, on the other hand, one would surely need to fasten them together more securely, e.g., by gluing them to one another. And there's nothing at all one could do with them to get them to add up to a fish or a clock or a sports car (1993, 705).

Rosenberg suggests that, rather than asking "What is required for composition", we should be asking "What is required to compose a chair, or a boat, or a house?" He may be claiming that there is no answer to the Special Composition Question as it is formulated; different composite objects are composed in different ways. Moreover, explaining how and why different objects are composed in the ways they are will draw upon different fields of study: "Microphysics explains how protons, neutrons,

and electrons compose different species of atoms, and physical chemistry, how atoms of various species compose different sorts of molecules" (Rosenberg 1993, 706).

I am sympathetic to this sort of worry. Ultimately I will claim that the Special Composition Question has an answer: any things whatever compose an object. But the sorts of questions that Rosenberg wants answered—"What is required to compose a chair, or a boat, or a house?"—are left unanswered. The fact that any things whatever compose some further thing does not tell us whether that further thing is a chair, or a boat, or a house. I will suggest in Section 4.7.3, however, that these sort of questions are not metaphysical questions at all; rather, they are questions about our "conceptual household".

2.4.1 Another attempt to explain our beliefs

Van Inwagen's approach to nihilism is not the only one. Trenton Merricks has proposed a very similar thesis—that the only composite objects are human beings—for very different reasons. Like van Inwagen, he tries to undermine the obviousness of the fact that there are chairs, and he attempts to explain why we believe that there are chairs at all. Merricks' attempt succeeds only if universalism is rejected. But Merricks' method of explanation can also explain why we hold beliefs that conflict with universalism. And given that universalism is intuitively more plausible than nihilism, the lesson we will take away from Merricks is that universalism is probably true.

2.5 How does Merricks explain what we believe?

Trenton Merricks, like van Inwagen, claims that there are no physical objects other than human beings. However, he comes to this conclusion through a different path of reasoning. He claims, roughly, that positing ordinary things (excluding people) is causally redundant; everything that ordinary things are said to do can be described in terms of their parts. (The details are unimportant; what matters is how Merricks explains why we nonetheless believe that there are ordinary things.)

Despite the fact that Merricks has a different motivation for his nihilism, we can pose the same question to him as we posed to van Inwagen. Why, if there are no chairs, do we believe that there are chairs? Happily, Merricks addresses our concern. Even more happily, he has a better explanation than van Inwagen. He explains why, if nihilism is true, we might nonetheless believe that there are chairs.

But his strategy presupposes that universalism is false (see Sections 2.2.3 and 2.7). Universalism, like nihilism, seems to contradict certain of our beliefs, but Merricks' strategy can also explain why, if universalism is true, we nonetheless hold these certain beliefs. Merricks' strategy does not therefore provide nihilism any advantage over universalism, and universalism is intuitively more plausible than nihilism.

2.5.1 Nearly as good as true

Merricks claims that "folk" beliefs, such as the belief that there are chairs, are false, but nonetheless are *nearly as good as true*. What does this mean?

> People who believe in unicorns [or ghosts] are few and far between. And those few are generally unjustified. On the other hand, people who believe in statues are legion. And they are generally justified in so believing. Given the truth of eliminativism [what I have been calling 'nihilism'], we might ask *why* the belief in statues is more common, and more commonly justified, than the belief in unicorns.
>
> The answer is that statue beliefs are nearly as good as true. For, so I claim here, *atoms arranged statuewise* often play a key role in producing, and grounding the justification of, the belief that statues exist. In general, a false belief's being nearly as good as true explains how *reasonable* people come to hold it. And, relatedly, its being nearly as good as true can ground its justification. Because the belief that unicorns exist is not nearly as good as true (i.e., because there are no things arranged unicornwise), there is no similar explanation of its production or similar reason to think it is justified (2001, 171–172).

To say that a proposition is "nearly as good as true" seems to mean that while it is false, it is nonetheless somehow close enough to the truth for a given purpose or situation. For example, suppose we have decided to buy a fake holiday tree for the holidays this year. We are looking at a number of different fake trees. I point to one and say "That is a nice tree". What I have said is false; that is not a tree. It is a fake tree. But what I mean—and what my audience recognizes me to mean—is that it is a nice *fake* tree. We both know that we are looking at fake trees; there is no point in saying "fake tree" every time. When I say "That is a nice tree", therefore, what I say is quite sufficient to allow for successful communication, despite being false. Merricks claims that propositions expressed by things like 'There are chairs' are also loosely true. They are false, but are nonetheless good enough for certain purposes.

Initially, this seems like a bizarre claim. After all, Merricks is claiming that chairs *necessarily* do not exist. According to Merricks, 'There are chairs', given its current

meaning, could *never* be true. If the proposition expressed by 'There are chairs' is necessarily false, how could it nonetheless be "nearly as good as true"?

2.5.2 The conceptual connection

Merricks' argument relies on a very close connection between the concepts *chair* and *chairwise* (and likewise for all "ordinary concepts"). Despite claiming that chairs are impossible, Merricks admits that we understand perfectly what chairs *would* be, if they existed. Because we understand the concept *chair*, we can recognize *actually existing* things that are arranged chairwise:

> The folk concept of *statue* plays a role in determining which atomic arrangements are statuewise. I would even go so far as to say that if *being arranged statuewise* were not derivative upon folk-ontological concepts . . . something would be amiss (2001, 8).

For Merricks, to know what things are actually arranged statue- or chairwise requires knowing what things would compose a statue or a chair, if such things were possible:

> Atoms are *arranged statuewise* if and only if they both have the properties and also stand in the relations to microscopica upon which, if statues existed, those atoms' *composing a statue* would non-trivially supervene (2001, 4).

Merricks' explanation of why we believe that there are chairs relies on this conceptual connection. It also is structurally similar to the explanation we gave in Section 2.1. Recall that our explanation of why we believe that there are chairs (or statues) is that, first, there are chairs, and, second, we see that there are chairs (or learn that there are chairs through a similarly reliable mechanism).

Merricks' definition of 'nearly as good as true' allows us to produce a parallel explanation. His definition is this:

> Any folk-ontological claim of the form 'F exists' is *nearly as good as true* if and only if (i) 'F exists' is false and (ii) there are things arranged F-wise. So, for example, 'the statue *David* exists' is nearly as good as true because (it is false and) there are some things arranged Davidwise (2001, 171).

We may now say on behalf of Merricks that we believe that there are chairs (and statues) because, first, there are things arranged chairwise and, second, we see that there are things arranged chairwise.

The structure of the two explanations is analogous, but there is an apparent disanalogy in the content of the two. The disanalogy does not favor Merricks. For it is easy enough to understand why there being chairs, and us seeing that there are chairs, would cause us to believe that there are chairs. But it is less obvious why there being things arranged chairwise, and us seeing that there are things arranged chairwise, would cause us to believe *not* that there are things arranged chairwise, but that there are *chairs*.

(While it is certainly true that we believe that there are chairs, I am not sure if all or even most of us *also* believe that there are things arranged chairwise. Let us suppose for now that we do.)

The close conceptual connection between *chair* and *chairwise* is very important for Merricks. It is this *connection* that is doing the explanatory work. The only thing that can explain why there being things arranged chairwise would cause us to believe that there are chairs is this connection between the concepts. The existence of things arranged chairwise, and the belief that there are things arranged chairwise, is supposed to cause the *additional* belief that there are chairs. How does this happen?

Merricks' answer appears to go something like this: chairwise arrangements, statuewise arrangements, and other ordinary arrangements of things play important roles in our lives. These arrangements of things are of interest to us, so we have developed words that allow us to refer to them. For whatever reason—historical, psychological, or otherwise—we think of each arrangement as a single thing, rather than as things. Words like 'chair' and 'statue', being singular, reflect this (incorrect) view of the world. We are, in a sense, fooled by grammar.

This is more than Merricks says himself. I have not found a passage in which he explicitly describes the nature of the conceptual connection between concepts like *chair* and *chairwise*, and explains why, from our belief that there are things arranged chairwise, we invariably infer that there are chairs. But I think he would endorse something like this. In the first chapter of his book, he claims that whether there is a statue or merely things arranged statuewise is not an empirical question. He claims that were there not a statue and merely things arranged chairwise, our "visual evidence" would be the same. He supports this claim with an analogy:

> [Consider] the claim that the atoms arranged my-neighbour's-dogwise and the-top-half-of-the-tree-in-my-backyardwise compose an object. . . it won't do to defend this claim with nothing more than "I can *just see* the object composed of the atoms arranged dog-and-treetopwise". Part of why this won't do, presumably, is that one's visual evidence would be the same *whether or not* those atoms composed something (2001, 8–9).

He assumes, of course, that we do not believe that there is a thing composed of a dog and some of a tree. Later he suggests that it is arbitrary to claim that there are statues but not dog-tree things: "we ought to see that the only difference between arbitrary sums and statues is a matter of conventional wisdom and local custom" (2001, 75). He seems sympathetic to the idea that the reason we believe that there are statues, and not dog-tree composites, is due to our conventional speech practices: "it is at least somewhat plausible that atoms arranged statuewise are united not by composing something but, instead and in part, by how we speak and think" (2001, 121).

On this picture, whether we see an arrangement of things as composing an object or not depends more on our own interests than features of the things themselves. We have words for chairs and statues because things arranged chairwise and statuewise interest us. We don't have a word for things arranged my-neighbor's-dogwise and the-top-half-of-the-tree-in-my-backyardwise because such an arrangement does not hold much interest for us. But each of these arrangements exist, and it seems arbitrary to say that the chairwise and statuewise arrangements compose chairs and statues while the other arrangement composes nothing.

Merricks might explain why we believe there are things arranged my-neighbor's-dogwise and the-top-half-of-the-tree-in-my-backyardwise thus: there are things arranged my-neighbor's-dogwise and the-top-half-of-the-tree-in-my-backyardwise, and we see that there are things so arranged. This is exactly the same explanation that I would give.

Now Merricks explains why we believe that there are chairs thus: there are things arranged chairwise, and we see that there are things arranged chairwise. *And incidentally, due to our own human peculiarities, we have found it convenient to refer to and think about things arranged chairwise as if they were "chairs"—single unified objects.*

2.6 Strange objects

This is a somewhat plausible explanation of why we would believe that there are chairs if there were not. It is certainly much better than van Inwagen's. But I think that it fails. I think that when we look closer at Merricks' attempts to motivate nihilism, we will see that they do not support nihilism at all. If anything they support a version of *universalism*.

Merricks observes that one might object to nihilism simply by saying, "I just *see*

the chair!" He claims that if this objection moves us, we should think about an analogous objection, which he finds much less moving:

> Whether atoms arranged statuewise compose a statue is analogous to whether atoms arranged my-neighbour's-dogwise and the-top-half-of-the-tree-in-my-backyardwise compose an object . . . it would not do to support an affirmative answer to the latter question simply by saying "I can just see that object" (2001, 73).

It does indeed seem initially plausible to say that the top half of a tree and my neighbor's dog do not compose anything. But I think this is ultimately incorrect.

Recall the bliger story that van Inwagen used to motivate his version of nihilism (Section 2.3.1). A bliger was supposed to be four monkeys, an owl, and a sloth, who arrange themselves into a temporary symbiotic configuration. Van Inwagen thought we would agree that bligers did not exist. He claimed that it is not true that "six animals arranged in bliger fashion compose anything, and that is what I mean to deny when I say that there are no bligers" (1990, 104).

But as we saw, it is simply false that there are no bligers:

> . . . *of course* there are bligers in [van Inwagen's] story. Bligers are what the story is about. The zoologists do not report that there are no bligers. Rather they tell us what a bliger is. They explain that a bliger is not a single large carnivorous animal but a transient symbiotic union of six animals (Rosenberg 1993, 704).

We might be tempted to say that there are no bligers because van Inwagen presents the question in an unintuitive way. He asks us if there is some thing, some object, that is composed of the other six animals. This gives one the impression that, were there to be such a thing, it would perhaps be another animal (a seventh); were there such a thing, it should somehow pop out at us. But all we see when we picture the scene are the six animals together, so we feel that van Inwagen might be right. There is no *other* thing. But if we phrase the question differently, things become clearer. Rather than ask if there is some thing composed of such and such other things, we simply ask, "Are there bligers?" And of course there are. Van Inwagen's use of the word 'composition' led our intuitions astray.

Merricks makes the same mistake in his passage above. Imagine if he had said, "Consider five discontinuous islands. One cannot argue that they compose some further thing by simply saying 'I just see it!' " If these five islands are an archipelago, then one *can* say "I just see the archipelago!" *Of course* there are archipelagos. They are, as one might put it, *scattered objects*. The archipelago is made up of a number

of separate islands, but it is nonetheless a thing. It is an archipelago. Now let us suppose there is an archipelago in the Mediterranean Sea (this example is adapted from Hawthorne (2008)). This archipelago is called the Roman Archipelago, due to the fact that there are a number of Roman ruins on one of its islands. There are several research camps on the islands, where archaeologists dig for artifacts. Their researches result in a surprising discovery: one of the islands *is* a Roman ruin. What was thought to a rocky and curiously shaped island is in fact a massive collapsed temple. Further investigation reveals that another island is made up of the bones of an extinct sea monster, and another island is a crashed UFO.

Despite these extraordinary circumstances, it is nonetheless true that the Roman Archipelago exists. It just happens to be composed of several islands, a Roman ruin, a pile of old bones, and an alien spacecraft. To say the Roman Archipelago does not exist would entail that these things are *not* sitting in the Mediterranean Sea. (Of course I made this story up, so the Roman Archipelago in fact doesn't exist; but it does in the story.)

If Merricks or someone else asks us "could scattered islands, Roman ruins, old bones and alien spacecraft ever compose anything?" we should reply "*of course*". Now take this example:

> Pranksters break into a museum to install joke pieces of art. One one wall they put up a bathroom mirror and towel ring (complete with towel). Under the mirror they put a little sign reading "Wash your hands". The installation is accepted as art by the gullible curator, who gets an equally gullible journalist to write about it. *Wash Your Hands* quickly becomes a valuable piece of art—valuable enough that art thieves target it. They break into the museum in order to steal *Wash Your Hands*, but trip an alarm and are forced to flee. All they get away with is the towel. In the morning the guards tell the curator that part of *Wash Your Hands* is missing. The curator orders them to remove the rest of the piece and informs crestfallen visitors that *Wash Your Hands* is no longer in the museum's collection.

Here, the only point at which is it true to say that *Wash Your Hands* is not in the museum is when it is finally removed. Someone who claimed that it was *never* in the museum because it doesn't exist would be saying something quite clearly false. Thus if Merricks asks us "do mirrors and towels ever compose anything?" we should say "*of course!*"

In these two examples, it is clear that the things in question really do exist. Nobody will deny that there are archipelagos and works of art without having first been moved by a philosophical argument. But it may be that people *will* deny that there are things composed of the tops of trees and dogs, even before hearing an argument.

Let us use 'dogbush' to refer to things composed of dogs and treetops. For example, in a park that contains one tree and one dog, there is also one dogbush. Is it *obvious* that there are dogbushes? Is it just as obvious as that there are archipelagos and chairs and the *Wash Your Hands*? If not, why? What is the difference between things like archipelagos and things like dogbushes?

One obvious difference is that things like archipelagos interest us. I argued above that Merricks motivates his nihilism by drawing our attention to the role of tradition and convention in our talk. We have a word for archipelagos because they *matter* to us. We don't have a word for dogbushes because they *don't* matter. Merricks argued, in effect, that since we are not inclined to say that there are dogbushes, and since there is no metaphysical difference between dogbushes and archipelagos, we should not be inclined to say that there are archipelagos.

But we can reverse Merricks' argument. Since we *are* inclined to say that there are archipelagos, and since there is no metaphysical difference between archipelagos and dogbushes, we should not be inclined to deny that there are dogbushes.

2.7 Universalism

I claimed in Section 2.5.2 that Merricks' explanation of why we believe that there are chairs is something like this: there are things arranged chairwise, and we see that there are things arranged chairwise. *And incidentally, due to our own human peculiarities, we have found it convenient to refer to and think about things arranged chairwise as if they were "chairs"—single unified objects.* I attributed to Merricks the idea that just because things arranged chairwise interest us, we should not therefore suppose that there are chairs. What interests us should not be a guide to what exists. But now it is obvious how we should reply to Merricks. Just because dogbushes do *not* interest us, we should not therefore suppose that there are not dogbushes. In this spirit, Judith Thomson suggests that we "think of Reality as like an over-crowded attic, some of its contents interesting, and most merely junk. There is no need to deny the junk; we can simply leave it to gather dust" (Thomson 1998, 167). This is the intuition behind universalism, one of the answers to the Special Composition

Question (Section 2.2.2):

Universalism Necessarily, for any xs, there is an object composed of the xs if and only if no two of the xs overlap (Markosian 1998, 227).

The above considerations suggest an argument of this sort:

1. Chairs exist.

2. Things that do not differ from chairs (or archipelagos, or works of art) in metaphysically significant ways also exist.

3. Dogbushes do not differ from chairs in metaphysically significant ways.

4. *Therefore*, dogbushes exist.

I imagine that Merricks would deny the conclusion (4) and so, by *modus tollens*, deny one or more premises (and we have seen that he denies (1)). But I affirm the premises and so, by *modus ponens*, affirm the conclusion.

This argument helps us see what is wrong with Ned Markosian's response to the Special Composition Question. Markosian defends what he calls "brutal composition". The thesis of brutal composition is that, while there is indeed no "no true, non-trivial, and finitely long answer to [the Special Composition Question]" (1998, 214), this is not because we should refer questions of composition to the empirical sciences. Rather, whether or not some things compose another is simply a *brute fact*.

This is a clever reply, but whether true or not I do not think it does the work that Markosian expects it to. He presents his theory as "consistent with standard, pre-philosophical intuitions about the universe's composite objects" (1998, 211). But his theory will only be consistent with such intuitions if, first, it is a brute fact that all of the things we ordinarily take to exist (tables, chairs, etc.) do in fact exist, and, second, that it is a brute fact that the things that we don't take to exist don't in fact exist. But why should we expect there to be a *metaphysical* difference between things that interest us and things that don't? The chance that the brute facts of composition happen to line up with our (or Markosian's) intuitions seems to be incredibly low.

But accepting the above argument for universalism has some strange consequences that are not immediately apparent. Ned Markosian brings out such a consequence in this passage:

> There is what seems to me a fatal objection to Universalism: Universalism entails that there are far more composite objects than common sense intuitions can allow. To give just one example, Universalism entails that the following sentence is true: . . . There is an object composed of (i) London Bridge, (ii) a certain sub-atomic particle located far beneath the surface of the moon, and (iii) Cal Ripken, Jr. My intuitions tell me that there is no such object, and I suspect that the intuitions of the man on the street would agree with mine on this point (1998, 228).

If this is a compelling objection, it is because such an object (call it 'Lumpkin') does not interest us in the least. As Merricks observed (see Section 2.5.2), the things that we believe to exist are largely the things that interest us. We believe that there are archipelagos; van Inwagen's imaginary farmers believe that there are bligers. If we do not believe that there are dogbushes or Lumpkins, this may be because they do not interest us.

Suppose Markosian wrote this instead:

> Universalism entails that the following sentence is true: . . . There is an object composed of (i) an island, (ii) a Roman ruin, and (iii) the bones of a sea monster.

But this is just the Roman Archipelago I mentioned in Section 2.6. We are (or should be) happy to admit that it exists. If the Roman Archipelago exists, and if it does not differ from the Lumpkin in any metaphysically significant ways, why shouldn't we admit that the Lumpkin exists? Of course we don't *care* about the Lumpkin. We have no need to refer to it; it doesn't matter to our lives. But why should we expect—as Markosian seems to—that our intuitions should perfectly track what exists?

2.8 Lessons, part 2

What we have learned from examining Merricks' arguments is not that there are no chairs. What we have learned is that since there *are* chairs, and since dogbushes do not differ from chairs in metaphysically significant ways, there are therefore also dogbushes.

If we agree that there are chairs and archipelagos and dogbushes and the Lumpkin, however, new questions arise. For example: What are the parts of a chair? How do they compose the chair? Do the parts of the chair change over time? How? We will address these questions in the next section.

3

How are chairs composed of their parts?

In the previous section I argued that not only are there ordinary things like chairs, but that there are more unusual things like archipelagos, scattered works of art, and perhaps even dogbushes. I tried to make it at least plausible to assume that some version of *universalism* is true—that for any material things, there is some material object made up of them.

If this is the case, a new problem arises. The problem is that universalism, along with a few plausible assumptions, rules out the possibility that things change their parts. But this seems clearly false; things appear to change their parts all the time. The philosopher who accepts universalism and claims that things change their parts must deny one or more of the plausible assumptions that, with universalism, rule out the possibility of things' changing their parts. One of these plausible assumptions is the assumption that no two things completely overlap one another; that is, are *co-located*. Denying this assumption leads to the possibility that there are very many things in any given location; for example, there might be a plurality of objects co-located with my chair at this very instant.

There are reasons to be suspicious of a theory that entails such a plurality of things. But the alternative, which I will present in Section 4, is to deny that things really can change their parts.

3.1 Parthood and composition

This subsection will describe the classical notions of mereology. The technical formulae of classical mereology are often defined in terms of parthood, which is itself left undefined (except for the stipulation that everything is a part of itself). 'Part', moreover, is understood to have a single, univocal, meaning; the consequence is that everything that has a part (or parts) is a mereological sum. Since everything is by definition a part of itself, classical mereology entails that everything is a mereological sum. We will see in Section 3.1.2 that this consequence is problematic.

If we make several plausible assumptions, classical mereology also entails that things cannot change their parts. This consequence also seems problematic, and the theories that I will present below are motivated largely to avoid this consequence.

3.1.1 Classical mereology

Peter van Inwagen provides the following definitions for classical mereology:

1. x is a part of $y =_{df}$ x is a proper part of y or $x = y$

It is assumed that everything is a part of itself. A *proper part* of some x is a part that is not x itself.

2. x overlaps $y =_{df}$ For some z, z is a part of x and z is a part of y

Just as everything is a part of itself, everything overlaps itself (when $x = y = z$).

3. x is a mereological sum of the ys $=_{df}$ For all z (if z is one of the ys, z is a part of x) and for all z (if z is a part of x, then for some w, (w is one of the ys and z overlaps w)) (2006, 618–619).

The first part of this last definition—"if z is one of the ys, z is a part of x"—specifies that all of the ys are part of x. We cannot say that *only* the ys are part of x, because the sum of half of the ys is also part of x. But we can say that every part of x overlaps one of the ys. The second part of the definition—"if z is a part of x, then for some w, w is one of the ys and z overlaps w"—secures this.

There are at least two limitations to this classical formulation of mereology. First, it entails that everything that has parts is a mereological sum. Second, it does not explain how, if at all, mereological sums can change their parts.

3.1.2 Is everything a mereological sum?

One problem with the classical formulations of mereology is that—like van Inwagen's definitions above—they entail that everything that has parts is a mereological sum. And though it may be an unreflective prejudice, I am inclined to believe that mereological sums are *physical*, or material, things. Material things certainly have parts, but they are not the only things:

> The word 'part' is applied to many things besides material objects. We have already noted that submicroscopic objects like quarks and protons are at least not clear cases of material objects; nevertheless, every material object would seem pretty clearly to have quarks and protons as *parts*, and, it would seem, in exactly the same sense of *part* as that in which a paradigmatic material object might have another paradigmatic material object as a part. A "part," therefore, need not be a thing that is clearly a material object. Moreover, the word 'part' is applied to things that are clearly *not* material objects—or at least it is on the assumption that these things really exist and that apparent reference to them is not a mere manner of speaking. A stanza is a part of a poem; Botvinnik was in trouble for part of the game; the part of the curve that lies below the x-axis contains two minima; parts of his story are hard to believe . . . such examples can be multiplied indefinitely (1990, 18–19).

Under our current conception of a mereological sum, things like poems seem to be included. For recall van Inwagen's definition:

> x is a mereological sum of the ys $=_{df}$ For all z (if z is one of the ys, z is a part of x) and for all z (if z is a part of x, then for some w, (w is one of the ys and z overlaps w)) (2006, 618–619).

Stanzas are parts of the poem, as are lines, words, and letters. For simplicity's sake, though, let us pretend that only words are parts of poems. Let the ys therefore be all the words in a poem x.

Suppose z is the word 'bear'. The word 'bear' is a word in the poem, so it is one of the ys. The first part of van Inwagen's definition tells us that 'bear' is therefore part of the poem. Now take the second part of the definition. We have established that z ('bear') is part of x (the poem), so the antecedent of the conditional ("if z is a part of x") is true. If the poem is a mereological sum, then the consequent must also be true. There must be some one of the ys that overlaps z. Since z is one of the ys, and everything overlaps itself, the consequent is true. We can follow the same steps for every word in the poem. It seems, therefore, that poems are mereological sums.

The problem with this conclusion is that *order of composition* matters with poems, but not with sums. The mereological sum of A, B, C is identical with the sum of A, C, B and also with the sum of C, B, A (and so on). But the poem that begins "The bear ate him . . . " is not identical with the poem that begins "Ate him the bear . . . ". It appears that words are parts of a poem in a *different way* than things are parts of mereological sums. And once we recognize this case, others press in upon us:

> Now, on the face of it, there would appear to be a wide variety of basic ways in which one object can be a part of another. The letter 'n' would appear to be a part of the expression 'no', for example, and a particular pint of milk part of a particular quart; and if these two relations of part are not themselves basic (perhaps through being restricted to expressions or quantities), there would appear to be basic relations of part that hold between 'n' and 'no' or the pint and the quart. It is also plausible that the way in which 'n' is a part of 'no' is different from the way in which the pint is a part of the quart. For if the two ways were the same, then how could it be that two pints were only capable of composing a single quart, while the two letters 'n' and 'o' were capable of composing two expressions, 'no' and 'on' (Fine 2010, 562)?

The parthood relation for sets is similar to the parthood relation for sums. The set containing the only the letters 'n' and 'o' has the letters as parts. When the letters are parts of a set, their order is irrelevant, but when the letters are parts of a word, order matters; hence 'no' and 'on'. The parthood relation for sets is also different from the parthood relation for quantities (of milk):

> If four quarts compose a gallon the pints which compose the quarts will compose the gallon in the same way in which they compose the quarts, whereas, if four sets compose a further set the members of the sets will not compose the further set in the same way in which they compose the component sets. Thus we would now appear to have three different basic ways in which one object can be a part of another (pint/gallon, letter/word, and member/set); and once these cases have been granted, it is plausible that there will be many more (Fine 2010, 562).

Classical mereology does not appear to be capable of handling the parthood relation that applies to sets, or that which applies to words. But if these things (sets, words) have parts, and if they are not sums, then classical mereology is flawed, for it entails that everything that has parts is a sum.

3.1.3 Can mereological sums change their parts?

Many philosophers believe that mereological sums cannot change their parts. Since many also believe that chairs and other ordinary things *can* change their parts, concerns arise about the utility of mereological sums. If chairs and other ordinary things change their parts, then they are not sums; what then *are* sums?

But not all philosophers do believe that sums cannot change their parts. Peter van Inwagen is one. His argument is very straightforward: just as it follows from the definition of 'mereological sum' that things like poems are sums, so it follows that things like chairs are sums. Things like chairs can change their parts. Therefore, sums can change their parts.

This simple argument requires some supplementation, for there is an (almost) equally simple argument that purports to show that sums *cannot* change their parts:

> Consider an object α that is the mereological sum of A, B, and C (that is $\alpha = A+B+C$). We suppose that A, B, and C are simples (that they have no proper parts), and that none of them overlaps either of the others. And let us suppose that nothing *else* exists—that nothing exists besides A, B, C, $A+B$, $B+C$, $A+C$, and $A+B+C$. Now suppose that a little time has passed since we supposed this, and that, during this brief interval, C has been annihilated (and that nothing has been created *ex nihilo*). Can it be that α still exists? Well, here is a complete inventory of the things that now exist: A, B, and $A+B$. And α is none of these things, for, before the annihilation of C, they existed and α existed and α was was not identical with any of them (all three of them were then proper parts of α). And nothing can become identical with something else: $x \neq y \rightarrow \Box\, x \neq y$; a thing and another thing cannot become a thing and itself. We do not, in fact, have to appeal to any modal principle to establish this conclusion, for if α were (now) identical with, say, $A + B$, that identity would constitute a violation of Leibniz's Law, since the object that is both α and $A + B$ would both have and lack the property *once having had C as a part* (van Inwagen 2006, 628).

Three assumptions are required for this argument to be valid. First, the thing that is the sum of A and B before C is destroyed must be the same thing that is the sum of A and B after C is destroyed. That is,

> If A and B had a unique mereological sum before the annihilation of C, and if A and B had a unique mereological sum after the annihilation of C, the object that was their sum before the annihilation of C and the object that was their sum after the annihilation of C are identical (van Inwagen 2006, 629).

This assumption seems very plausible. If C had not been destroyed, we would have had little or no inclination to say that the sum of A and B at the earlier time is not identical with the sum of A and B at the later time. So I do not see why we should think that *if* C is destroyed, then the sum of A and B at the earlier time is not identical with the sum of A and B at the later time.

We can generalize this as the *existence assumption*:

1. If there exists a sum S of some things A and B, then S exists when and only when A and B exist.

The second assumption is that composition is unrestricted (that is, that universalism is true). Van Inwagen escapes the conclusion that mereological sums cannot change their parts by denying that mereological composition is unrestricted. He denies that for any things, there is an object composed of them. In the example above, therefore, van Inwagen might deny that, before the annihilation of C, there was a sum of $A+B$. He would therefore be able to maintain that α loses a part, going from $A+B+C$ to $A+B$. There would be no preexisting $A+B$ to compete with. As I argued in Sections 2.5–2.7, I think unrestricted composition—universalism—is true:

2. Universalism is true.

The third assumption is that that there are no *co-located* (completely overlapping) objects. This assumption, along with the principle that a thing is located where its parts are located, entails that for any things, there is at most *one* thing composed of them. This consequence is generally referred to as *uniqueness*.

3. There are no co-located things, and wholes are located where their parts are located.

Anyone wishing to maintain that things *do* change their parts must reject one of these three assumptions. Philosophers like van Inwagen and Merricks reject universalism (and, for good measure, the existence assumption). Anyone who accepts universalism will, I think, also accept that a whole exists whenever its parts do; I can see no reason why a universalist would deny the existence assumption. But if a universalist claims that things can change their parts, she must therefore reject the third assumption, that there are no co-located objects. Below I will examine three different theories that allow for co-located objects. If such co-location is unacceptable, we will have to reject all three theories.

Section 3.3 will discuss Kit Fine's theory of embodiments. Section 3.4 will discuss Fine's more recent theory of composition operators. Section 3.5 will discuss Paul Hovda's theory of temporal mereology.

Before we assess the merits of these theses, however, there is another possibility that should be addressed. If we adopt the theory of *four-dimensionalism*, many of our problems appear to go away. Unfortunately, new ones arise.

3.2 What if we assume four-dimensionalism?

I am using 'four-dimensionalism' to refer to the conjunction of two theories. The first is that things have *temporal parts*. The second is *eternalism*.

Ted Sider presents a relatively clear picture of the doctrine of temporal parts:

> Think of your life as a long story. Let the story be a rather narcissistic story: cut out all details about everything else except you. So the story begins with an infant (or perhaps a fetus). It describes the infant developing into a child and then an adolescent. The adolescent passes into young adulthood, then adulthood, middle age, and finally old age and death. Like all stories, this story has parts. We can distinguish the part of the story concerning childhood from the part concerning adulthood. Given enough details, there will be parts concerning individual days, minutes, or even instants.
>
> According to the four-dimensionalist conception of persons (and all other objects that persist over time), persons are a lot like their stories. Just as my story has a part for my childhood, so *I* have a part consisting just of my childhood. Just as my story has a part describing just this instant, so I have a part that is me-at-this-very-instant (2001, 1).

The claim that we have these *temporal parts*—me-at-this-instant, or me-as-a-child—relies on a close analogy between space and time. It is uncontroversial to claim that we have *spatial* parts. My foot is a part of me, for instance, but it is not *all* of me (it is a proper part, in mereological terms). The proponent of temporal parts claims that, likewise, my adulthood is a part of me, but it is not all of me. My childhood is—or was, if we do not assume eternalism—another part of me. My infancy, childhood, adulthood, etc. together *compose* me.

This theory of temporal parts is often conjoined with a theory about time. This theory is commonly referred to as *eternalism*. According to eternalism, "time is like space. There is nothing special about the things here; things at other places are just as real; no place is metaphysically distinguished. Similarly, for the eternalist,

there is nothing special about the present; things at other times are just as real; no time is metaphysically distinguished" (Hinchliff 1996, 122). For the eternalist, there is a sense in which 'there are dinosaurs' is true. Everyone agrees that there are no dinosaurs *now*; the question is whether the dinosaurs of the past still exist *in the past*.

I have no firm intuition as to whether either conjunct of four-dimensionalism is true. I do not know whether things have temporal parts, and I do not know if the past and future exist. But let us suppose for now that four-dimensionalism is true; *if* this assumption is correct, we can explain the existence of ordinary things in new and interesting ways.

3.2.1 Four-dimensional essentialism

According to the standard versions of four-dimensionalism, ordinary things like chairs and statues are *four-dimensional spacetime worms*. They are composed of temporal parts or *slices*; a chair might be made up of "chair-slices" at t_1, t_2, $t_3 \ldots$, etc. These "slices" are generally supposed to have no temporal duration. They are *extended* in only three dimensions; their temporal extension is point-sized.

Four-dimensionalism is very commonly conjoined with universalism—the theory, defended in Sections 2.5–2.7, that for any things, there is something composed of them. If we assume universalism, then four-dimensionalism entails that for every set of temporal slices, there is something composed of them. There is an object composed of the first ten years of my life, the Kremlin from 1970–1990, and one second of a puppy's existence in 2020. This thing is not, of course, a person; nor is something composed of the first 10 years of my life and the last ten years of someone else's. Certain causal or psychological connections must hold between the temporal parts of a thing in order for it to be a person.

The objects composed of these temporal slices are mereological sums in the classical sense. Let us use 'Krupkin' to designate the object made of the first ten years of my life, the Kremlin from 1970–1990, and one second of a puppy's existence in 2020. Because the past and future exist (we're assuming eternalism), Krupkin always has the same parts. Strictly speaking, it doesn't ever change its parts. In 1991 it is true to say "The Kremlin is not *now* part of Krupkin", but it is not true to say "The Kremlin is not part of Krupkin.

If we assume universalism in addition to four-dimensionalism, then not only does Krupkin not change its parts, it *cannot* change its parts. It cannot change its parts for the reason given in Section 3.1.3. Let us use 'Alkin' to designate the object composed

of the first 10 years of my life and the Kremlin from 1970–1990. Now if Krupkin could change its parts, it could lose a part. Suppose it lost its puppy part. Then, if it still exists, it would be the object composed of the first 10 years of my life and the Kremlin from 1970–1990. But *that* object is Alkin; Krupkin would therefore become identical with Alkin. Alkin and Krupkin are not identical, however, because Krupkin has a property that Alkin does not: the property of having had a puppy as a part. So Krupkin cannot, in fact, lose a part; otherwise we would have a contradiction.

Technically, therefore, four-dimensional universalism is a version of *essentialism*—the thesis that things cannot change their parts. Saying that a thing "changes" a part just means that it has some but not all of that part's temporal parts as parts. For a chair to lose a leg is for the chair to have the leg-at-t_1 as a part and not have the leg-at-t_2 as a part. The chair has one of the leg's temporal parts (the leg-at-t_1) as a part, but not both (it does not have the leg-at-t_2).

I am somewhat sympathetic to this view. In Section 4 I will sketch an essentialist theory of things, but one that presupposes neither temporal parts nor eternalism. But here I will briefly examine how a four-dimensional essentialism addresses the issues related to ordinary things that we have been concerned with.

Four-dimensionalism has two advantages and two disadvantages, when compared with the three theories below (Sections 3.3–3.5). The first advantage is that four-dimensionalism does not posits a plurality of *kinds* of things. The material objects that a four-dimensionalist recognizes are all mereological sums in the classical sense. The second advantage is that four-dimensionalism does not posit co-located objects. The first disadvantage is that four-dimensionalism, when conjoined with universalism, produces a plurality of objects, just as the three other theories do. The second disadvantage is that four-dimensionalism has difficulty distinguishing objects that are co-located for the entirety of their existence.

3.2.2 Four-dimensional solutions

The first advantage of four-dimensionalism—that it does not have to posit a plurality of kinds of things—is primarily an advantage relative to Fine's theory of composition operators (Section 3.4). That theory, as we will see, produces an incredible plurality, not only of things in general, but of different kinds of things. Four-dimensional things are simply mereological sums, in the classical sense.

The second advantage of four-dimensionalism is that, unlike the three theories presented below, it does not posit co-located objects. The theories of Fine and Hovda,

in order to distinguish objects like the statue and the lump—objects that (currently) share all their parts—have to posit co-located objects. But on the four-dimensional picture, this is unnecessary. Suppose that the lump is formed on Monday, and the statue on Tuesday. The lump therefore has temporal parts that are "earlier" than any of the statue's parts. They do not share all their parts, and so are not co-located. It is true that they share all their Tuesday parts; the temporal slices that compose the lump on Tuesday are the same that compose the statue on Tuesday. But they share parts only at certain times. They do not share all their parts at all times.

This leads into a problem for four-dimensionalism, however; it does not appear to let us differentiate a statue and a lump that *always* share their parts.

3.2.3 Problems for four-dimensionalism

There are two disadvantages to four-dimensional universalism. The first is that while four-dimensionalism does not posit a plurality of kinds of things or a plurality of co-located objects, there is still a sense in which it is a "plurality theory". Any given temporal slice is part of a plurality of things. When I point at my chair, I am also pointing at a thing composed of my chair and a black bear from the 1800s, as well as a thing composed of my chair and the head of Thomas Aquinas. All those things (and *many* more) are currently located in the very same place.

This is certainly bizarre, and it makes four-dimensionalism somewhat unpalatable, but it does not *disprove* the theory. Unfortunately there is another disadvantage to four-dimensionalism, one that does threaten it as a theory.

The second disadvantage of four-dimensionalism is that it has trouble distinguishing between objects that are co-located for the entirety of their existence. Suppose that I have two lumps of clay; I form one into the top half of a figure and I shape the other into the bottom half. Having done this, I stick the two pieces of clay together, forming a statue. When I do this I also form a new, larger lump of clay. I admire the statue and the lump for a little while, then smash them with a hammer.

Let S be the thing composed of all the statue-slices. Let L be the thing composed of all the larger-lump-slices. S and L are mereological sums composed of the very same parts; $S = L$. But if the statue had been squashed instead of smashed, L would have survived; but S would not have survived being squashed. L has a property that S does not—the property *could survive being squashed*—and therefore $S \neq L$. This is a problem.

The four-dimensionalist could say that the lump would not have survived being

squashed, or that the statue would have survived. Since there is only one thing under investigation (since $S = L$), that thing must have a consistent set of properties. It can't be such that it would both survive and not survive a squashing. So the four-dimensionalist will have to say that one of our two intuitions is wrong.

But there is another, related, difficulty. In the case just presented, the statue is the lump ($S = L$). But suppose there is a situation exactly like the one just presented, but in which the statue and lump are first squashed, then smashed. In this case, we are inclined to say that the lump L' continues to exist after the squashing. Its parts include temporal slices of the clay after it has been squashed. In the case of the statue S', however, we are inclined to say that the statue does not have any temporal parts after the squashing. The statue is destroyed when it is squashed. Since L' and S' have different parts, they are not the same thing; $L' \neq S'$. The four-dimensionalist is committed to the claim that whether there is one thing (a statue that is also a lump) or two things (a statue and a lump) on the table, and what that thing's (or those things') modal properties are depends upon whether I squash or smash it. This seems highly implausible. By choosing to squash the statue rather than smash it, do I thereby *make it the case* that there were two things, rather than one?

The four-dimensionalist will object that, since the future already exists, it was *already* true that there were two things (it has always been true). But claiming that it is already the case that I will squash the statue seems to commit the four-dimensionalist to some version of *determinism*—the thesis that, roughly, the events of the future are determined, or fixed, to occur. This may well be true, but it is largely an empirical hypothesis; to rely on it here would be unwise. (If the four-dimensionalist does not assume determinism, and instead assumes that the future is undetermined, they will presumably have to say that, since it is indeterminate whether or not I will squash the statue, the number of things on the table is therefore also indeterminate. This seems even worse.)

Four-dimensionalism allows for the resolution of a number of puzzles related to ordinary things. It does not resolve everything, however, and it introduces a few problems of its own. Moreover, it requires a number of controversial assumptions: the theory of temporal parts, eternalism, and possibly determinism. I will therefore set aside four-dimensionalism, and suppose henceforth that the past and future do not exist, and that things do not have temporal parts.

In the section that follows, I will examine the first of two theories by Kit Fine that attempt to explain how things can change their parts.

3.3 First theory: rigid and variable embodiments

Kit Fine's theory of embodiments is presented in his paper "Things and their parts" (1999). His objective in this paper is to present a satisfactory account of how things can change their parts over time.

In Section 3.1.3 I explained why, given three assumptions, mereological sums do not change their parts. One of those assumptions is that a mereological sum exists whenever the things that compose it exist. The mereological sum of a, b, c exists whenever (and wherever) a, b, c exist.

Now, however, there are some things that do not seem to obey this assumption. Take a ham sandwich, for example. It has two slices of bread and a piece of ham as parts. It seems to fit the definition of a mereological sum. But

> the sum $a+b+c+\ldots$ will exist *whenever* any of its components $a, b, c, \ldots$ exists (just as it is located, at any time, *wherever* any of its components are located). It follows that, under the proposed analysis of the ham sandwich, it will exist as soon as the piece of ham or either slice of bread exists. Yet surely this is not so. Surely the ham sandwich will not exist until the ham is actually placed between the two slices of bread. After all, one *makes* a ham sandwich; and to make something is to bring into existence something that formerly did not exist (Fine 1999, 62).

If it is true that the sandwich comes into existence only when the bread and meat are put together, then the sandwich cannot be a mereological sum in the classical sense. How, then, is it composed?

3.3.1 Composition relations

Fine's suggestion is that things like the sandwich be seen not merely as the sum of the bread and meat, but as an object composed of the bread and the meat *standing in the relation of betweenness*. Likewise, a bunch of flowers is not merely the sum of the individual flowers, but as an object composed of the flowers *in the relation of being bunched*:

> Given objects $a, b, c, \ldots$ and given a relation R that may hold or fail to hold of those objects at any given time, we suppose that there is a new object—what one may call 'the objects $a, b, c, \ldots$ in the relation R.' So, for example, given some flowers and given the relation of being bunched, there will be a new object—the flowers in the relation of being bunched (what might ordinarily be called a 'bunch of flowers') (1999, 65).

Fine can be understood here to be modifying our existence assumption—the assumption (1) that a sum exists whenever its parts do. Instead, something composed of certain objects and a relation—a composite object that Fine calls a *rigid embodiment*—exists whenever its parts stand in the given relation.

But rigid embodiments cannot change their parts. The sandwich is *destroyed* when its parts fail to stand in the correct relation. Fine must introduce another kind of thing—a *variable embodiment*—in order to make it possible for things to change their parts. In doing so, he allows for (very many) co-located objects.

3.3.2 How things change their parts

Given certain assumptions, classical mereological sums cannot change their parts. Given the same assumptions, rigid embodiments cannot change their parts either.

Fine stipulates that a thing x composed of a, b, c in relation R exists at a time t if and only if R holds of a, b, c at t. If x exists at t_1, it is because a, b, c are in R at that time. If at t_2, a, b, c are not in R—say that only b, c are in that relation—then x does not exist. This is the analogue of our assumption (1) that a sum exists whenever its parts do.

If our assumption (2) of universalism holds here, then for any things (zs) in a relation R, there is an object composed of the zs in that relation. Suppose, as above, that there is an object x composed of a, b, c in relation R. If a, b alone also stand in R, then, *if* composition is unrestricted, there is also an object y composed of a, b in relation R. Objects x and y have different parts and are therefore different things.

If our assumption (3) holds, then there is at most one thing composed of a, b in relation R.

Now suppose c is destroyed or somehow no longer stands in R with a, b. If we assume that composition is unrestricted and that the object composed of a, b in R before c is destroyed is identical with the object composed of a, b in R after c is destroyed, then we cannot say that x has lost a part and is now composed of a, b in R. There is already an object composed of a, b in R—the object y. If we said that x has lost a part, we would be committed to the claim that $x = y$, even though previously $x \neq y$. If y exists, then we must say that x ceases to exist when it loses a part (c).

(Here I am assuming that relations like R are *not* fixed polyadic relations. That is, there is not one relation R that can apply to three things—the schema being $Rxyz$—and a different relation R' that can apply to two things—Rxy. Rather, I am

assuming that relations like R have a single variable "slot" that can accommodate *plural variables*. The schema is something like Rxs, where xs is a plural variable that can designate any number of things. Therefore it is the *same* relation R that applies to a, b and to a, b, c.)

Therefore Fine has a separate proposal for objects that can change their parts. These things Fine calls *variable embodiments*. Variable embodiments have, at different times, different *rigid* embodiments as parts. What part a variable embodiment has at a given time is determined by a function that assigns rigid embodiments to times. Fine illustrates this with the water of a river. There is the quantity of water that currently composes the river, but there is also the "variable" water, that consists of different quantities of water at different times:

> I take it that the water in the river in the second sense—what we may call the variable water—is now constituted by one quantity of water and now by another. But what is the variable water? . . .
>
> I would like to take the bold step of supposing that there is here a hitherto unrecognized method by which wholes may be formed from parts. In the case of the variable water, there is a function, or "principle," that determines which quantity of water constitutes the variable water at any given time (1999, 68).

In effect, *the water* of the river—the thing that is the variable embodiment—is composed of other things—rigid embodiments that are in turn composed of water molecules. The water molecules are not directly part of *the water*, but they are parts of its parts.

3.3.3 Problems with the first theory

There are two problems with this theory. First, it has the consequence that relations (like that of being bunched) are actually *parts* of things (the relation of being bunched is part of the bunch of flowers). Second, it produces a plurality of co-located objects.

It is certainly not true that a relation is part of a bunch of flowers in the same way that the flowers are part of the bunch. Fine recognizes this; it constitutes one of his objections to a possible extension of classical mereology. He observes that one could claim that mereological sums are made up of things like bread and meat as well as *tropes*, or relations. But

> even if we grant that the trope is a part of the sandwich, it is hard to believe that it is a part in the same way as the standard ingredients. Thus we should not regard the sandwich as a straightforward mereological sum

> of s_1, s_2, h, and r, but in some other way that has yet to be made clear (Fine 1999, 64).

Fine's theory of embodiments recognizes relations as parts of things, but in a different way than things like slices of bread are parts of things. This is suggested by his notation for a rigid embodiment of a, b, and c in relation R: $a, b, c/R$. But this does not explain in *what* way relations are parts of things. Moreover, it just seems false that the relation of being bunched *is* a part of the bunch of flowers in any way. The relation *holds* of the flowers, and it explains why the flowers are a bunch, but that does not convince me that the relation is in fact part of the bunch. In Section 3.1.2 we saw examples of many different kinds of things that have many different kinds of parts. Tennis matches have sets, sets have members, poems have stanzas, stanzas have lines, lines have words. But *relations* were not included in this catalog of parts. A theory that has the consequence that relations are parts is, at least, unintuitive. (Fine's theory can be modified to avoid this consequence, as we will see in Section 3.4.)

The second problem with Fine's theory is that which affects all three theories: it posits a plurality of co-located objects, violating our assumption (3) of non-co-location. Every variable embodiment is composed at different times of different rigid embodiments. At any given time, therefore, a variable embodiment and the rigid embodiment that composes it at that time occupy the very same location.

(Because Fine claims that rigid and variable embodiments are different *kinds* of things, he is not required to deny *uniqueness*. The parts of the rigid embodiments (including itself) are parts of it in a different *way* than the parts of the variable embodiment are part of it. It remains true that for any parts, there is one whole composed of them, but Fine considers this statement ambiguous: there are at least two different *senses* of 'part' and 'compose' that might be meant here, corresponding to the rigid and variable notions.)

Fine illustrates how his theory entails that even people are co-located with many other things:

> An especially important class of cases are those in which the principle of embodiment is a property P rather than a polyadic relation R. The rigid embodiment is then of the form 'a/P' and may be read as 'a qua P' or as 'a under the description P.' An airline passenger, for example, is not the same as the person who is the passenger since, in counting the passengers who pass through an airport on a given weekend, we may legitimately count the same person several times. This therefore suggests that we should take an airline passenger to be someone under the description of

> being flown on such and such a flight. And similarly for mayors and judges and other "personages" of this sort (1999, 67–68).

One might take this to be an unacceptable consequence of Fine's theory. For persons can think, and airline passengers can think as well. Are we therefore being asked to accept that there are at least *two* thinking things in every seat on the airplane?

This objection, however, comes from confusing rigid and variable embodiments. Rigid embodiments, like the person-as-passenger, cannot change their parts. As soon as the person-as-passenger loses *any* of its parts, it ceases to exist. I think Fine would say that rigid embodiments, because they cannot undergo change, cannot properly be said to think. Things that *do* think are variable embodiments; for example, the human person that at one time is composed of some of the same parts as the person-as-passenger (but not all of the same parts, for the person-as-passenger has a relation as a part). If it is only variable embodiments that can think, then a variable embodiment overlapped by one or more rigid embodiments cannot result in co-located thinkers.

Moreover, if functions are identified by their assignments of things to times—that is, extensionally—then there may not be *always* co-located variable embodiments. If there are no two functions that assign the very same things to the very same times, then there can be no co-located thinkers. (But pluralities of variable embodiments will overlap at any given time.)

However, even if there cannot be co-located thinkers—thinkers who completely overlap—why can't there be partially overlapping thinkers? For example, Fine's theory may well predict the existence of a variable embodiment that is composed of the various rigid embodiments of Alex-as-passenger during a particular flight. (That is, since I change some of my parts during a flight, there are a number of different rigid embodiments that may be called Alex-as-passenger. Then the question is whether there is a variable embodiment composed of each of these rigid embodiments in turn.) If there is such a variable embodiment, why shouldn't we expect *it* to think?

I think Fine will have to simply deny that such a thing could think. There are a number of reasons that may be appealed to: the thing does not have the right sort of history (it is at best a "restriction" of me—the real thinking thing), or there is a better candidate (me) for being the one and only thinking thing in that location. (But I think as a result of the functioning of my brain; my brain is also part of the passenger. How can only one of us think? I will raise this objection against Hovda as well in Section 3.5.1.)

In any case, it seems simply bizarre that by boarding an airplane I thereby cause

a new thing to come into existence. If I become a judge, then according to Fine, a new *thing* has come into existence. Why not just say that a description is true of me that was once not true of me? For

> suppose that Mary got married at noon. Her marrying did not make a wife come into existence: it merely made her become a wife. Your reaching the age of 20 did not make a teenager go out of existence; it merely made you cease to be a teenager. And so on (Thomson 1998, 151).

The consequence of Fine's theory that passengers are things distinct from people, coupled with the "explosion of reality" that occurs simultaneously, is cause for concern. I have in fact understated the size of the explosion, for in addition to the pluralities of co-located rigid embodiments, there is likely also a plurality of variable embodiments, each corresponding to a possible function.

But these consequences are not limited to our first theory. The second theory, as we will see, results in a similar explosion.

3.4 Second theory: composition operators

Recently Kit Fine has proposed a new analysis of things. In "Toward a theory of part" (2010), he suggests that not only are there a plurality of mereological sums, but that there is a plurality of *kinds of things*; sums are only one kind in a vast "mereological firmament". Fine's theory is extremely interesting, but ultimately it faces a particularly acute version of the problem of co-location that faces the other two theories. For while Fine's theory of embodiments and Hovda's theory of tensed mereology (Section 3.5) predict a plurality of overlapping things, Fine's theory of composition operators predicts, in addition, a plurality of *kinds* of things.

Fine's new theory has a number of connections with his theory of *rigid embodiments* (see Section 3.3.1). That theory posited *relations* as parts of things, but as parts in a different *way*. The relation of being bunched was supposed to be part of the bunch of flowers, but in a different way than the flowers themselves are part of the bunch. But it was not explained *how* something can have different parts in different ways.

One might suppose that if we reject Fine's theory of embodiments, we can reject this pluralist conception of parthood. But as we saw in Section 3.1.2, there are independent grounds for thinking that there are different ways of being a part. The way that letters are parts of words is different from the way members are parts of

sets, and both are different from the way things are parts of sums. Fine's new theory begins by defending this pluralist claim about parthood.

3.4.1 Problems for pluralists

There are a number of objections to Fine's pluralism about parthood. The first objection is that while parthood is supposed to be transitive, the membership relation of sets is not. The letter 'n' is a member of the set {'n',{'n','o'}}, but 'o' is not. The objection claims that sets have *members*, not parts, and that Fine has confused the two.

But while it is true that the membership relation is not the parthood relation, this is no reason to think that sets do not have parts. A given set will have certain members—the xs—and certain parts—the ys—and only sometimes will the xs and the ys be the very same things. The set {'n',{'n','o'}} has two members but three parts. The parthood relation for sets can even be defined in set-theoretic terms:

> It may well be thought that the way in which a member is a part of a set is given, not by the membership relation itself, but by the ancestral of the membership relation, where this is the relation that holds between x and y when x is a member of y or a member of a member of y or a member of a member of a member of y, and so on (Fine 2010, 563).

A second objection is that talk of parthood in connection with things like sets is somehow metaphorical or non-literal. We saw above that van Inwagen admits that many different things are said to have parts. However, he qualifies this in two ways. First, he seems to have doubts (or at least is sympathetic with those who have doubts) as to whether the non-material things that are said to have parts really exist:

> The word 'part' is applied to things that are clearly *not* material objects—or at least it is on the assumption that these things really exist and that apparent reference to them is not a mere manner of speaking (van Inwagen 1990, 19).

If there are no such things as tennis matches or poems or papers, then of course they do not have parts. But I think it is obviously true that there are such things. This being so, what does it mean to say that they have parts? This is where van Inwagen's second qualification comes in. For he suggests not only that the parts of tennis matches and poems are parts in a different way than are the parts of a table, but that these different relations of parthood are only tenuously connected. Van Inwagen says that the various relations of parthood (if such there be) are connected only by

the "unity of analogy" (1990, 19). If the only similarity between the parthood relation for poems and the parthood relation for chairs is that they share the "analogy" of parthood, then is there anything important or interesting about "parts" of poems? Is the parthood relation for sets likewise only interesting because of the analogy with the parthood relation for chairs?

At least in the case of parthood for sets, the notion does not appear to be wholly metaphorical:

> In the case of set-membership, there would appear to be nothing that might plausibly be taken to indicate that the talk of part-whole is not to be taken literally. A set is indeed composed of or built up from its members, and we should add that we may meaningfully talk—and in the intended way—of *replacing* one member of a set with another. Thus Aristotle in the set {Plato, Aristotle} may be replaced with Socrates to obtain the set {Plato, Socrates}, with the given set becoming a different set from what it was. In the case of sets, our conception of members as parts seems to extend all the way (Fine 2010, 564).

But the second worry raised by van Inwagen remains. Why should we think that there is any *real* similarity between these different parthood relations, other than the fact that we call them all "parthood"?

3.4.2 Operationalism

Fine's doctrine of *operationalism* helps answer this worry. Various *operations* produce different things—mereological summation produces mereological sums or fusions, the set-builder produces sets, and so forth. Parts are therefore *things* that have been "combined", through one or more such operations, into a single *thing*. What is common to all parthood relations is that from each set of parts is produced a *whole* by means of a composition operator. From parts (letters, atoms) are made something else (a word, a set, a chair). What ties together all the ways of being a part is that they are involved in a composition operation that produces a single thing from a number of things:

> In formulating the principles of mereology, it has been usual to take the relation of part-whole or some associated relation (such as overlap) as primitive. But I believe that, in formulating a more general theory, it is important to take the operation of composition as primitive rather than the more familiar relation of part-whole. In the case of classical mereology, the operation of composition will take some objects into the sum or fusion of those objects, while, in the set-theoretic case, it will take some objects

> into the set of those objects; and, in general, the operation of composition will be the characteristic means (summation, set-builder, and so on) by which a given kind of whole is formed from its parts (Fine 2010, 565).

Each way of being a part can then be defined in terms of the related composition operation:

> Once given a compositional operation, a corresponding relation of part may be defined in two steps. We say first that x is a *component* of y if y is the result of applying $\sum$ to x or to x and some other objects. In other words, y should be of the form $\sum(x_1, x_2, \ldots)$, where at least one of x_1, $x_2, \ldots$ is x. Thus when $\sum$ is mereological summation the components of an object will be mere parts, and where $\sum$ is the set-builder the components of an object will be its members. We may then define x to be a part of y if there is a sequence of objects x_1, $x_2, \ldots x_n$, $n > 0$, for which $x = x_1$, $y = x_n$, and x_i is a component of x_{i+1} for $i = 1, 2, \ldots, n-1$. The parts of an object are the object itself, or its components, or the components of the components, and so on (Fine 2010, 567–568).

The parthood relation for mereological sums can therefore be shown to exhibit reflexivity, transitivity and anti-symmetry (Fine 2010, 568):

Reflexivity Each object is a part of itself.

Transitivity If x is a part of y and y of z, then x is a part of z.

Anti-symmetry x is a part of y and y of x only when $x = y$.

But not all definitions of parthood that issue from a composition operator will exhibit these features:

> When the underlying operation is summation, each object will be a part of itself, since the unit sum of any object is the object itself, but when the underlying operation is the set-builder, no object will be a part of itself, since no object is ever an ancestral member of itself (Fine 2010, 569).

In every case, how some thing is part of a whole (if it is) will depend on the composition operation that produced the whole. Other properties, both of a whole and its parts, will be determined by the nature of the composition operator that produced it. Each composition operation will, according to Fine, be governed by various principles. The "formal principles" govern when composition occurs and when two products of a composition operation are identical. The "material principles" govern both how the object "sits" in space and time—whether it has spatial and/or temporal parts (see Section 3.2) or not—and the specific characteristics of the object (such as its color and weight).

3.4.3 Fine's pluralist account of classical mereology

Of the principles sketched above, Fine gives most attention to the identity conditions for composition operations. The composition operation used as a paradigm is the summation operation of classical mereology. Fine's exposition of identity conditions for sums relies on the notion of *regularity*:

> Call an identity condition $s = t$ *regular* if the variables appearing in s and in t are the same. Thus $\sum(x, y) = \sum(y, x)$ is regular while $\sum(x, y) = x$ is not (2010, 572).

With this notion in hand, Fine proposes this condition for identity of sums:

Summative Identity $s = t$ whenever '$s = t$' is a regular identity (2010, 572).

One particularly interesting aspect of this condition is that it entails four more principles of the summation operation:

Absorption $\sum(\ldots, x, x, \ldots, \ldots, y, y, \ldots, \ldots = \sum(\ldots, x, \ldots, y, \ldots)$;

Collapse $\sum(x) = x$;

Leveling $\sum(\ldots, \sum(x, y, z, \ldots), \ldots, \sum(u, v, w, \ldots), \ldots)$
$= \sum(\ldots, x, y, z, \ldots, \ldots, u, v, w, \ldots, \ldots)$;

Permutation $\sum(x, y, z, \ldots) = \sum(y, z, x, \ldots)$ (and similarly for all other permutations) (Fine 2010, 573).

We can define other compositional identity criteria (e.g., sequences) in terms of which of these principles apply to their compositional operation. But we may also devise new principles by which we may then define new types of composition:

> We should note that there would appear to be no good reason to require that the defining principles for the various operations should be limited to the particular principles (C [collapse], L [leveling], A [absorption], and P [permutation]) that we used in characterizing sums; for any set of regular identities would appear to be equally well suited to defining a basic form of composition, so long as they conform to Anti-cyclicity. Indeed, I would conjecture that any such set of principles in fact will correspond to a form of composition and a corresponding form of whole. How the resulting forms of composition and whole might be organized is an interesting question, but it should be apparent that the approach will lead to an infinitude of forms of composition, each differing from one another in how exactly the identity of the resulting wholes is to be determined. (Fine 2010, 575–576).

It is at this point that the importance of Fine's theory becomes obvious. In Section 2.7 I argued for universalism, but according to Fine's new theory, there are many different *kinds* of universalism. One might be committed to the existence of dogbushes, and so to unrestricted *mereological* composition, but deny the existence of some other kind of thing (for example, groups—see Section 3.6). Or one might defend unrestricted composition of other kinds of things while claiming a restriction on mereological composition.

3.4.4 Composition operators and time

In Fine's theory of embodiments (Section 3.3) he recognizes at least two kinds of things: rigid and variable embodiments. Rigid embodiments have their parts timelessly. They exist when and only when their parts exist, and at all times during which they exist, they have the same parts. Rigid embodiments, therefore, cannot change their parts. Variable embodiments *can* change their parts, however; what rigid embodiment a given variable embodiment is composed of at a given time is determined by a function.

Fine's account of composition operators explains how the create things that, like rigid embodiments, do not (and presumably cannot) change their parts. He does not address how composition operators might produce things that, like variable embodiments, *can* change their parts over time; he opens his paper on composition operators by saying that "it is not [his] aim to discuss either the notion of relative part or its connection with the absolute notion" (2010, 559). However, I think we can imagine a few ways in which Fine's theory of composition operators might be adapted to relative or temporary parthood.

One way to adapt Fine's new theory so as to allow things to change their parts would be to think of the mereological sum operator (the sum-builder) as operating *not* on ordinary things but on things-at-times. By "things-at-times" I mean *temporal slices* of things. For example, a temporal slice of a chair is an object that resembles a chair but has no temporal duration. The sum-builder for a chair would take such temporal slices and compose from them a chair. The chair would have temporal duration and would be capable of changing its parts. (As in the four-dimensional picture presented in Section 3.2.1, for a thing to gain or lose some part x would be analyzed as: having some but not all of x's temporal parts as parts.)

One problem with this proposal is that it requires temporal parts (see Section 3.2). For it seems that composition operators like the sum-builder operate on *things*.

If sum-builder can operate on things-at-times, then we commit ourselves to the claim that things-at-times are *things*. And what things could they be but temporal parts of other things?

If we don't want to presuppose temporal parts, the sum-builder has to be somehow *dynamic*. It can't just take things, compose them and be done—it has to *add and remove things over time*.

Making sense of a dynamic operator might allow us to avoid presupposing *eternalism* as well. If the sum-builder composes a chair "in one go" out of different temporal slices, then the future slices would have to already exist in some sense. How else could the sum-builder operate on them?

One way to make sense of a dynamic operator is by relativizing the sum-builder to times. We can think of the operator as taking some things at a time and producing a sum: $G = \sum_t(S)$. (There are two interpretations of $\sum_t$: we might say that the composition operator (re-)produces a sum at a number of different times t, or we might say that there is a *different* composition operator at each time t. I will suppose that the former is correct.)

A second way to make sense of a dynamic operator is the way that Fine makes sense of variable embodiments. Variable embodiments were composed of different things at different times according to a function. Likewise, a composition operator that produces a thing that has different parts might do so by means of a function. Rather than operating directly on some things, the operator could apply to a function. Instead of

$$\sum(a, b, c, \ldots)$$

we would have something like this:

$$\sum(f)$$

On this understanding of a "dynamic operator", the only *component* (see Section 3.4.2) of the object is the function, but at any given time it has as parts (in some sense) whatever objects the function assigns to that time.

On either understanding of the "dynamic operator", things can change their parts, but things can (and will) also be co-located.

3.4.5 Problems with temporally relativized operators

Suppose we take the first suggestion and relativize the sum-builder to a time. The primary problem with this is that it leads to a great plurality of co-located objects. What is particularly objectionable in this case is that the objects are all of different *kinds*.

To see why this is so, let us suppose that ordinary things like chairs and statues are produced by means of the temporally relativized sum-builder $\sum_{s_t}$. A statue might then be produced thus:

$$ST = \sum_{s_t}(a, b, c, \ldots)$$

Now since we are assuming that universalism—assumption (2)—is true, there is an object composed of all the parts of the statue except for the left hand:

$$LF = \sum_{s_t}(a, b, \ldots)$$

At t, these are obviously different things. Since ST and LF have different parts, $ST \neq LF$. But now suppose the statue changes its parts—by losing its left hand—while the lump of clay LF remains the same. We will have these two objects:

$$ST = \sum_{s_t}(a, b, c, \ldots)$$

$$LF = \sum_{s_t}(a, b, \ldots)$$

But now we are committed to it being the case that $ST = LF$. Identity is not a temporary or contingent relation. If any two things are actually the same thing, they are necessarily so. That is, $ST = LF \rightarrow \Box ST = LF$. It cannot ever be the case that $ST \neq LF$. But at t, this was apparently so.

The way to avoid this contradiction is to deny that the statue and the lump are produced by the same composition operator. The statue must be seen to be the product of the "statue-builder"—$\sum_{st_t}$—and the lump the "lump-builder"—$\sum_{lump_t}$.

But the products of different operators are of different *kinds*. The statue and the lump, therefore, are different kinds of things—to say that both are "physical objects" or "ordinary things" is simply to bring two heterogeneous kinds under one label.

Thus, in the same fashion as Fine's theory of embodiments, we find ourselves

rejecting non-co-location—assumption (3)—without denying uniqueness. Because things that are co-located (like the statue and lump) are different kinds of things, they have their parts in different ways. When we say "These things are parts of the statue" and "These things are parts of the lump", we are using 'parts' differently in each case.

But just as with Fine's previous theory, the theory of composition operators creates an "explosion of reality", with the additional strangeness of a plurality of *kinds* of things. Since we have allowed that the statue and the lump may be different things composed of the same sums, why stop there? We can introduce more composition operators that produce distinct objects. Where we see a statue and a lump, why not suppose that there is a great plurality of objects, each of a different kind and with slightly different properties?

This is not a particularly attractive position, but it is not indefensible (see Bennett (2004, Section 4)). Since we have already allowed a plurality of scattered objects like archipelagos and dogbushes, why not allow a plurality of co-located objects?

One additional difficulty for this theory is that it is unclear how Fine would avoid there being co-located thinkers. When discussing Fine's theory of embodiments (Section 3.3) we saw that he has to claim that "qua-objects" like airline passengers (people-as-passengers) don't actually think, but that it is nonetheless correct to say that passengers think.

Fine's theory of operators may have to include a similar clause. If the theory is correct, then there will no doubt be many things composed of the same atoms that compose me, but none of them will think. Only I will be thinking. Fine needs an explanation both of why there can only be one thinking thing composed of any given parts—why only one "thinker-builder" can apply to some things—and of what the "thinker-builder" is. What builds me?

3.4.6 Problems with functional operators

The second way that I suggested we make sense of a "dynamic operator" was to understand it as applying not to things but to a single function:

$$G = \sum(f)$$

The function assigns certain things to certain times, so to determine what is part of G at a given time, we appeal to the function: what thing or things does the function assign to that time? In Fine's theory of embodiments (Section 3.3), the things that

composed a variable embodiment V at a given time was the rigid embodiment that is determined by V's function. Non-dynamic operators (Section 3.4.2) produce things that do not change their parts, much as rigid embodiments do not change their parts. The function of a dynamic operator might therefore assign products of non-dynamic operations to times, just as the functions of variable embodiments assign rigid embodiments to times.

The major advantage of this kind of dynamic operator is that it does not result in a plurality of different kinds of things. The statue and the lump can now be built from the same composition operator. That operator, in producing them, will of course be operating on different functions; the "statue function" will assign different pieces of clay to different times than will the "lump function". Since the operator $\sum$ will be operating on two different functions (rather than on the same objects), it will produce two different things.

This version of the dynamic operator also blocks the entailment from co-location to uniqueness. The statue and the lump may be in the same place at the same time, but they do not have all the same parts. The statue has the statue-function as a part, and the lump has the lump-function as a part. (If these functions were not parts, there would be no way to distinguish the statue and the lump.) This version of the dynamic operator therefore treats functions as parts of things, in much the same way as Fine's theory of embodiments treats relations as parts of things. Just as it seems false to say that relations are parts of things (in any sense), so it seems false that functions are parts of things.

Moreover, this version of the dynamic operator still leaves us with a great plurality of objects. Indeed, there seems no principled limit to the functions that might, through an application of a composition operator, give rise to new things. If there is a "statue function" that assigns pieces of clay to times for every moment at which the statue in question exists, then it seems arbitrary to say that there isn't a function that is identical but for its beginning 10 minutes later. If we apply the same operator to *that* function, do we get another thing that overlaps the statue for most of its existence? What about a function that leaves off the first 10.1 minutes? What about a function that assigns Tacitus to 100 AD and my cat to today? Is there a thing that existed momentarily last year, then exists for all of today, then ceases to be?

Another difficulty with relying on functions is that it may also assume eternalism. If the function seeks to assign objects to past or future times, we may be thereby committed to the existence of those past and future objects and times.

Whether we construe the dynamic operator as relative to time or operating on functions, we get an absurd number of co-located things of different kinds. Of course, in addition to this plurality of "dynamic" objects, there is *also* a plurality of "static" objects. This is analogous to the result of Fine's theory of embodiments, with pluralities of both rigid and variable embodiments.

There are enough problems with Fine's theory to encourage us to look for something better. The third theory I will examine has a number of similarities to those of Fine (especially his theory of embodiments), but it has some advantages as well. Unlike previous theories, Hovda's theory of tensed mereology does not have the consequence that relations or functions are parts of things. Nor does not posit a large number of different kinds of things. But it does nonetheless posit what I take to be an objectionable number of overlapping things.

3.5 Third theory: tensed mereology

Paul Hovda has proposed an amended version of classical mereology that presupposes neither eternalism nor presentism, and that allows for mereological sums to change their parts over time. (In his paper "Tensed mereology" (2011) he in fact offers three versions of his theory; I will focus on the first formulation.)

Tensed mereology is similar to Fine's theory of embodiments in at least one important way. According to both theories, some relation or property is required to specify when and where a sum of some things exist. Fine's example was of a bunch of flowers; the flowers compose the bunch when and only when the relation of being bunched holds of them.

Hovda uses 'condition' to cover both relations and properties:

> We will want a "condition" to be an open sentence that may have more than one free variable, *together with a specification of a target variable*. For example, we will want to consider "conditions" like 'y loves x', with 'x' as target. This is because we want to consider, in effect, for each object that might be a value of the variable 'y', the property of being a thing loved by that object. The point of this may be brought out by an example. We want as an instance of the plenitude principle, roughly this: that for every y, if y loves at least one thing, then there is a thing b such that b is a fusion of the condition (with respect to x) 'y loves x' (i.e., a fusion of the condition of being loved by y) (2011, sec. 1.1n2).

With this notion in mind, Hovda replaces classical mereological sums with *diachronic fusions*:

Diachronic fusion An object b is a "diachronic fusion" of a condition if and only if it is always the case that (1) every x that meets the condition is part of b; and (2) every part of b overlaps something that meets the condition (2011, sec. 1.1).

Like Fine, Hovda takes composition to be unrestricted: "every suitable condition has a diachronic fusion (where a condition is suitable iff it is not always empty; i.e., it is suitable iff at some time, at least one thing satisfies it)" (2011, sec. 3.1). Not only does every suitable condition have a diachronic fusion, but "it is always the case that every suitable condition has a diachronic fusion" (2011, sec. 3.1.1). In other words,

- For every condition K,
- if it is ever the case that something satisfies K, then
- there is exactly one thing b such that at at any time t during which anything satisfies K, all the things that satisfy K at t are parts of b at t and all the parts of b at t overlap at least one of the things that satisfies K at t.

This has the welcome consequence that there are no two things that are *always* co-located. However, it does mean that there will be very many things that are co-located at some time or other, and this may cause problems. Things being co-located at a time will cause problems if we make two plausible assumptions about how parts work. These two assumptions are *strong supplementation* and *anti-symmetry*.

Strong supplementation is a common assumption in mereology to the effect that if everything that overlaps one thing overlaps another thing, then the first thing is part of the second. It may be formalized as:

$$\forall x \forall y(\forall z(z \circ x \rightarrow z \circ y) \rightarrow x \leq y)$$

(Here '$x \circ y$' means 'x overlaps y' and '$x \leq y$' means 'x is part of y'.)

Anti-symmetry is the assumption that if two things are parts of each other, it follows that they are really the *same thing*:

$$\forall x \forall y((x \leq y \wedge y \leq x) \rightarrow x = y)$$

At this point, a problem arises:

> Consider a (diachronic) fusion of the condition on x that '(x is Socrates and Socrates is sitting) or (x is Plato and Socrates is not sitting).' Suppose β is such a fusion. Then, when Socrates and Plato are sitting at

> dinner, β exists and it should hold (then) that everything that overlaps Socrates overlaps β and vice-versa. By strong supplementation, Socrates and β then bear $\leq$ to one another. By anti-symmetry, they are then identical. But later, when Socrates stands, β will then (by similar reasoning) be identical with Plato, yet Socrates won't be identical with Plato, so Socrates and β are then non-identical. I take this result to be unacceptable: once identical, always identical, certainly if "both" exist (2011, sec. 3.1.2).

One of our assumptions—strong supplementation or anti-symmetry—must be withdrawn. Hovda chooses to deny anti-symmetry:

> Instead of saying that it is always true that any mutual parts are identical, [we] will say, roughly, that any things that are always mutual parts are identical (Hovda 2011, sec. 3.1.2).

The rejection of anti-symmetry helps to show why Hovda's theory will result in there being, at particular times, many co-located objects. (Fine's theory of embodiments did not have to reject anti-symmetry because his co-located objects did not share all the same parts—they had different relations as parts. Fine's theory of operators did not have to reject anti-symmetry because his "co-located" things had the same parts, but in different ways.)

3.5.1 Problems with the third theory

Hovda's tensed mereology avoids the conclusion that conditions or relations or functions are parts of things. The theory does this, however, only by rejecting our assumption (3) of both non-co-location *and* uniqueness. When Tibbles is sitting, the fusion of the condition of being Tibbles and the fusion of the condition of being Tibbles sitting have all the same parts (in the same sense of 'part'). The two things are distinguished by the fact that it *will be* or *was* the case that they do not share all the same parts.

Like Fine's theory of embodiments, Hovda's theory produces a huge number of things, most (perhaps all) of which are temporarily co-located with other things. For instance, when Tibbles the cat is sitting, there are also an unknown number of other objects co-located with Tibbles: the fusion of the condition of being Tibbles sitting, the fusion of the condition of being Tibbles while less than 3 years old, the fusion of the condition of being Tibbles with a full stomach, etc. We should therefore pose to Hovda the same objection, by Thomson, that we posed to Fine's theory of embodiments in Section 3.3.3: is it really true that when a cat sits, it thereby comes

to pass that a new thing (a sitting-cat) comes into existence? When (if) I graduate college, does a college-graduate pop into being?

One might object further that Hovda's theory results in temporarily co-located thinkers, which would be a grave objection indeed. We should all agree that the object that fuses the condition of being Tibbles surely thinks. How, then can the object that fuses the condition of being a sitting cat *not* think? Like Fine in Section 3.3.3, Hovda must reply that the fusion of the condition of being Tibbles sitting is just not the kind of thing that can think.

It is not obviously false that the fusion of being a sitting cat cannot think, but what about the fusion of being a *thinking* cat? That is, can the fusion of being Tibbles while thinking itself think? I am inclined to think so.

Hovda could object that this thing is identical with the fusion of the condition of being Tibbles. We saw above that any "two" diachronic fusions that always share the same parts are really the very same thing. But is it true that Tibbles is *always* thinking? Tibbles probably does not think when unconscious (and not dreaming). Moreover, depending on when the life of Tibbles begins, there may be a period in which Tibbles *can't* think; for example, while a fetus.

If one wants to quibble about whether or how cats think, we can run the same argument with people. There is a fusion of the condition of being Alex; this fusion is me, a thinking thing. But there is also the condition of being Alex thinking.

It might seem that *by definition* this thing thinks; after all, the condition that is fused makes direct reference to thinking. But it is important to keep in mind that "the formal theories behind the idea of a fusion make no mention of change, or its absence, or of the essential natures of [fusions]" (Hovda 2011, sec. 1). The condition being fused merely picks out the objects that satisfy it. Moreover, any two fusions which always have the same parts are identical; if it was true that we exist when and only when we think, the fusion of the condition of being Alex thinking would *be* the fusion of the condition of being Alex.

Nonetheless there is reason to think that the fusion of the condition of being Alex thinking *does* think. At any time during which this fusion exists, it has all the same parts as I—the fusion of the condition of being Alex—have. If I think, it seems that this is as a result of the functioning of my brain; and my brain is also part of the fusion of the condition of being me thinking. How can only one of us think? If we are not to have co-located thinkers, we must deny that if a thing is thinking at a given time, it is in virtue of the structure or functioning of its parts at that time. We must instead say that it is in virtue of its history (only the fusion of the condition of being

Alex is a *human*) or other properties.

There may be a satisfactory reply here, one that allows Hovda to avoid co-located thinkers. But his theory still entails a curious number of overlapping things. A theory that gave us fewer would, I think, be better.

3.6 Does the Supreme Court exist?

These three theories are bizarre—they predict a huge number of co-located things always popping into and out of existence. In the case of Fine's theory of composition operators (Section 3.4), there may be a swarm of different kinds of things as well.

But bizarre as this is, there are some reasons to adopt such a theory. Not only does it appear to follow from other theoretical assumptions (universalism, change of parts, the negation of four-dimensionalism), but it allows us to account for certain aspects of ordinary belief. For example, the three theories we have examined can help us describe the existence of *groups* better than can the theory of classical mereology alone.

3.6.1 What's a group?

Groups, as I will understand them, are things that have other things as members. Families, sports teams, support groups, and committees are all examples of groups.

But why should we suppose that groups are *things*? For example, one might claim that we use 'the Dunns' to refer *plurally* to me and the other members of my family. I say things like "The Dunns are fine people"; the term obviously does not function as a singular term. The suggestion is that 'the crew' behaves similarly. When I say that the crew exists, it would then *not* follow that there is a *thing* composed of the crewmembers. Saying "The crew exists" would instead be equivalent to saying "The crewmembers all exist".

I do not think that this a plausible claim. Recall the analogy I tried to draw between 'the crew' and 'the Dunns'. On closer inspection, this analogy appears weak. A stronger analogy would be between a term like 'the crew' and a term like 'the Dunn family'. 'The Dunn family' is *not* a plural referring expression. It is used to refer to a *thing*. If I talk about the Dunn family, I will say things like "The Dunn family is waning", or "The Dunn family must regain its political power". The term 'the Dunn family' is a singular term that designates a thing—the family.

'The crew' appears to behave like 'the Dunn family' and not like 'the Dunns'. We

say things like "There is a skeleton crew on board", or "The crew is small for such a large ship", and "The crew is abandoning the ship". We so also say things like "The crew *are* abandoning the ship", but this may be a case of *non-literal* speech; 'the crew' is being used non-literally to refer to the crewmembers. If this is not non-literal speech, then it seems most likely that 'the crew' is *ambiguous*: it can be used to refer either to *the crew* or to the crew*members*. In the former case, 'the crew' is used as a singular term.

Similar considerations apply to terms like 'team' as well. 'The Reed College women's rugby team' is a singular term, for it behaves in the same ways as do 'the crew' and 'the Dunn family'. We say things like "The Reed College women's rugby team is going to win", or "The Reed College women's rugby team is in Seattle this weekend". However, team names are often used (whether non-literally or not) to refer to the team-members, rather than to the team itself. This is often due to pluralized team names. The Reed College women's rugby team is called 'The Badass Sparkle Princesses'. This leads us to say things like "The Badass Sparkle Princesses are on a losing streak". Here we are led by the plural construction to—perhaps unconsciously—use the term to refer not to the team itself but to the players. The Badass Sparkle Princesses *is* a rugby team, but it is far more natural to say that the Badass Sparkle Princesses are rugby players.

Yet even if it is agreed that groups are things, why shouldn't we think they are just sets, or sums? Why suppose that there is another kind of thing?

3.6.2 Groups and sets

I have suggested that families, crews, and other groups are, strictly speaking, things. But one might object that there is no need to suppose that groups are some special *kind* of thing; we can identify families, crews, courts, etc. with *sets*, and avoid the "ontological clutter" that would result from the introduction of groups. Groups, it may be said, are really just sets. When we speak of a group of people, we are actually referring to the set of which they are members.

But there are some reasons why it seems incorrect to identify groups with sets. Take the Supreme Court. It seems that any attempt to identify the Supreme Court with the set of the Supreme Court justices will not succeed. This is because the membership of the Supreme Court changes over time, while the members of a set do not. The set containing the 1990 justices is a *different* set from the set containing the 2012 justices, but the 2012 Supreme Court is not a different entity than the 1990

Court. (We may of course say things like "it's a different court now", but by that we mean only that it is composed of different people, and so may rule differently—note that we do *not* say "it's a different Court now".)

In Section 4.1 I will re-examine these arguments against identifying groups with sets. But let us suppose for now that they are correct.

3.6.3 Groups and sums

Even if it is granted that groups such as the Supreme Court are not sets, it may be objected that groups are therefore mereological sums (see Section 3.1.1), like chairs and people. But it seems that

> membership in the Supreme Court is very different from the part-whole relation on material objects. The part-whole relation on material objects is a transitive relation. Thus if one identified the Supreme Court with a material object and Justice Breyer with a part of it, then one would be forced to conclude that Justice Breyer's arm must be a part of the Supreme Court as well. Yet, it is plain that Justice Breyer's arm is neither a part nor a member of the Supreme Court (Uzquiano 2004, 136–137).

If we are going to attempt to account for groups with Fine's theory of embodiments (Section 3.3) or Hovda's theory of tensed mereology (Section 3.5), we must accept this strange result, and identify groups with sums. But if we adopt Fine's theory of composition operators (Section 3.4), we do not need to identify groups with either sets or sums.

According to Fine's theory of embodiments, when we say "The Supreme Court has become more diverse over time" we are referring to a variable embodiment that is composed of different rigid embodiments at different times. These rigid embodiments are things composed of justices (for example, Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, and Breyer) in a certain relation (that of being part of the Supreme Court). The rigid embodiment $S =$ (Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, Breyer)$/R$ exists when and only when those justices stand in that relation; when Rehnquist died, S ceased to exist. But the variable embodiment that is the Supreme Court did not cease to exist; it was simply no longer composed of *that* rigid embodiment.

According to Hovda's mereology, the Supreme Court is the diachronic fusion of the condition of being the Supreme Court. It is a scattered object that overlaps the individual justices as well as other things at various times (like the fusion of the

condition of being Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, or Breyer, with which it is temporarily co-located).

The treatment of groups from within the framework of Fine's theory of composition operators is somewhat more involved. Fine's theory has the advantage of treating groups as different than sums or sets, but it also requires treating different groups *themselves* as different kinds of things.

3.6.4 Composition operators and groups

To see why the theory of composition operators must treat different groups as different kinds, we must first recognize that a set of people can compose more than one group at a time. Suppose that all and only the members of the Supreme Court in 2004 are part of the Special Committee on Judicial Ethics. In this case "The Supreme Court share[s] all of its members with the Special Committee on Judicial Ethics as of a certain time" (Uzquiano 2004, 151). It seems false to say that, in 2004, the Supreme Court was identical with the Special Committee. But if the Supreme Court, G, is $\sum_t(S)$ and the Special Committee, C, is also $\sum_t(S)$, then how can we deny that $G = C$?

Just as the co-located statue and lump were produced by means of different operators, so the Supreme Court and the Special Committee must be produced by means of different operators. The Supreme Court will be the product of some operator $\sum_{sc}$ and the Special Committee of $\sum_{sp}$. Since these two things are the products of different operators, they are not identical.

But just as the statue and the lump are therefore different kinds of things, so the Supreme Court and the Special Committee must now be recognized as not merely different groups, but as different *kinds*. There may be a greater resemblance between their two kinds than there is between things like sums and sets, but ultimately they have been estranged. Using 'group' to refer to both is simply categorizing two kinds under a common label.

Is there anything wrong with this conclusion? It does seem bizarre in some ways. For it is clear enough that one person (or group) may be a member of an indefinite number of groups; each of these "groups" will therefore be a product of a different composition operator. And each will, strictly speaking, be a different kind of thing.

Previously we had a relatively tidy ontology. There were sums, and sets, and other well-known kinds; but now each task force or subcommittee is potentially a kind unto itself. Fine recognizes that his approach "will lead to an infinitude of

forms of composition . . . a vast mereological firmament" (2010, 576). But he does not consider this to be a drawback.

3.7 Lessons

The objections I have raised in this section by no means show that any of the three theories presented are false. But I would prefer a solution that does not postulate such bizarre pluralities. In Section 4.1, therefore, I set aside the theories of this section and look at a new possibility. I will re-examine the thesis that groups—all of them—really are identical with sets, and that ordinary things are identical with sums. This will lead to some strange consequences, but it may be that they are *less* strange than the "explosion of reality" that we otherwise face.

First, however, there is a question that arises for each theory: can it explain (or be supplemented with an explanation) of why we believe things that the theory denies?

3.7.1 Can the plurality theories explain what we believe?

In Section 2 I claimed that a theory that denies that there are chairs should be supplemented with an explanation of why we nonetheless believe that there are chairs.

None of the theories I have proposed deny that there are chairs, but they do make other unexpected claims that conflict with certain of our beliefs. Therefore, the theories should be supplemented with explanations of why we hold these beliefs.

If the plurality thesis is right, why do we believe that there are chairs when we *don't* believe that there are millions of other objects? Why, when there is a ten-pound chair in an otherwise empty room, are we inclined to say that there is just *one* thing that weighs ten pounds? What is so special about the chair that promotes it to our attention out of the many objects in the room?

It may be, in fact, that we *do* believe that there are co-located things. Many philosophers believe that there are co-located statues and lumps of clay; do any normal people hold this belief too? If so, then the question become: why do people believe in only *some* co-located things?

One answer might be simply that things like chairs, statues, and lumps matter to us more than the other things. This is similar to Trenton Merricks' explanation of why we believe that there are chairs (Section 2.5). Merricks denies that there are chairs, but claimed that we believe there are chairs because *things arranged chairwise* matter to us. Because they matter, we have terms to refer to them; for the sake

of convenience (or for some other reason) we use singular terms to refer to things arranged chairwise, and so we are fooled by the grammar into thinking that there are chairs.

Likewise, a philosopher like Fine or Hovda could claim that chairs (which do exist) matter to us more than the plurality of co-located objects that share parts with the chair. We introduce terms to pick out one object from among the plurality (how this happens is a difficult question) and ignore the others. The things that do not matter of course remain; "we just pay most of them no attention" (Bennett 2004, 356).

3.7.2 Is there an alternative to the plurality?

We have examined three different theories that account for the existence of chairs. Each has the difficult consequence that there are pluralities of co-located objects. Once we have admitted that, for instance, the same matter might compose a statue and a lump, we have trouble resisting the idea that there might be *more* things, of other kinds, composed of that same matter. (Some theories that I have not discussed, like Thomson's (1998), are also forced to posit co-located kinds.) Where we might take there to be one thing (or maybe two), we now seem committed to there being a huge number of co-located things. I believe that this consequence is a reason to reject each theory and look for an alternative.

In Section 4 I will sketch an alternative theory. This theory identifies chairs and other ordinary things with mereological sums in the classical sense. Groups like the Supreme Court will be identified with sets. As I have argued, a sum is like a set in that it does not change its parts. Therefore the thing I refer to with 'my chair' is a sum. If I replace the leg on my chair, I will use 'my chair' to refer to a different sum. Which sum I refer to with 'my chair' will be governed by convention.

4
Can chairs change their parts?

In Section 3 I presented three different theories that modified classical mereology. These modification were made to explain how objects change their parts over time. But each of these theories require us to posit an extraordinary plurality of (if only temporarily) co-located objects. Such theories are, if not false, at least very strange.

In this section, therefore, I will attempt to sketch an *essentialist* theory of things. This theory will allow us to reject the "plurality thesis"—that there are pluralities of co-located objects—but it will have problems of its own. The most glaring is the consequence that, strictly speaking, things don't change their parts.

In Section 3.6 I claimed that three theories—Fine's theory of embodiments, his theory of composition operators, and Hovda's theory of tensed mereology—could each explain the existence of *groups* like the Supreme Court. These theories are able to do so because they each have a way of accounting for how things, including groups, change their parts over time. In this section, however, I am suggesting that perhaps things cannot change their parts. Must I therefore deny the existence of groups?

Instead of denying that there are groups, instead I will argue that it is possible to identify groups with *sets*; strictly speaking, therefore, groups cannot change their parts.

4.1 Re-examining the set identity thesis

The primary motivation cited in Section 3.6.2 for positing groups was the fact that the Supreme Court appears to change its members over time. For example, both of

the following sentences seem to be true:

1. The Supreme Court ruled on Roe vs. Wade in 1973.

2. The set of justices now serving as Supreme Court Justices did not rule on Roe vs. Wade in 1973 (Uzquiano 2004, 135).

One way to accommodate these facts is to "insist that the Supreme Court is a set, but to abandon the assumption that there is a single set to which the phrase 'the Supreme Court' refers in sentences (1) and (2)" (Uzquiano 2004, 138). To successfully use 'the Supreme Court' to refer to a set of justices, there must be an implicit or explicit temporal reference. If an utterance of (1) is true it will be true because it the speaker intends her audience to recognize her intention to refer to the set of justices that was the Supreme Court in 1973. If her audience, for whatever reason, takes her to be referring to the current Court, then they will evaluate (1) as false.

Considered in this light, 'the Supreme Court' is used to express a relation between sets and times; 'x is the Supreme Court at t' (Uzquiano 2004, 140). There is some precedent for this sort of interpretation:

> Our use of the phrase 'the Supreme Court' to express a relation a set of justices bears to a time is much like our use of the phrase 'the president of the United States' to express a relation an individual bears to a time. Different persons may be the president of the United States at different times, but there is at most one person that bears that relation to each time (Uzquiano 2004, 138).

"But," it will be objected, "there is an important difference here. We use both phrases—'the Supreme Court' and 'the president'—to refer to a past, present or future set that 'is' the thing, but we also use 'the Supreme Court' to refer to *the Supreme Court*, which has changed its membership over time. If I say, 'The Supreme Court has become more conservative over the past century', there is no one set I am referring to. I must be referring to something else; the obvious candidate is the *group* that is the Court."

One reply here is to claim that all that what "The Supreme Court has become more conservative over the past century" actually means is that the members of the sets that have been the Supreme Court have become more conservative. Another, similar reply is that someone who utters "The Supreme Court has become more conservative over the past century" is saying something literally false (either because there is no unique set that is being referred to, or because there is a unique set

referred to, but one that does not make the proposition true), but can generally be understood to mean something else; namely, that the members of the sets that have been the Supreme Court have become more conservative.

Neither reply is *very* unintuitive; indeed, there is something attractive about a thesis that reserves application of adjectives like 'conservative' for people, rather than other things like groups.

But there is a more pressing worry for the set identity thesis. Recall that the set that is the Supreme Court at a given time might also be the Special Committee on Judicial Ethics. We must admit that the Supreme Court in 2004 is the set {Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, Breyer}, and the Special Committee in 2004 is that very same set. But now we are committed to this argument:

1. The Special Committee on Judicial Ethics is one of the committees assembled by the Senate.

2. The Special Committee on Judicial Ethics is identical with the Supreme Court.

3. *Therefore* the Supreme Court is one of the committees assembled by the Senate. (Uzquiano 2004, 144)

And (3) seems false.

But it may be possible to argue that (3) is not false but only *misleading* (indeed, very misleading). For it (conversationally) implies that future sets referred to by 'the Supreme Court' will be identical to future sets referred to by 'the Special Committee'. And it is *this* that is certainly false.

This possibility raises another: that ordinary things like chairs are identical with *sums* in the classical sense. That is, just as it may be that, strictly speaking, the Supreme Court cannot change its parts (its members), so a chair cannot, strictly speaking, change its parts. Just as we identified groups like the Supreme Court with different sets at different times, so we can identify things like chairs with different sums at different times.

This is a bizarre possibility, and one apparently at odds with common sense. Isn't it *obvious* that things change their parts? They certainly seem to, and it may be argued that much of our talk presupposes this. But not all of our talk does, and some stretches of discourse can actually be *better* interpreted on the assumption that groups are sets, or that ordinary things are sums.

4.2 Sets, sums, and literal speech

I argued in Section 1.3 that ordinary uses of 'there is' are often false. For example, if I say "There is no beer", what I say is almost certainly false—there is beer *somewhere*—but what I mean is that there is no beer in the house.

It is very likely that much of our ordinary talk is similarly non-literal (see Bach (1987)). For example, we should interpret all uses of 'The chair is mine' as non-literal, because saying "The chair is mine" entails that there is only one chair in the world. Even propositions involving proper names might be non-literal. If 'Alex' designates every person named 'Alex', then "Alex is lying down" is literally false, since it entails either that there is only one 'Alex' or that every 'Alex' is lying down.

Therefore, if a theory predicts that some of our talk is non-literal, we should not necessarily be worried. But not *all* of our talk is non-literal, and when a theory can preserve the intuition that certain things are literally true, that should be taken as an advantage.

4.2.1 Talking about sets

At least for a certain class of examples, the set-identity thesis preserves more of our intuitive judgments about literal speech than does the theory that posits groups as distinct from sets.

1. Suppose we arrive at a meeting of the Special Committee on Judicial Ethics. Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, and Breyer are sitting around a center table. As we take our seats you turn to me and say, "They look rather familiar, don't they?" I say "That's also the Supreme Court."

   What am I referring to with the demonstrative expression 'that'? If one thinks that I am referring to a *group*—the Special Committee—that is distinct from the Supreme Court, my utterance will have to be interpreted as non-literal. I will have to be understood to mean that the *members* of the Special Committee are also the members of the Supreme Court. On the other hand, if I am referring to the *set* of justices, what I said is literally true.

2. Suppose instead that you ask me who the members of the Special Committee are. I say "Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, and Breyer. The Special Committee is just the Supreme Court."

Here again one could argue that I am speaking non-literally; what I mean is that the members of the Special Committee are just the members of the Supreme Court. But if the Supreme Court and the Special Committee are just sets—the same set—I have again said something literally true.

3. Now suppose that the Special Committee is dissolved in 2004. In 2005, we see the members of the Supreme Court (still Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, and Breyer) out to lunch together. I point and say "That was the Special Committee on Judicial Ethics." Now what is 'that' used to refer to? It cannot be the Special Committee, for that has ceased to be. It must either be the Supreme Court or the set {Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, and Breyer}.

   Either way, the proponent of groups will have to interpret this utterance as non-literal. The set-identity theorist can interpret this utterance as literally true, however; the set in question was the Special Committee before the dissolution.

4. Now suppose that the Special Committee is dissolved in 2004 and Rehnquist retired before dying in 2005 (let's pretend he retired in May). Now in August we see Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, and Breyer out to lunch together. I point and say "That was the Supreme Court *and* the Special Committee on Judicial Ethics." I can only be referring to the set of justices. Why not suppose that I have only *ever* been referring to the set of justices? If I am in fact referring to the set {Rehnquist, Stevens, O'Connor, Scalia, Kennedy, Souter, Thomas, Ginsburg, Breyer}, then when I say "That was the Supreme Court *and* the Special Committee", I say something literally true.

These examples provide some support for the set identity thesis. At the very least they show that identifying groups with sets does not mean that all our talk about groups must be interpreted as non-literal. However, the set identity thesis also predicts that some propositions will be literally true, when intuitively we may believe that they are not. For example, according to the set identity thesis, I say something literally true when I say "The Supreme Court is one of the committees assembled by the Senate" or "The Supreme Court is the Special Committee on Judicial Ethics". But it is very misleading to say either. By saying "The Supreme Court is the Special Committee" I imply that future things designated by 'the Supreme Court' will be identical to future things designated by 'the Special Committee'. It is less misleading

to say "The current Supreme Court is the Special Committee on Judicial Ethics". (It is even less misleading to say "The current Supreme Court is also the Special Committee".)

4.2.2 Talking about sums

The identification of statues (and lumps) with sums allows us to again explain some sorts of talk that would be otherwise problematic:

1. Suppose you help me carry a lump of clay into my workshop. In the afternoon you drop by and see that I am sculpting a statue. You say, "That looks familiar". I reply, "It's the lump of clay from this morning".

   What are you referring to with 'that', and what am I referring to with 'it'? If we thought that the statue and the lump were two distinct things, we might assume that we are both referring to the statue. We would therefore have to interpret what I say as somehow non-literal. But if we are both referring to a single sum, then what I say is literally true.

2. Suppose you're a little dense. You see the statue and ask, "What a great big statue! Where did it come from, and where did the lump of clay disappear to?" I reply, "The statue *is* the lump".

   If the statue and the lump are distinct things and my use of 'is' is that of identity, then what I say is false. It must be interpreted non-literally, as meaning that the statue is composed of the same matter as the lump. But if the statue and the lump are the very same sum, then what I say is literally true.

3. Suppose you come along and squish the statue, thereby destroying it. I cry, "That was my statue!"

   If we are imagining that the statue was a distinct thing from the sum (and from the lump), we would have to interpret what I say non-literally. For if the statue was a distinct thing that has been destroyed, then when I use a demonstrative like 'that' I cannot be referring to the non-existent statue. My audience may interpret me as referring to the lump, and meaning that there used to be a statue co-located with the lump. But if we suppose that the statue was not a distinct thing from the sum (and from the lump), then what I said is literally true. For "that"—that sum—was a statue, but is no longer. It no longer satisfies the criteria for being a statue. (You could dispute this; after I say "That was my

statue", you could say "It still is your statue; it's just a flatter statue than it was".) Likewise, suppose I have a lump of clay on Monday:

Alex
: This will be a statue!

On Tuesday I make a statue out of the clay:

Alex
: Yesterday this was nothing more than a lump of clay! Now look at it!

On Wednesday you squish the statue:

Alex
: Well, it's not a statue anymore.

With these examples, I am trying to motivate the idea that we refer to the sum when we use words like 'it' and 'this' and 'that'. The sum referred to on Monday is the same (or nearly the same) sum referred to on Tuesday and on Wednesday.

This idea is a part of the thesis of essentialism—the thesis that things do not change their parts. This is a controversial thesis, and I will address the objections to it in Section 4.3. The primary objection is that it is simply *wrong* to claim that most of our cross-temporal talk—for example, "That is the same chair as yesterday"—is literally false.

4.3 Problems with essentialism

Essentialism is the thesis that, strictly speaking, things don't change their parts. One can endorse or oppose essentialism in various domains. For example, almost everyone is a set essentialist; I can think of nobody who claims that sets can change their parts. But not everyone is a *mereological* essentialist.

People who deny mereological essentialism are, I think, making one of two claims:

1. They may be claiming that ordinary things like chairs are not mereological sums; chairs can change their parts, so essentialism *with regard to chairs* is false. A philosopher who makes this claim might allow that mereological sums, if there are such things, cannot change their parts.

2. They may be claiming that mereological sums, whether or not they are identical with ordinary things like chairs, can change their parts.

Fine appears at least sympathetic to the first claim (see Sections 3.3–3.4); van Inwagen and Hovda argue for the second (see Sections 3.1.3 and 3.5). But a philosopher who makes either claim will reject the theory I have been building. They will say that my theory flies in the face of common sense (and I make so much of common sense in earlier sections!). They will say things like this:

> According to [the essentialist], it is never literally correct to say that a thing survives a change in parts. This is a point of massive departure from ordinary belief (Sider 2001, 184).

This is more or less the argument against essentialism. You point at a chair and say "I'm supposed to believe that if that chair loses *one atom*, it's literally a different chair?"

It is interesting to note that in the past, many philosophers were more than willing to affirm this. Roderick Chisholm points out that

> Abelard held that "no thing has more or less parts at one time than at another" . . . [and] Leibniz said "we cannot say, speaking according to the great truth of things, that the same whole is preserved when a part is lost" (1979, 145).

Joseph Butler, writing in 1736, also held that "when a man swears to the same tree, as having stood fifty years in the same place, he means only the same as to all the purposes of property and uses of common life, and not that the tree has been all that time the same in the strict philosophical sense of the word" (1975, 100).

One might object that these philosophers were simply failing to distinguish *descriptive* and *numerical* sameness. When I say I have the same guitar as you, all I mean is that it is descriptively the same, not that I have your guitar. Likewise perhaps Abelard, Leibniz, and Butler observed that a sapling is descriptively different from the mature tree that it grows into, and then drew the unwarranted conclusion that the sapling and mature tree are not therefore the same.

This seems a bit uncharitable, but in any case there are arguments supporting the same conclusion—that things cannot change their parts. The first comes from Chisholm:

> Let us picture to ourselves a very simple table, improvised from a stump and a board. Now one might have constructed a very similar table by

> using the same stump and a different board, or by using the same board and a different stump. But the only way of constructing precisely *that* table is to use that particular stump and that particular board. It would seem, therefore, that that particular table is *necessarily* made up of that particular stump and that particular board (1979, 146).

It may be objected that, *once the table is built*, it is possible to change its parts without thereby destroying one table and constructing another. Once I have built a table, it seems true that I could take it apart and reassemble the very same table. It even seems that I could take it apart and reassemble the very same table with a slight modification; for example, I could put it back together with one new leg. It may be, then, that all Chisholm's argument shows is that this particular table necessarily *began* its existence with a particular stump and board. But there is nothing in the argument that shows that it necessarily cannot go on to change its parts while remaining numerically identical.

But if a chair can remain numerically identical after changing a part, it is difficult to say *how large* a part the chair can lose while remaining the (numerically) same chair. If most of the chair is blasted away, then we may very well say that the chair is no more. But *how much* must be blasted away? Or suppose we have a portion of gold. How many atoms of gold can be stripped off before it is no longer the same portion? Thomson claims that ordinary uses of 'portion' are context-dependent:

> The ordinary use of the term 'portion' is heavily context-dependent. If an atom drifts away from your portion of gold, do you still have the same portion of gold? You will say no if you are a scientist engaged in an experiment for which every atom matters. You will say yes if you are a jeweler about to make a ring. Similarly, in fact, for clay. If you have just bought a load of clay, and a handful falls off while you are on your way home, is the portion you have when you get home the same as the portion you bought? You will say no if you had carefully measured and bought exactly as much as you need. You will say yes if loss of a handful makes no difference to you (1998, 163).

When we say that a use of a term is context-dependent, that can mean one of two things. First, it may mean that whether an utterance involving a use of the term is *correct*, or *appropriate*, depends on the context. It would not be appropriate for the scientist to say that she has the same portion after the loss of several atoms, because those atoms matter for the experiment. Second, to say that the use of a term is context-dependent may mean that whether an utterance involving a use of the term is *true* depends on the context. In the quoted passage above, do the scientist and jeweler

both say true things? If they do, then the truth-conditions of 'portion' are context-dependent. This would mean that whether an utterance involving 'portion' is true depends on the context of the utterance. This would also suggest that the *meaning* of 'portion' depends on the context, for the truth-value of a sentence is generally thought to be a function of the meaning of its constituent elements, including words.

But just as I do not think there are different senses of 'there is' (see Section 1.3), so I do not think that there are multiple senses of 'portion'. I find it far more plausible to think that only the scientist says something that is, *strictly speaking*, true. The jeweler, when she affirms that she has the same portion of gold, may say something correct or appropriate, given the context, but it is not *true*. Strictly speaking, a portion cannot change its parts; why should we assume that a chair can?

4.4 Talk over time

One may object that, while this is all well and good, the essentialist thesis—that groups are sets and ordinary things are sums—fails the most important test. The thesis seems to predict that propositions about change over time, such as 'The Supreme Court was formed in 1789' or 'The Brick House did not exist last Tuesday' are almost always literally false.

In the case of sets, what is going on when I say something like "The Supreme Court was formed in 1789"? If 'the Supreme Court' designates the set of current justices, then such a claim is false. But there is obviously *something* right about what I say. The set identity thesis must be supplemented with an explanation of what is right about 'The Supreme Court was formed in 1789' and what is wrong about 'The Supreme Court was formed in 1200'. (Compare this to van Inwagen and Merricks' attempts—discussed in Section 2—to explain what is right about utterances like "There is a chair in the kitchen".)

In the case of sums, how are we to understand the proposition 'The Brick House did not exist last Tuesday'? This example is part of an argument by Peter van Inwagen aiming to show that sums can change their parts. Suppose, first, that sums cannot change change their parts:

> Call the bricks that were piled in the yard last Tuesday the 'Tuesday bricks'. Between last Tuesday and today, the Wise Pig has built a house—the 'Brick House'—out of the Tuesday bricks (using them all and using no other materials). The Brick House did not exist last Tuesday (that is, it was not then a pile of bricks, a thing that was not yet a house but would

> become a house). The Brick House is not, therefore, a mereological sum; for if it were, it would have been (it would have "existed as") a pile of bricks last Tuesday (2006, 616).

But since the Brick House *is* a mereological sum, van Inwagen concludes that our supposition that sums can't change their parts is false; he claims that mereological sums *can* change their parts. If we are to maintain both that the Brick House is a sum *and* that sums can't change their parts, we must say that (strictly speaking) the Brick House *did* exist last Tuesday, despite the fact that it had not yet been built.

Below I will look at two different ways of making sense of cross-temporal utterances about sets and sums. The first is an adaptation of Ted Sider's temporal counterpart theory; it maintains that even though 'the Supreme Court' designates the current set of justices, "The Supreme Court was formed in 1789" is literally true. The second is an adaptation of Roderick Chisholm's notion of an "ens successivum"; this theory claims that the Supreme Court and the Brick House are "fictions" that are constituted by different things at different times; cross-temporal talk is generally false, but can be correct or accurate. I will suggest that Chisholm's theory is superior to Sider's.

4.4.1 Ordinary speech and temporal counterpart theory

According to the essentialist thesis, it is literally false to say "The Supreme Court was formed in 1789". Likewise it is false to say "The Brick House did not exist last Tuesday". The thing designated by 'the Supreme Court' is a set; sets exist when their members exist, and so the set in question did not even exist in 1789. (Even if the set *did* exist then, the only way the utterance would be true would be if the last member of the set was born in 1789; then the set would come into existence in 1789. This *might* make it true that the set was "formed" in 1789.) The thing designated by 'the Brick House' is a sum; sums exist whenever their parts exist, and the parts of the Brick House existed last Tuesday.

These are obviously unintuitive conclusions. Ted Sider's temporal counterpart theory offers a possible way to avoid them.

Sider's counterpart theory is part of the theory of four-dimensionalism he once promoted (2001). Unlike most four-dimensionalists who claim that we use terms like 'chair' to refer to "spacetime worms" or "aggregates of chair-stages", Sider argued that we use such terms to refer to instantaneous stages, not "continuant" worms or aggregates. What this means is that in ordinary talk we never refer to the same thing

twice; the chair I refer to at t_1 is one temporal part (chair-at-t_1) and the chair I refer to at t_2 is another. When I use 'Ted' to refer to Ted Sider, I am not referring to the temporally extended object that includes a childhood; I am referring to something that lasts only for an instant.

Nonetheless Sider claims that when I say "Ted was once a boy", I say something literally true. How can this be? The object I am referring to was never a boy. It is here that Sider introduces temporal counterparts:

> According to my temporal counterpart theory, the truth condition of an utterance like "Ted was once a boy" is this: there exists some person stage x prior to the time of the utterance, such that x was a boy, and x bears the temporal counterpart relation to Ted. Since there is such a stage, the claim is true. (2001, 193).

This theory can be adapted to our purposes. We may say that sets and sums, like stages, have temporal counterparts. The set that is currently designated by 'the Supreme Court' bears a temporal counterpart relation to other sets at other times. The truth condition of 'The Supreme Court was formed in 1789' is perhaps the fact that there was a set S such that S in 1789 bears the temporal counterpart relation to the (current) Supreme Court and it is not the case that there was some set S' and time t such that t is earlier than 1789 and S' in t bears the temporal counterpart relation to the Supreme Court. It would then be literally true to say "The Supreme Court was formed in 1789". Likewise the sum that is currently designated by 'the Brick House' bears temporal counterpart relations to other sums. The truth condition of 'The Brick House did not exist last Tuesday' is perhaps the fact that the Brick House does not bear a temporal counterpart relation to anything on last Tuesday (or prior).

These are only rough formulations; they must be adapted to account for the possibility of co-location (in a loose sense). Recall that the set that is currently designated by 'the Supreme Court' might also currently be designated by 'the Special Committee'. It is neither true nor correct in any sense to say that the Special Committee was formed in 1789. If we were to adopt the theory of temporal counterparts, we would have to recognize different kinds of counterpart relations. The set that is currently designated by 'the Supreme Court' bears the "Supreme-Court-counterpart" relation to the set that was designated by 'the Supreme Court' in 1789, but not the "Special-Committee-counterpart" relation. It bears *that* relation to other sets at other times.

I will not elaborate on this, however, because Sider's temporal counterpart theory makes false assumptions about meaning.

Sider explicitly states that stages have an instantaneous temporal duration—any given stage exists only for an instant (2001, xiv). If we suppose that Ted is a person-stage that exists only at instant t, then it is obviously not true that it was the case that Ted existed at any previous time. That is, at t, the following is true:

$$\neg\exists t'(t' \text{ is earlier than } t \wedge \exists x\ (Ext' \wedge x = \text{Ted}))$$

('Ext' means 'x exists at t'.)

But Sider also claims that 'Ted was once a boy' is true. This seems to be equivalent to 'There was some thing such that it was a boy and it was Ted'. That is, it appears that Sider is also committed to this being true at t:

$$\exists t'(t' \text{ is earlier than } t \wedge \exists x\ (Ext' \wedge Bx \wedge x = \text{Ted}))$$

(Here 'Bx' means 'x is a boy'.)

These are contradictory claims. Sider must therefore be supposing either that '$\exists$' is semantically ambiguous or that 'Ted was once a boy' *does not mean* 'There was some thing such that it was a boy and it was Ted'. Sider is vehemently opposed to the idea that there are multiple, equally suitable, meanings for quantifiers (2001; 2011a; 2011b). Therefore, I think Sider is assuming that what 'Ted was once a boy' means is 'There exists some person stage x prior to the time of the utterance, such that x was a boy, and x bears the temporal counterpart relation to Ted'.

If 'Ted was once a boy' does not mean 'There exists some person stage x prior to the time of the utterance, such that x was a boy, and x bears the temporal counterpart relation to Ted', then there is no reason to think that the truth-condition of the former are the latter. For it seems initially obvious that the truth-condition of 'Ted was once a boy' is that Ted (the stage) was once a boy. If this is not the truth-condition, then it must be because 'Ted was once a boy' does not actually mean that Ted was once a boy, but instead means that there exists some person stage x prior to the time of the utterance, such that x was a boy, and x bears the temporal counterpart relation to Ted.

In order to maintain that 'Ted was once a boy' is literally true, Sider must claim that it means something other than that Ted was once a boy. This is a highly implausible and unmotivated claim; the only reason I can think of as to why Sider might make such a claim would be because he holds a truth-conditional theory of meaning (see Section 1) and believes that 'Ted was once a boy' is true if and only if 'There exists some person stage $x\ldots$' is true. But a truth-conditional theory of

meaning is controversial and susceptible to numerous counter-examples. It seems far more reasonable to admit that 'Ted was once a boy' means that Ted was once a boy, and is literally false.

4.4.2 Chisholm's entia successiva

Roderick Chisholm was a mereological essentialist, claiming that ordinary things cannot change their parts:

> Familiar physical things such as trees, ships, bodies and houses persist "only in a loose and popular sense". This thesis may be construed as presupposing that these things are "fictions", logical constructions or *entia per alio* (1979, 97).

Chisholm paraphrases talk involving persistence by stipulating a technical sense of 'successor' and 'successive'. He gives the following definitions:

1. x is at t a direct chair successor of y at $t' =_{df}$ (i) t does not begin before t'; (ii) x is a chair at t and y is a chair at t'; and (iii) there is a z, such that z is a part of x at t and a part of y at t', and at every moment between t and t', inclusive, z is itself a chair.

2. x is at t a chair successor of y at $t' =_{df}$ (i) t does not begin before t'; (ii) x is a chair at t and y is a chair at t'; and (iii) x has at t every property P such that (a) y has P at t' and (b) all direct chair successors of anything having P have P.

3. x constitutes at t the same successive chair that y constitutes at $t' =_{df}$ Either (a) x and only x is at t a chair successor of y at t' or (b) y and only y is at t' a chair successor of x at t (Chisholm 1979, 99–100).

Before we see how these definitions are used, there are two misinterpretations (in my opinion) of Chisholm's position. First, one might take Chisholm to be claiming that "successive chairs" are *things* that are composed of or constituted by different bits of matter at different times. I think this is not how Chisholm should be understood, for it would undermine his claim that successive chairs are "fictions" that persist only in a "loose and popular" sense.

Second, one might take Chisholm's four definitions above to be giving the literal meaning of the definienda. That is, one might take Chisholm to be claiming that what 'x constitutes at t a successive chair' *means* is 'There are a y and a t' such that y is

other than x and x constitutes at t the same chair that y constitutes at t''. Whether or not this is what Chisholm intended, I think it is false for two reasons. First, it is a highly implausible thesis about sentence meaning; why should we think the the former sentence is synonymous with the latter, except that it makes Chisholm's theory more palatable? Second, if Chisholm's definitions gave the literal meaning of the definienda, then it would be true in the "strict and philosophical sense", as well as in the "loose and popular sense", that a successive chair persists over time. But Chisholm explicitly denies this (1979, 96–97).

The interpretation of Chisholm that I prefer is this: when we speak of a successive chair persisting over time, what we say is, strictly speaking false. However, we should be understood to *mean* something other than what we say; what we mean can be captured with the definitions given by Chisholm. For example, when someone says "That chair was made in 1900", what they say is literally false, but can be *paraphrased* by applying Definitions 1–3. First we understand 'That chair was made in 1900' to be equivalent to 'x (the present chair) constitutes now the same successive chair that some y constituted in 1900 and there is no z such that z constitutes before 1900 the same chair that x constitutes now'. This is false, but someone making either utterance should be taken to mean something else. We can determine exactly what is (or should be) meant by applying Chisholm's definitions in reverse:

3. x and only x is now a chair successor of some y in 1900 and there is no z such that x is now a chair successor of z before 1900.

This is turn can be understood as

2. First, x is a chair now and y is a chair in 1900, and x has now every property P such that (a) y has P in 1900 and (b) all direct chair successors of anything having P have P. Second, there is no z and t such that t begins before 1900 and x is now a chair successor of z at t.

The meaning of 'direct chair successor' is given by Definition 1.

We can say the same thing about groups and ordinary things. When someone says "The Supreme Court was formed in 1789", what they say is false, but should be paraphrased as something like this:

- First, S is the Supreme Court now and T is the Supreme Court in 1789, and S has now every property P such that (a) T has P in 1789 and (b) all direct Supreme-Court successors of anything having P have P. Second, there is no V and t such that t begins before 1789 and x is now a chair successor of V at t.

Likewise when someone says "The Brick House did not exist last Tuesday", what they say should be paraphrased as 'There is no x and t such that t begins before last Monday and the Brick House is now a house successor of x'.

This solution is superior to Sider's theory of temporal counterparts because it does not make questionable assumptions about meaning. It is false that the Supreme Court was formed in 1789, but it is correct (in a "loose and popular sense") because the Supreme Court is a successor of the "original" Supreme Court. It is also false to say that the Brick House did not exist last Tuesday, but it is correct, in a loose and popular sense.

As given, however, Chisholm's definitions assume eternalism. If the set of 1789 justices no longer exists—if some matter that was part of a justice is destroyed—then, without assuming that what *did* exist always *does* exist, it is not true that there is a set S such that the Supreme Court is a Supreme-Court-successor of S. This can only be true if S exists. If S does not exist, then the Supreme Court cannot be a successor of it.

However, it seems possible to reformulate Chisholm's definitions (or write entirely new ones) so as to avoid this assumption. The following revisions of Definitions 1–3 illustrate how this might be done (t is the present time and 'ALWAYS' means 'it is always the case that'):

1a. x is at t a direct chair successor of y at $t' =_{df}$ ALWAYS(if it is $t' \rightarrow \exists y$ such that y is a chair and such that ALWAYS(if it is $t \rightarrow \exists x$ such that x is a chair and such that ALWAYS(if it is between t' and t inclusive $\rightarrow \exists z$ such that z is a chair and such that ALWAYS(if it is $t' \rightarrow z$ is part of y) and such that ALWAYS(if it is $t \rightarrow z$ is part of x)))).

2a. x is at t a chair successor of y at $t' =_{df}$ ALWAYS(if it is $t' \rightarrow \exists y$ such that y is a chair and such that ALWAYS(if it is $t \rightarrow \exists x$ such that x is a chair and such that ALWAYS(if it is $t \rightarrow x$ has every property P such that ALWAYS(if it is $t' \rightarrow y$ has P) and such that ALWAYS(all direct chair successors of anything having P have P)))).

3a. x constitutes at t the same successive chair that y constitutes at $t' =_{df}$ Either (a) x and only x is at t a chair successor of y at t' or (b) y and only y is at t' a chair successor of x at t.

(Definition 3a is identical to 3.)

We can again "paraphrase" talk about chairs over time. As before, we understand 'That chair was made in 1900' to be equivalent to 'x (the present chair) constitutes now the same successive chair that y constitutes at 1900 and there is no z such that z constitutes before 1900 the same chair that x constitutes now'. This is false, but we can determine exactly what is (or should be) meant by applying our new definitions in reverse:

3a. x and only x is now (at t) a chair successor of y in 1900 and there is no z such that x is now a chair successor of z before 1900.

This is turn can be understood as

2a. ALWAYS(if it is 1900 $\rightarrow \exists y$ such that y is a chair and such that ALWAYS(if it is $t \rightarrow \exists x$ such that x is a chair and such that ALWAYS(if it is $t \rightarrow x$ has every property P such that ALWAYS(if it is 1900 $\rightarrow y$ has P) and such that ALWAYS(all direct chair successors of anything having P have P) and such that ALWAYS(it is not the case that (if it is before 1900 $\rightarrow \exists z$ such that z is a chair and z has P))))).

The meaning of 'direct chair successor' is given by Definition 1a.

Similar paraphrases can now be performed on utterances about the Supreme Court, the Brick House, and other things.

Unfortunately, adopting this solution requires that we reject *serious presentism*. Presentism is the thesis that only presently existing things exist. Serious presentism is the conjunction of that thesis with the further claim that relations and properties can hold only of existing things. Serious presentism has the consequence that it is literally false that I am smaller than Socrates. This is not because I am very large, but because Socrates does not exist. Likewise, Socrates is not identical with himself because he does not exist.

The last clause of Definition 2a—"ALWAYS(all direct chair successors of anything having P have P)"—violates serious presentism by positing a relation (what we might call the "chair successor" relation) between cross-temporal entities. It may be possible to rewrite that clause to avoid this assumption and make Chisholm's solution compatible with serious presentism. Then again, it may not. If we do not want to reject serious presentism, we may be forced to look for a different solution.

4.5 The conventions of persistence

Even supposing that our talk over time can be sorted out, there is still more to be said. Although chairs are sums that cannot change their parts, we talk as if they can. Likewise, although the Supreme Court is a set, we talk as if the Supreme Court can change its members. The most reasonable way to make sense of this is to suppose that for a given "successive chair" we use 'chair' to refer to different sums at different times; likewise, we use 'the Supreme Court' to refer to different sets at different times. Chisholm's definitions specify that a "chair successor" must be a chair, and a "Supreme Court successor" must be the Supreme Court, but they do not specify how to determine what counts as a chair or as the Supreme Court at any given time. What makes it true that some sum is a chair, or that some set is the Supreme Court?

What makes it true that some sum is a chair is just the fact that it meets our conventional criteria for being a chair. These criteria probably cannot be given in terms of necessary and sufficient conditions; the concept *chair* is too broad:

> When one says chair, one thinks vaguely of an average chair. But collect individual instances, think of arm-chairs and reading chairs, and dining-room chairs and kitchen chairs, chairs that pass into benches, chairs that cross the boundary and become settees, dentists' chairs, thrones, opera stalls, seats of all sorts, those miraculous fungoid growths that cumber the floor of the Arts and Crafts Exhibition, and you will perceive what a lax bundle in fact is this simple straightforward term. In co-operation with an intelligent joiner I would undertake to defeat any definition of chair or chairishness that you gave me (Wells 1904, 384–385).

This is not a problem, since we can agree on paradigm examples of chairs. The term 'chair' is obviously meaningful; this suggests that the criteria for what counts as a chair are relatively well-defined, even if we cannot adequately formalize them. Thus what makes it true at a given time that some sum is the "chair successor" of another sum is the fact that both sums satisfy the criteria for being chairs (at their respective times), and are related in the ways specified by Chisholm's definitions.

But what about the Supreme Court? What makes it true at a given time that some set is then the Supreme Court? I suggest that, again, there are conventional criteria governing 'the Supreme Court', and that which set is at a given time the Supreme Court is a matter of convention. In the case of the Supreme Court, the conventions are *legal* conventions. The Constitution authorizes the recognition of a set of justices as the Supreme Court. Which set is recognized as the Supreme Court is decided by the legislative and executive branches. The president nominates a set

(the sitting justices and the nominated justice) and the legislative branch votes. The outcome of the vote makes it true or false that a given set is the Supreme Court. Thus what makes it true at a given time that some set is the "Supreme Court successor" of another set is that fact that both sets satisfy the criteria for being the Supreme Court (at their respective times), and are related in the ways specified by Chisholm's definitions.

The correctness (*not* the truth) of cross-temporal talk about groups is governed by convention. This is plausible; groups are social entities, and it is plausible that their "change" over time should be due to convention. But if this is right, it suggests that the same holds for ordinary things.

4.6 Am I a mereological sum?

I have proposed that ordinary things like chairs and statues are mereological sums. Their apparent persistence through change is a result of certain conventions—a chair x at t_1 is the "same successive chair" as a chair y at t_2 if the two are related in the ways specified by Chisholm's definitions.

If ordinary things like chairs are sums, then are other things sums as well? I will suppose that sums are "material things" as opposed to "abstract things" (whatever that distinction comes to), but are *all* material things sums? If we are material things, are we therefore sums?

4.6.1 All material things are sums

If we think that ordinary things are sums, and that ordinary things are material things, I think it is extremely plausible to conclude that all material things are sums. For what else would they be?

What is included under the concept *material thing*? I would include things like chairs, and desks, and desk lamps, and doors, and doorways, and houses, and gardens, and plants. I would also include minuscule objects like molecules and massive objects like planets and galaxies. What would these things be, if not sums?

I proposed that ordinary things are sums so as to avoid the conclusion that there is a plurality of different kinds of ordinary things (statues and lumps only scratch the surface) all overlapping each other. This essentialist proposal was made so as to avoid positing many different kinds of things. So anyone who accepts the essentialist theory should be sympathetic to the idea that all material things are sums.

I don't have much of an argument for this conclusion, but I don't see the *point* of supposing that all and only ordinary things are sums, but other material things are some different kind of object.

4.6.2 We are material things

Even if the idea that all material things are sums is relatively uncontroversial, the idea that *we* are material beings will not be unanimously accepted. For it does have some unintuitive consequences.

First, it rules out identifying us with our mental states. Suppose all my psychological characteristics—memory, personality—is somehow transferred to another body. The brain in that body is "wiped" before my psychology is transferred, and after the operation my old brain is similarly wiped. There is a temptation to say that I exist in the new body. But saying this commits us to the claim that I am not a material thing, because I "left" my old material body and came to "inhabit" a new one:

> If I am identical with the thinking substance in which I am thus placed, then I cannot be transferred *from* that substance to another substance (Chisholm 1979, 107).

Claiming that we are material things entails that psychological continuity is not a criterion of identity. The body into which my psychology is transferred is not me, according to the materialist claim. Psychological continuity is often taken to be *the* criterion of identity, so one might take this consequence as a refutation of the claim that we are material things.

But if we are not material things, what are we? The only alternative I see is to claim that we are immaterial minds or souls. These positions seem, to me, to be more implausible than the claim that we are material things. (Much, of course, can be said in defense of this alternative.)

Claiming that we are material things, however, gives rise to another question: what material things are we? Are we identical with our brains, or with our bodies?

I suggest, though somewhat tentatively, that we are identical with our bodies. I agree with Peter van Inwagen on this much:

> I suppose that [the objects of mental predicates]—Descartes, you, I—are material objects, in the sense that they are ultimately composed entirely of quarks and electrons. They are, moreover, a very special sort of material object. They are not brains or cerebral hemispheres. They are living animals; being *human* animals, they are things shaped roughly like statues of human beings (1990, 6).

Eric Olson has a very plausible argument for the same conclusion:

1. There is a human animal sitting in your chair.

2. The human animal sitting in your chair is thinking. (If you like, every human animal sitting there is thinking.)

3. You are the thinking being sitting in your chair. The one and only thinking being sitting in your chair is none other than you. Hence, you are that animal (2008, 354).

One apparent consequence of the claim that we are material human animals is that if my brain is removed from my body and put into another body, that new person is not me. Claiming that we are material things required denying that psychological continuity is a criterion of identity; claiming that we are material human animals requires denying that even brain continuity is a criterion of identity.

This may seem to be a troubling consequence, but it is much less troubling if we accept the essentialist theory. If material objects are sums, and if we are material objects, then we are sums. And if sums do not, strictly speaking, change their parts over time, then, like the "persistence" conditions for "successive chairs" and other ordinary things, the "persistence" conditions over time for *us* is conventional.

Another difficulty with identifying us with human animals disappears if we accept an essentialist theory. Dean Zimmerman has objected to Olson's argument by claiming that "human animal" can be replaced with "human body" without making the argument invalid (2008, 24). The problem, however, is that it seems true that we cease to exist when we die. So Zimmerman concludes that we are not bodies or animals.

If we accept an essentialist theory, however, the problem disappears. If, strictly speaking, I can't change my parts over time, then I am not (strictly speaking) the same person that will be designated by 'Alex' a month from now (or even a week). I will certainly not be identical with a dead body further down the road.

4.6.3 How do I "persist" over time?

The idea that, strictly speaking, I don't change my parts over time seems crazy. And maybe it is. But I don't think it is obviously false.

Someone who thinks that I do, strictly speaking, persist over time might say that it is obvious that I persist. After all, I engage in activities that take long periods

of time, I remember things from long ago, and I bear unique attitudes toward my past and future selves. I feel pride or regret at past actions, and anticipation or apprehension at future ones. How could these past and future selves not be me?

One reply begins by pointing out that, whether or not we persist in a strict sense, the world will look the same. I will still engage in activities that take time; but it will not be I who completes them. I will still remember things from long ago; but it will not be I who experienced them. I will bear attitudes towards past and future people, but those people will not, strictly speaking, be me. But it will *seem* as if they are me, and they may be "Alex successors" in the sense defined by Chisholm (Section 4.4.2). As in the case of tables and chairs, there are conventional "persistence" conditions for people over time. Like tables and chairs, these criteria will involve causal and spatiotemporal continuity. What person is designated by 'Alex' a week from now will depend on a causal chain connected to me.

Psychological continuity may also play a role. For example, if by some miracle I am vaporized and—quite coincidentally—a qualitatively identical person is summoned into existence nearby, that person will not, strictly speaking be me. But it may be that the person meets the criteria for being designated by 'Alex'. Then again, it may not. It may ultimately indeterminate whether or not that person is Alex. (My friends and family might have to *decide* whether it is or not.)

The criteria for the "persistence" of people over time is not fully precise, as shown by our indecision over whether we would use 'Alex' to refer to a spontaneous duplicate of me. Another, more realistic, situation in which this indecision manifests itself is in death. Suppose I die, and a wake is held for my body. It is perfectly correct for someone to point and say, "That was Alex". But it is equally correct to say "That's Alex". (The latter may be more appropriate if it is necessary to identify my body.) Is the mereological sum that is the (deceased) body really me, or not? If we accept the essentialist theory, it is (strictly speaking) not, but it may be correct or appropriate to use 'Alex' to refer to the body. If it is, this will be because the body satisfies (or nearly satisfies) the conventional criteria for being me.

4.7 Lessons

In Section 3 I examined three different versions of the "plurality thesis"; the view that there are pluralities of co-located objects. In this section I offered an alternative. I am not sure whether my theory or one of the plurality theories is correct, but I suspect that it must be one or the other. My conclusion is largely the same as that

of Karen Bennett:

> The only live options, then, are to be either a one-thinger or a bazillion-thinger. We must either think that there is only one thing per spatio-temporal location, or else that there are lots and *lots* of spatio-temporally coincident things (2004, 358).

I would prefer to be a "one-thinger" because it does not commit me to a "bazillion" things all in the same place. That is not a decisive objection, of course. It may well be that such an explosion is more plausible than certain consequences of the "one-thinger" theory. But I think one of the two theories must be right.

Just as we demanded that the plurality theories could be equipped with an explanation as to why we don't believe there to be as many things as there are, so this essentialist thesis should be supplemented with an explanation as to why we *do* believe that things change their parts, when they in fact don't.

4.7.1 Can the essentialist theory explain what we believe?

In Section 3.7.1 I assessed whether any of the three plurality theories could explain why we hold beliefs that conflicted with certain consequences of the theories. The same assessment may be conducted with regard to the essentialist theory I have sketched here. If the essentialist thesis is right, why do we believe that chairs can change their parts?

One explanation is simply that we *don't* believe that things literally persist over time. When asked "Is it *literally* the same chair without its leg?" some of us may waver, and perhaps concede that we don't think it is really the same chair. But I doubt this reply will convince any philosopher who has already made up her mind about essentialism.

Another reply is that we are fooled by the great similarity between "successive chairs", both with regard to appearance and with regard to their spatiotemporal location. If we see a certain chair in the sitting room, and while we are away it is replaced by a different chair (someone carries one out and places another in the room), then we will likewise be fooled by the similarities between the two, and mistake them for one and the same thing. This idea is largely due to Hume:

> Nothing is more apt to make us mistake one idea for another, than any relation betwixt them, which associates them together in the imagination, and makes it pass with facility from one to the other. Of all relations, that of resemblance is in this respect the most efficacious; and that because it

> not only causes an association of ideas, but also of dispositions, and makes us conceive the one idea by an act or operation of the mind, similar to that by which we conceive the other. This circumstance I have observ'd to be of great moment; and we may establish it for a general rule, that whatever ideas place the mind in the same disposition or in similar ones, are very apt to be confounded . . .
>
> Now what other objects, besides identical ones, are capable of placing the mind in the same disposition, when it considers them, and of causing the same uninterrupted passage of the imagination from one idea to another? . . . I immediately reply, that a succession of related objects places the mind in this disposition, and is consider'd with the same smooth and uninterrupted progress of the imagination, as attends the view of the same invariable object. The very nature and essence of relation is to connect our ideas with each other, and upon the appearance of the one, to facilitate the transition to its correlative. The passage betwixt related ideas is, therefore, so smooth and easy, that it produces little alteration on the mind, and seems like the continuation of the same action; and as the continuation of the same action is an effect of the continu'd view of the same object, 'tis for this reason we attribute sameness to every succession of related objects. The thought slides along the succession with equal facility, as if it considered only one object; and therefore confounds the succession with the identity (Hume 2000, 135).

Hume claims that from a succession of similar impressions, we come to believe, through a "fiction of the imagination", that there is a single enduring object causing the succession of impressions. Likewise, I am suggesting that if this essentialist theory is true, then we come to believe that chairs can change their parts through a fiction of the imagination. When looking at a "successive chair", we see a series of sums that resemble each other in their appearance and spatiotemporal location. Due to such great similarities, we mistakenly take them to be a single enduring thing.

4.7.2 What can we learn from Fine's theory?

I have argued that we can identify ordinary things like chairs as mereological sums, and we can identify things like groups as sets. It is therefore not necessary to use Fine's theory of operators (Section 3.4) to describe these things. Is there anything we can take away from Fine's theory?

At the very least, Fine's theory is valuable for its insight that there are different ways of being a part. It shows that sums and sets both have parts, but in different ways. It suggests that there are also sequences, strings, words, poems, events, and quantities, each perhaps having their parts in different ways.

Some philosophers who adhere to a more or less classical mereology believe that physical or material things are the only things that exist (van Inwagen is one). For such philosophers, there is only one way of being a part, and anything that has parts (which is everything) is a mereological sum. I do not share this view; I think there are also sets, and probably other kinds of things. I do not think, therefore, that anything that has parts is a mereological sum. Sets have parts, and sets are not sums. My theory of essentialism must therefore operate with a definition of mereology that does not entail that everything that has parts is a sum. One way (though perhaps not the best way) to ensure this is to say that mereological sums are all and only physical things. Appropriate qualifications may be added to the definitions in Section 3.1.1.

But if everything is not a sum, if there are sets and probably other kinds of things as well, how *many* kinds of things are there? If the essentialist theory in this section was meant to avoid many different kinds of overlapping things, how can I allow that, in addition to sums and sets, there might also be strings, and sequences, and words, and poems, and an unknown number of other things?

I am not sure. But one, perhaps minor, advantage of my theory is that it allows us to retain at least a semblance of our pre-reflective categorization of ordinary things. According to Fine, chairs, statues, lumps, boats, and kittens are all different kinds of things, occupying different ontological categories. According to the essentialist, they are all the same kind of thing—they are all physical sums. The essentialist theory may recognize different kinds of things, but it does not multiply kinds beyond necessity.

4.7.3 Deflationary metaphysics

Kathrin Koslicki has an interesting objection to universalist theses such as the one I appear committed to. Her objection amounts to this: if every set of objects (such as the London Bridge, a particle in the moon, and Cal Ripkin, Jr.) is a thing in its own right (a sum), then metaphysics becomes uninteresting. There is no longer any debate about whether chairs or dogbushes are more "real" or have a stronger claim to existence. They both exist, and the difference between chairs and lumpkins is not ontological but conceptual: 'chair' is more embedded in our talk, and so chairs have greater importance to *us*. But metaphysically, or ontologically, chairs and dogbushes are on the same level. There is no sense in which chairs exist and lumpkins do not.

In the quote below, Koslicki is criticizing a version of four-dimensionalism that Sider has previously defended. Sider's position was that any collection of objects-at-times composes a sum. (Sider uses 'fusions' to refer to sums.) For example, a chair

is a fusion of a large number of *temporal part* of things (wood molecules, or atoms, or simples). Each thing (wood molecule, atom, or simple) is a fusion of *its* temporal parts. Each temporal part of the chair is also a thing (a fusion).

Again, I take no stand on whether objects have temporal parts or rather "endure" through time. But Koslicki's comments are relevant nonetheless:

> There is room, in Sider's theory, for *some* genuine ontological disagreements: for example, the universalist, the nihilist and the holder of the intermediary position genuinely disagree over how many and which fusions that exist. But the only genuine ontological disagreements for which there is room, in Sider's world, are ones that concern disagreements over "bare" fusions, so to speak. What has happened to the houses, trees, people, and cars, the familiar concrete objects of common-sense, whose persistence this account set out to analyze? There are no "deep" ontological facts as to whether a given fusion should count as a house or not . . .
>
> [By claiming that there can be genuine ontological disputes while also promoting four-dimensionalism,] Sider is guilty of a bit of false advertising: his account is really a way of saying that, at the end of the day, there is no interesting *ontological* story to be told about the persistence of our familiar concrete objects of common-sense; whatever there is to say about the persistence of houses, trees, people and cars concerns the organization of our conceptual household (2003, 124–125).

Koslicki seems to think that we ought to be able to find some ontological difference between "the familiar concrete objects of common-sense" and "bare fusions" like lumpkins or chairs-at-times. But according to Sider's four-dimensional mereology, anything with parts is, *by definition*, a fusion. Fusions are just things with parts. Lumpkins have parts, and are therefore fusions. Chairs and houses have parts, and are therefore fusions. To complain that ordinary things should be something more than "bare fusions" appears to exhibit a confusion about what fusions are.

Moreover, as I remarked above (Section 2.7), why should what interests us (familiar objects like chairs) be a guide to what exists? The only difference between ordinary things like chairs and unusual things like dogbushes seems to be the fact that we care about the former and not about the latter. There does not seem to be any metaphysical or ontological difference between the two; both are sums or fusions. The conclusion that "the persistence [and other properties] of houses, trees, people and cars concerns the organization of our conceptual household" therefore seems to be correct.

However, there *is* an ontological difference between some things, if not between chairs and dogbushes. One lesson of Kit Fine's theory of parts is that mereological

sums may not be the only kind of composite thing. There are apparently sets as well, and strings, and sequences, and perhaps many other types of thing. The difference between a set and a sum is probably an ontological difference, and identifying what distinguishes sets from sums (and from other kinds of things) is an interesting metaphysical question. The field of metaphysics is not then so barren, as Koslicki seems to have feared. But it is true that many interesting questions—When are we willing to call something a chair, and why? What conditions must be fulfilled?—are not ontological questions. They are questions about our "conceptual household."

Conclusion

I have argued for a number of claims in the preceding sections.

First, debates in metaphysics such as the one I have been engaged in are conducted in English (or French, or German) and not in "Ontologese" or some other pseudo-language. If it is "really" or "fundamentally" the case that there are no chairs, then 'there are no chairs' is true in English.

Second, philosophers who deny that there are chairs have some difficulty explaining why we nonetheless believe that there are chairs. Van Inwagen's explanation fails outright. Trenton Merricks claims that because things arranged chairwise matter to us, we have introduced the word 'chair' to refer to them; we are fooled by the singular nature of the word 'chair' and come to think that there is some single *thing* that we are referring to, when in fact there is not. This explanation, however, is equally compatible with universalism: the claim that for every set of things, there is some other thing they compose. And universalism is a much more plausible thesis than the nihilism of Merricks.

Third, if we assume that universalism is true, we have a choice to make. We can either adopt a "plurality theory" that posits a huge number of things (and possibly different *kinds* of things), or we can adopt a version of essentialism, maintaining that, strictly speaking, things do not change their parts over time. I have suggested that the essentialist theory avoids some of the excesses of co-location that plague the plurality theories while offering some neat solutions to problems of personal identity over time. But neither route is obviously superior, and both are defensible.

In the Introduction and in Section 2, I emphasized that my opposition to metaphysical nihilism was based, largely, on the fact that it is *obviously true* that there are chairs. I claimed to be arguing for what is clearly so, and rejecting what is clearly not.

But surely, mereological essentialism is not *obviously* true. Some would say it is

obviously false. In either case, I can no longer claim to be arguing for what is clearly so.

But not everything is clear in metaphysics. (*This* is obviously true.) There are a few things that are obviously true; many other things are not, but they are no less true. It is obvious that there are chairs; given that, what are they like? What sort of thing are they? Can they change their parts? If these questions have answers, they are not obvious.

Moreover we seem to be forced to choose between two possibilities, both of which might be decried as obviously false. If there are chairs, and all the other things that universalism entails, then either things change their parts or they do not. If things change their parts, then (again ignoring four-dimensionalism) there must be very many co-located things. Someone who takes this to be false may be forced to conclude that things do not change their parts.

This thesis therefore ends with no fully-formed theory. I have offered a disjunction: either a plurality theory or an essentialist theory is correct. I have no decisive intuitions here. I appreciate the minimalism of the essentialist solution, which dissolves problems of persistence and identity over time. But I recognize its strangeness, and see also the strengths of theories that posit pluralities of things.

References

Bach, K. (1987). *Thought and Reference*. New York: Oxford University Press.

Bach, K. (1994). Conversational impliciture. *Mind & Language 9*(2), 124–162. `http://userwww.sfsu.edu/~kbach/impliciture.htm`.

Bennett, K. (2004). Spatio-temporal coincidence and the grounding problem. *Philosophical Studies 118*(3), 339–371.

Butler, J. (1975). Of personal identity. In J. Perry (Ed.), *Personal Identity*. Berkeley: University of California Press.

Chisholm, R. (1979). *Person and Object: A Metaphysical Study*. Chicago: Open Court.

Fine, K. (1999). Things and their parts. *Midwest Studies in Philosophy 23*(1), 61–74.

Fine, K. (2010). Towards a theory of part. *The Journal of Philosophy 107*(11), 559–589.

Hawthorne, J. (2008). Three-dimensionalism vs. four-dimensionalism. In T. Sider, J. Hawthorne, and D. Zimmerman (Eds.), *Contemporary Debates in Metaphysics*, pp. 263–282. Malden: Blackwell Publishing.

Hinchliff, M. (1996). The puzzle of change. *Philosophical Perspectives 30*, 119–136.

Hirsch, E. (2005). Physical-object ontology, verbal disputes, and common sense. *Philosophy and Phenomenological Research 70*(1), 67–97.

Hirsch, E. (2008). Language, ontology, and structure. *Noûs 42*(3), 509–528.

Hovda, P. (2011). Tensed mereology. *The Journal of Philosophical Logic*. `doi:10.1007/s10992-011-9220-4`.

Hume, D. (2000). *A Treatise of Human Nature*. New York: Oxford University Press.

Koslicki, K. (2003). The crooked path from vagueness to four-dimensionalism. *Philosophical Studies 114*(1/2), pp. 107–134.

Markosian, N. (1998). Brutal composition. *Philosophical Studies 92*(3), 211–249.

Merricks, T. (2001). *Persons and Objects*. New York: Oxford University Press.

Olson, E. (2008). An argument for animalism. In P. van Inwagen and D. Zimmerman (Eds.), *Metaphysics: The Big Questions*. Malden: Blackwell Publishing.

Rosenberg, J. (1993). Comments on Peter van Inwagen's *Material Beings*. *Philosophy and Phenomenological Research 53*(3), 701–708.

Sider, T. (2001). *Four-Dimensionalism: An Ontology of Persistence and Time*. New York: Oxford University Press.

Sider, T. (2011a). Hirsch's attack on ontologese. Unpublished manuscript. `http://tedsider.org/papers/hirsch_attacks.pdf`.

Sider, T. (2011b). *Writing the Book of the World*. New York: Oxford University Press.

Thomson, J. (1998). The statue and the clay. *Noûs 32*(2), 149–173.

Uzquiano, G. (2004). The Supreme Court and the Supreme Court justices: A metaphysical puzzle. *Noûs 38*(1), 135–153.

van Inwagen, P. (1990). *Material Beings*. Ithaca: Cornell University Press.

van Inwagen, P. (2006). Can mereological sums change their parts? *The Journal of Philosophy 103*(12), 614–630.

Wells, H. (1904). Scepticism of the instrument. *Mind 13*(51), 379–393.

Zimmerman, D. (2008). Problems for animalism. *Abstracta Special Issue 1*, 23–31.