# MEREOLOGICAL NIHILISM

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To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

#### ABSTRACT

This dissertation is an exposition of Mereological Nihilism – one of doctrines concerned with material composition. The claim is that Mereological Nihilism is the most simple and unproblematic theory of material composition. It is confronted with it's most important rival – Mereological Universalism. Two restricted versions of Mereological Nihilism are presented and rejected, as they are not full-blooded and stable theories. Arguments in favour of and against total Mereological Nihilism are discussed, the latter being: its implausibility, the alternative possibility of the atomless gunk scenario, and its clash with ordinary language. These arguments are regarded either as not conclusive, or not peculiar to Mereological Nihilism.

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#### INTRODUCTION

The main subject of this thesis is the so-called "Special Composition Question" - a question that concerns conditions under which two or more material objects compose another object<sup>1</sup>. I believe that the correct answer to the Special Composition Question is Mereological Nihilism. My reasons for believing that Mereological Nihilism is true are, roughly, as follows. I assume that there is a mind-independent ontological structure of reality. What I mean by this is that there are some distinguished portions or aspects of reality, or, to put the idea in terms borrowed from D. Lewis – that reality has certain joints. I do not intend to put this picture explicitly in terms of properties, in the way Lewis does, but rather in terms of things. And therefore the difference between Lewis' view and mine, with respect to carving reality at the joints, is the following: while Lewis speaks of properties being natural or non-natural, I speak of things being natural or non-natural. I believe that to be a natural thing is to correspond to a certain joint in nature. Actually, I should rather say that I believe in existence of natural things, as opposed to unnatural things. Perhaps my view can be put in terms of properties as well. To say that something is a thing would be then to say that it instantiates a certain natural property. Natural properties would be here properties like: "being a human", "being a table", or in general: "being an x", where "x" stands for a thing we accept in our ontology. Perhaps there would be even such a general property as "being a thing", whose instantiation would be a necessary and sufficient condition for being a thing.

My view is then that to be a thing is to be a distinguished portion of reality – it is to be a significant or a special portion of reality. If there are any genuine ontological categories, these must be things first of all – things as basic building-blocks of reality. To

<sup>&</sup>lt;sup>1</sup> The Special Composition Question was firstly addressed in this form in van Inwagen (1990, pp. 20-32).

say that things are distinguished portions of reality is not exactly to say that they are "welldefined" or "clearly individuated", or even "clearly distinguishable", even though these are further requirements that things must meet. When I say that things are distinguished portions of reality I want to highlight their importance in the ontological structure.

Innocent as it might be, this view is challenged when applied to complex material objects, since every complex material object is subject to the so-called "Sorites Paradox". Take a table, for instance. Most people would say that it is a thing, and so, applying my concept of thing, that it is a distinguished portion of reality. Now let us take away a tiny part of this table – an atom for instance. Have we still got a table there? If yes – we must still have a distinguished portion of reality there. Now, most people would say that it is still the same table, so we must really have the same distinguished portion of reality there. But then let us take away another tiny part of the table, and another, and yet another, and let us repeat this step as many times as we like. And somewhere between these deductions we will start to doubt whether there is a table there or not. Some of us will doubt if there is the same table still, some - if there is still a table at all, and some - if there is a thing at all there. And at a certain point we will become sure that the table is not the same, or that there is *no table* at all, and perhaps that there is *no thing* at all. But surely, if the table was a thing in the first place, and so if it was a distinguished portion of reality, its existence cannot be vague. It is somehow incorporated in the idea of distinguished portion of reality that it cannot be vague. But now after we have taken away so many atoms from our old familiar tables, we have ended up with surprising conclusions: it is sometimes vague if there is a table or not; it is sometimes vague if the table is the same or not; it is sometimes vague if there is a thing or not. In my opinion the answer to these puzzles is the following: our old familiar tables are not things in the first place. Or to put it in slightly different words: if things correspond to joints in reality, it cannot be a vague matter whether there is

a thing or not. Therefore, I say that the only thing-joints that there are, are the simple thingjoints: things with no proper parts. And so my answer to the Special Composition Question: "When do two or more objects compose a further object?" is: "Never". And this is Mereological Nihilism.

Mereological Nihilism is one of two radical answers to the Special Composition Question. The other radical answer is Universalism, according to which two or more objects always compose a further object. Or in short: any xs always compose a further  $y^2$ . All other answers to the Special Composition Question are moderate: they allow of some composite objects and ban some others. The moderate answers can be based on various criteria of thinghood: adjacency, contact, instantiating a new property, or composing a living organism. The main problem with moderate answers is that the composite objects that they allow of are susceptible to the charge of vagueness – as we have seen already on the example of the table, it is sometimes vague whether certain composite objects exist or not. Therefore I dismiss moderate answers, as I say that they do not take the charge of vagueness seriously. The only answers that do so are the radical answers: Nihilism and Universalism, as they do not allow of any compositional "grey zone".

The advantage of Nihilism over Universalism is that only the former takes *things* seriously. Mereological Universalism goes against the spirit of my assumption that things correspond to joints in nature. I say that actually Universalists believe in so many things, that the notion of "thing" becomes trivial and non-distinguished. If they believe that there are any thing-joints in reality, then they must believe that *anything* in terms of material composition, any parts taken together do in fact correspond to a joint in nature. This makes the notion of "joint in nature" trivial. But the notion *cannot* be trivial. You cannot have a

<sup>&</sup>lt;sup>2</sup> "xs" are used in this paper to refer to some objects. We can also use expressions like "collection of xs" or "arrangement of xs", and these expressions are not supposed to carry any commitments to further complex entities composed of the xs. The use of such expressions does not imply that there is anything over and above just those objects – the xs.

world made entirely of joints – there must be some non-joints as well. A concept makes sense only when contrasted with its anti-concept, so to speak.

Universalism, as I refer to it here, is only a claim about material composition, and not about a particular way of existence *across time*. In its most popular version Universalism is understood as the Temporal Parts Theory, according to which things have not only spatial, but also temporal parts or dimensions. This aspect of Universalism is not a concern here. As far as the Temporal Parts Theory and existence across time are concerned, Mereological Nihilist can be either a friend, or a foe of them. Or he might not make any judgement about these matters, if he likes. At any rate, Mereological Nihilism is compatible with both endurance (being wholly present at all times of existence) and perdurance (having temporal parts). Some further remarks about combination of Mereological Nihilism and the Temporal Parts Theory can be found in the chapter titled "Four-Dimensional Simples".

When it comes to answering the Special Composition Question in a non-vague way only it seems that Mereological Nihilism and Mereological Universalism are equally good answers. People who do take the charge of vagueness seriously usually opt for Mereological Universalism as the only acceptable answer to the Special Composition Question. In this thesis I hope to demonstrate that there are no compelling reasons to prefer Universalism to Nihilism.

In the first chapter the problem of "depth" of ontological debates is discussed in detail, and various ways of being serious and being shallow about ontology are presented. In the second chapter a brief account of Mereological Nihilism is presented, together with two arguments for Restricted Nihilism which is a view that accepts only human beings as composite material objects. As it is claimed, there is no reason why one should restrict Nihilism in the manner proposed by these arguments: if arguments for Nihilism work for any other material object, they also work for humans understood as material complexes. In the end of the second chapter the relationship between Nihilism and the scientific approach is discussed. The third chapter concerns arguments against Mereological Nihilism. The first argument is the argument from implausibility of Nihilism. The proposed reply to this objection is that Universalism is just as implausible as Nihilism. As a part of this response the problem of ontological commitments of Mereological Universalism is discussed. The second argument against Nihilism, and as it seems – the most powerful one – concerns the possibility of the world's consisting of atomless gunk. It is claimed that Mereological Nihilism is able to embrace the possibility of gunk, however, reconciliation of Nihilism and gunk scenario results either in having a completely objectless ontology, or in accepting that there is only one thing – the world. The fourth chapter concerns the relationship between Mereological Nihilism and commonsense ontology, and various ways of reconciling these two are presented.

This paper concerns Mereological Nihilism only as applied to the realm of physical things. Therefore my defence of Mereological Nihilism is still compatible with the possibility of there being some non-physical complexes (still understood as distinguished portions of non-physical reality), like for example bundles of mental properties, or complex universals.

Before we scrutinize the problems posed by the Special Composition Question, perhaps it is worth to ask why this question should be of any interest to us in the first place. The question – or rather picking a particular answer to it – will definitely not change one's life. If you knew for sure that there were no composite material objects at all – would that change anything? No. You think you are a human being. I think that there are no human beings at all. Do I think that *you* do not exist? No. I only think that you do not exist if you are *conceived as a composite (non-vague) material thing*. Of course you do exist in some

sense of "you", and you are composite in some sense, perhaps there is even a sense in which you are a thing. All I want to say here is that given that a composite material thing is a non-vague sum of its parts, you are not such a thing. Nor is any visible material object. It is mostly because all such quasi-objects like you, tables, or cars, are able to survive loosing or gaining parts, while non-vague sums of parts are not. When exposed to this problem, some of us are inclined to say that there must be plenitude of things, like the table, the table minus one atom, the table minus two atoms and so on. This is the way that Universalists choose. I am inclined to say that there are much fewer things than they want to accept.

Why then should anyone be interested in asking the Special Composition Question? And why should anyone be interested in giving arguments in favour of one of the radical answers to it? It will not change the way we live, it will not change the way we talk, and it will not change the scope of our existential quantifier, as we normally use it. But I am sure that it might shed some light on the ways we think about material composition, identity of material things, object- or thinghood, structure of reality, and the like. So perhaps the Special Composition Question is worth asking because of "side-effects" of this enterprise. And if this is really so, then I am not aiming at answering a deep philosophical question, which the Special Composition Question undoubtedly is, but rather at trying to contribute to deeper understanding of some philosophical problems at least.

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### CHAPTER I HOW "DEEP" ARE ONTOLOGICAL QUESTIONS?

Thinking of possible approaches to the nature of ontological debates, one can be either a *robust ontologist* or a *deflationist about ontology*. If you are the former, it means that you take ontological questions seriously – you think that there are *facts of the matter* as to which of the alternative ontological theories is true. In other words, you think that there are facts of the *matter* are electrons", "There are tables", and the like<sup>3</sup>.

What are the ontological facts that determine the truth of existential claims? This can be for instance existence of joints in nature – the fact that mind-independent reality has certain structure, in which certain entities are distinguished and other alleged entities are not. If you are a robust Mereological Nihilist for instance, you think that simples are such joints – that the structure is built of them. If you are a Mereological Nihilist, you also want to say that all composite material objects *are not* such joints – that there is nothing in the structure of the reality that would make the composites in any sense distinguished. There is a sense in which you might want to say that the composites are ontologically derivative from simples. They exist as mere arrangements of simples, and as such do not contribute to structure of the reality.

If you are a robust Universalist on the other hand, an ontological fact for you is that there is such a joint in nature like a fusion of the Eiffel Tower and your left arm, for instance. You believe that this fusion is as distinguished in the structure as electrons,

<sup>&</sup>lt;sup>3</sup> Here we talk about issues concerning material composition, and so we are interested only in facts that determine truth of sentences concerning existence of complex material objects. However, robust and deflationary approaches are to be found within all ontological debates. And so we can have deflationists and robust ontologists about problems like coincidence of material objects, persistence and identity conditions, etc.

molecules and tables are, and that in no sense any of them are more or less privileged than the others. This is what being a robust ontologist amounts to.

If you are a deflationist about ontology, you do not believe in any ontological facts. The very idea of ontological facts makes no sense to you. Ontological questions are somehow trivial for you; these are questions that might have no answers, or might have merely semantic answers. And depending on the answers, there are various ways to be shallow about ontology.

#### **1.1. Ontological Debates As Merely Verbal**

The most popular way to be shallow about ontology is to say that ontological expressions, as used by different parties in ontological debates, have different meanings. This is to say that there is no genuine disagreement between one who says "There exist a fusion of the Eiffel Tower and Clinton's nose" and one who says "There exist no such thing as a fusion of the Eiffel Tower and Clinton's nose", since the former and the latter use "exists" in different meanings. People who believe that this is really the case, call them *ontological pluralists*<sup>4</sup>, claim that ontological disputes are merely verbal. This means that the participants of these debates are correct given what they mean by their terms. They want to resolve all apparent ontological questions by looking either at commonsense ontology, or at how our language works.

<sup>&</sup>lt;sup>4</sup> Following M. Eklund (2008).

#### **1.1.1.** The Doctrine of Quantifier Variance

The most prominent friend of the latter approach is Eli Hirsch (2002a, 2002b, 2005). Hirsch believes that the only way to resolve some ontological disputes (Hirsch is interested here only in the Universalism vs. Anti-Universalism dispute with regards to existence of visible physical objects) is to look at how people use the language. There are different ontological languages possible, he says, but there is one actual English language which people speak, and according to which the dispute is settled once and for all – there are no such things as an object made of Clinton's nose and the Eiffel Tower.

Hirsch believes in the plurality of possible languages. There are many languages an ontologist *could* speak. Moreover, it is possible to make them all intelligible, so that what is expressed in one of them, can be *translated* into another. Here Hirsch employs Davidsonian *principle of charity*: we should interpret a language in such a way that most of its sentences come out true or at least reasonable<sup>5</sup>. Different ontologists adhere to utterly different theories. And so you have utterly different ontological languages, so that for every theory there is a language according to which this theory comes out true.

When we think of various languages with various meanings, we usually think of predicate variance. Normally the predicates are this part of language that is responsible for differences in meaning. Hirsch describes this phenomenon in the following example: let us imagine a community in whose language (call it A-English) "cup" means any vessel for drinking. Now, in this community the sentence "A glass is a cup" is true, due to this particular meaning of "cup". In English this sentence is obviously false, because "cup" has some other meaning. If people speaking A-English were to enter into a debate with people speaking English as to the truth of this sentence, we would say that such a debate is merely

<sup>&</sup>lt;sup>5</sup> See Davidson (1974).

verbal. The meaning of "cup" differs here, we would say, and so there is no genuine disagreement. It is enough to say clearly what each party means by "cup" and the dispute is settled. The sentence is true when we mean "A-cup", and false when we mean "cup".

And likewise with ontological debates, says Hirsch. The only difference being that when it comes to ontological debates and the variety of ontological languages, it is the quantifiers, not the predicates, that change meanings of statements. There is a language spoken by the Universalist, for instance, in which the sentence: "There exists something composed of Clinton's nose and the Eiffel Tower" is true. This sentence is obviously not true in ordinary English. This phenomenon of quantifiers changing their meanings between languages is called by Hirsch *the quantifier variance*, and as such is responsible for ontological debates being merely verbal. Because of quantifier variance, one sentence has different truth conditions in different languages, and so it can come out true in one of them, but false in others.

It is important not to confuse the doctrine of quantifier variance with mere *quantifier restriction*. Quantifier restriction is another operation that can change truth conditions of a sentence. We merely restrict our quantifier if for some reasons we want to quantify only over *some* objects from our total domain. It is like saying: "There is no beer" when looking into an empty fridge. We restrict our quantifier to a specific area, namely to the interior of the fridge, and we look only at the objects that are *there*. When we unrestrict the quantifier and look at the whole world, this sentence will come out false.

Quantifier variance is not quantifier restriction. When we change the quantifier meaning, we do not intend to talk only about some objects, excluding other. When we use our quantifier, we mean it unrestrictedly, including all objects that exist (according to this quantifier). T. Sider (2007a, pp.210-17) uses notions of *contexts* and *meanings* to explain the difference between quantifier variance and quantifier restriction. When we want to

restrict the quantifier, we simply change the context of our utterance, like in the case of looking into the empty fridge. We can change our context to a broader one, looking at the whole town for instance, and in this way change the truth conditions of our sentence. Still, the meaning of "beer" and "there is" is the same. If we think of quantifier variance, we must change the meaning of the sentence, while being able to keep our context fixed. Let us pick a different example – a world containing three simples. The Mereological Nihilist would say "There are three things here". The Mereological Universalist would say: "There are seven things here". Both are right according to the quantifier variance doctrine, since both speak different languages with different quantifiers. The quantifier as used by the Nihilist does not recognise any fusions – therefore it ranges only over three objects. The quantifier as used by the Universalist has seven objects in its scope.

It is usually claimed that quantifier variance is about change of meaning of expressions like "object", "thing", "there is", or "there exists". Change of the meaning of "object" is then a change of the meaning of "there is". Now, this can be a bit confusing, when we think of sentences like: "x is an object", or "y is not an object". In sentences like these, "object" and "thing" appear in *predicate* position, and quantifier variance is *not* about predicate variance after all! Well, it seems that "object" and "thing" are not predicates really, even though they are sometimes used as predicates. To say that x is an object or a thing is just to say that it is in the scope of some quantifier. And so:

 $\exists x O(x)$  (where "O" stands for "object")

tells us nothing more than that the use of " $\exists x$ " is eligible. Sentences like "x is a table":

 $\exists x T(x)$  (where "T" stands for "table")

are much more informative, since they tell us that x is an object (because it is in the scope of the quantifier), and on top of that they tell us something about the sortal to which xbelongs. Therefore, we can say that quantifier variance is indeed variance of meaning of "thing" or "object", since by saying "x is an object/thing" we say no more than "there is an x".

How does this make the ontological debates merely verbal? Let us recall the example with A-English speaking community, for which "cup" means any vessel for drinking. The debate between them and the ordinary English speakers can be resolved by making clear that "cup" has different meanings in their languages. We assume, for the sake of simplicity, that they use the same quantifiers. We have a case of quantifier variance when for instance the Universalist disagrees with the Nihilist over the truth of the sentence "There exist tables". Here they keep meaning of the predicate fixed – they mean the same by "table". Most probably they mean "many particles arranged table-wise". When the Universalist utters the sentence, he asserts that it is true that there exists *an object* which is the collection of particles arranged table-wise. The Nihilist denies that there is any such *object* - for him collections are not objects at all. This is because their meanings of "object" vary.

It cannot be the case that one quantifier meaning is just a restriction of another, and that by simple undoing the restriction we can acquire the broader quantifier meaning. If this was the case, one could say that the broadest language is the best language, because all other languages are mere restrictions of it. The bigger, the better – one could say. But can one really say so?

This would be against the spirit of the quantifier variance doctrine, according to which all languages are equal when it comes to their ability to describe the world. If the quantifier variance doctrine was a mere restriction of quantifiers, one could say that the richest language is the best language for describing the world. However, since according to ontological deflationists there are no joints in the nature and so there is nothing that could make one of the languages more *correct* in describing the reality than the other, we cannot really speak of better and worse languages. Is it so certain that the richest language would be privileged *ontologically speaking*? One thing is to say that one language is better than the other because it is richer, yet quite different thing is to say that one language is better than the other because it describes the world more correctly. I do agree with the claim that the richest language would be privileged with respect to its *expressive power* – it would be the broadest language after all. But why would that imply that it is the language which is the most *correct* language when it comes to describing what the world is like? Perhaps the worry that having the biggest language would threat equality of languages comes directly from the fact that there are no ontological facts that would make one language better than the other when the correctness criterion is employed. And so we cannot say that one language is better than other languages because it reflects ontological facts more correctly. This lack of ontological criteria could perhaps be a motivation for treating languages as better or worse according to a different criterion – the criterion of broadness. This is the only problem I can see in having the biggest language. But if we restrain from that - if we can tell expressive power from correctness – having the biggest language should be no worry at all. At least not in principle.

However, it seems that mereology *is* an area in which we really have the biggest language. This biggest language is the language of Universalism, and the quantifiers of all other languages are restrictions on the Universalist quantifier. No mereological language could be broader than the language of Mereological Universalism. And what is more important – we cannot imagine a possible language such that objects recognised by this

language are not recognised by the Universalist language<sup>6</sup>. All sorts of composite material objects are in the scope of the Universalist quantifier. Is the demand to distinguish quantifier variance from mere quantifier restriction sound here?

Yes, it is. Mereology is quite a specific debate. Because of the particular languages we have here, we are somehow inclined to think that quantifier variance is mere quantifier restriction. Take for instance three mereological languages with different quantifier meanings. Call these languages Universalish, VanInwagenish, Nihilish. When you look at the domains of objects recognised by these languages, you can see that that Nihilish's objects are a subset of VanInvagenish's domain, which in turn is a subset of Universalish's domain. Now try to forget these and other familiar mereological languages and imagine the following: there are only three possible mereological languages: VanElectronish, VanProtonish, Differenceish (odd names here are introduced not in order to confuse the reader, but to give indication of their quantifier meanings). According to VanElectronish there exist only objects such as living organisms and electrons, according to VanProtonish - only living organisms and protons, and according to Differenceish - all possible simple and composite objects apart from living organisms, protons and electrons. Here the situation looks dramatically different: not only there is no language that recognises all objects from all *smaller* languages domains, but the *broadest* language (broadest by the number of objects it recognises) does not recognise any of the other languages' objects. This is, I think, a nice example of how the quantifier variance doctrine should work in principle. The requirements and conditions of the doctrine should be such as to embrace possibilities like this one. And only by drawing examples like the one above we can say what the difference between the quantifier *variance* and the quantifier *restriction* really is.

<sup>&</sup>lt;sup>6</sup> It is not necessary that the biggest language recognises all objects that are recognised in all other languages. In principle we could have a language that recognises few extra objects, but fails to recognise many objects that the biggest language recognises. This language still would be smaller, given *the number* of objects it recognises. It's not really possible to think of *material* objects not being recognised in Universalist language, but we can think of examples like mental objects, properties, etc.

Formal conditions for the doctrine of quantifier variance have been stated by T. Sider (2007a). Using the following basic formulas:

- m: meaning,
- c: context,
- *M*: set of models worlds according to different quantifiers,
- *E*: set of quantifier meanings,
- Q(E): set of quantifiers based on E,
- "Depicts": Model M *depicts* meaning-context pair <*m*, *c*>
- "Outruns": Model M *outruns* meaning m iff for no c does M depict  $\langle m, c \rangle$

(Which is just to say that there is no such context for which M would depict m – there are more objects in M that would be expressed by m; M is richer than m),

- "Unrestricted": A quantifier is *unrestricted* iff there exists no proper restriction of it,

Sider states the following possible forms of correspondence between quantifier worlds and quantifiers:

Weak M/E-quantifier variance Every member of M depicts some member of Q(E)

**Moderate** M/E-quantifier variance Weak M/E-quantifier variance + some member of M outruns some member of E

**Strong** *M*/**E**-quantifier variance Weak *M*/E-quantifier variance + every  $M \in M$  outruns some member of E (provided M is a proper supermodel of some member of *M*)

**Unrestricted** M/E-quantifier variance Every member of M depicts some unrestricted member of Q(E)

The weak quantifier variance is too weak, since it does not make any difference between quantifier variance and mere quantifier restriction. It is consistent with all quantifiers being mere restrictions on the maximal quantifier. The moderate quantifier variance says that at least one quantifier world is beyond the reach of at least one meaning, which is to say that the meaning cannot be unrestricted to generate the world. The strong quantifier variance requires that each quantifier world is beyond the reach of some meaning. The strongest form is the unrestricted quantifier variance: here each quantifier world depicts some unrestricted quantifier. If the unrestricted quantifier variance did not hold, we would have some quantifier words that would be mere restrictions of other worlds.

It seems that Hirsch's position is not as much deflationary as one might think. Hirsch believes that quantifier variance is possible rather that actual<sup>7</sup>. He believes that people really speak one ontological language, which is ordinary English (hopefully non-English speakers have their relevant languages too), and according to which there is no object composed of Clinton's nose and the Eiffel Tower whatsoever.

However, the other possible quantifier meanings can be made intelligible to English speakers. People can acquire a different quantifier meaning by thinking of a change in meaning of "there exist something" such that would render sentences like "There is something composed of Clinton's nose and the Eiffel Tower" true. This can be for instance done by stipulating that this sentence is true whenever there was/is/will be something that is Clinton's nose, and there was/is/will be something that is the Eiffel Tower. The meaning of the new quantifier is simply the role it plays in determining the truth-value of sentences containing it.

<sup>&</sup>lt;sup>7</sup> H. Putnam seems to think the opposite – that people in fact do speak different ontological languages (1994, pp.304-305), (1987, p.71).

It is relatively easy to make a narrower quantifier meaning intelligible. Let us assume, together with Hirsch, that the common ontological language is really ordinary English. A language, or a quantifier meaning narrower than that of the ordinary English would be for instance the quantifier meaning as used by the Mereological Nihilist. An ordinary English speaker can make this quantifier meaning intelligible to himself by stipulating that "x exists" is true only if x refers to a simple.

Now, how can an English speaker make a broader meaning intelligible to himself? He can stipulate that "There is something composed of Clinton's nose and the Eiffel Tower" is true if "There is Clinton's nose" is true, and "There is the Eiffel Tower" is true. Does he need to add anything else? Does he have to say that on top of these two objects there also exists another, the third object? Well, it seems so, if the English speaker intends to use the Universalist's quantifier<sup>8</sup>. But how can this extra statement be seriously asserted by him, if *his* language, that is English, does not recognise this composite object?

Hirsch proposes to use a metaphor here. *Metaphorically speaking*, he says, there is something that is composed of Clinton's nose and the Eiffel Tower. If we speak metaphorically, we are not *really* committed. We speak *as if* only.

An important thing to notice is that when two languages differ with respect to their quantifier meanings, their names, predicates, function symbols, reference and denotation must differ too. Otherwise, the following two powerful arguments against the quantifier variance doctrine would be sound<sup>9</sup>.

According to the first argument, if we had two different quantifiers:  $\exists_1$  and  $\exists_2$ , we could think of a third language that contains both of them. But when we apply the ordinary

<sup>&</sup>lt;sup>8</sup> Provided that mereology is ontologically committing. If mereology is not, then perhaps it would suffice to say that Clinton's nose exists, and the Eiffel Tower exists. But then it would be trivial to say that any two or more objects have a fusion, since it would add nothing to the ontological picture.

<sup>&</sup>lt;sup>9</sup> See Sider (2007a, pp.216-17).

inference rules: quantifier elimination and quantifier introduction, the quantifiers could come out equal:

$$\exists_1 x F(x)$$
  
 $F(a) (\exists_1 \text{ elimination})$   
 $F(a)$   
 $\exists_2 x F(x) (\exists_2 \text{ introduction})$ 

This would in turn mean that we cannot really have two different quantifier meanings. And so, it would mean that ontological debates cannot be mere semantic disputes, like those concerning different meanings of predicates for instance. But if inference rules vary with respect to different quantifier meanings, we really have two sets of inference rules, predicates and names here:

 $\exists_1 x F_1(x)$   $F_1(a_1) (\exists_1 \text{ elimination})$   $F_1(a_1)$  $\exists_1 x F_1(x) (\exists_1 \text{ introduction})$ 

And so it is no longer possible to infer  $\exists_2 x \ F(x)$  from  $\exists_1 x \ F(x)$ , since  $\exists_2$  cannot be introduced to formulas containing names and predicates specific for  $\exists_1$ .

Another argument against the quantifier variance doctrine comes from application of the Tarskian theory of truth. It is claimed that people who speak smaller languages and attempt to make bigger quantifiers intelligible to themselves, must reject Tarskian semantics. According to Tarskian theory of truth, they would have to think that there really exists something that the name from the bigger language denotes. Whereas being committed only to objects recognised by their smaller language, they cannot do so. Again, this problem can be solved by saying that with different languages not only quantifiers vary, but also other linguistic phenomena, like reference and denotation in this case. Again, if we have two different quantifiers:  $\exists_1$  and  $\exists_2$ , we have reference<sub>1</sub> and denotation<sub>1</sub>, and reference<sub>2</sub> and denotation<sub>2</sub>.

Yet another important objection to the doctrine of quantifier variance is the *threat* of antirealism. It may be claimed that quantifier variance presupposes antirealism about what there is, since existence claims are true or false with respect to different linguistic decisions. And so by choosing a given language we render certain existence claims true or false. Their truth is not mind-independent. Is that correct?

Well, it is and it is not. Hirsch claims that the quantifier variance doctrine does not commit one to antirealism (2002a, pp.51-53). Our linguistic decisions, he says, do not determine whether there exists something composed of Clinton's nose and the Eiffel Tower or not. According to Hirsch there is only one ontological language that is actually spoken – the ordinary English, and according to that language there is no such object. Linguistic decisions as to which ontological language to speak, determine only the meaning of "there exists", says Hirsch. And he gives the following example: let us say that there is a language in which "tail" refers to legs. If you ask how many tails a dog has, the answer is obvious: "one, of course!".

Now, this part might seem a bit mysterious. I would think that if I speak a language in which "tail" refers to legs only, the correct answer to that question should be: "four, of course!". Now, it seems that Hirsch plays with different languages here: he answers the question in a *different language* that it has been asked in. If you decide to change meaning of "tail" and thereby you decide to speak, say, T-English, you cannot really give an answer which is correct in English, namely that a dog has one tail, but which is not correct in T-English. What has gone wrong here? I guess that since Hirsch believes that there is actually only one ontological language that all people speak, he can answer the question only in this language. However, if you do not think that there is one actual language that ontologists speak, and so if you are a full-blooded ontological pluralist, and believe, in the way that Carnap and Putnam believe, that there are multitude of equally good ontological languages, and if you were asked in T-English how many tails a dog has, you would say that dog has four tails. But it is still true that dog has only one part of the body that it waves whenever it is happy. Only now this is not what "tail" means.

Let us take another example. Let us say that from now on we will use "object" to refer to the sum of Clinton's nose and the Eiffel Tower. And now let us ask: is the sum of Clinton's nose and the Eiffel Tower an object? Hirsch would have to say: of course it is not! But we, who consistently decided to use the new language, we must say: yes, it is. Languages change and answers change. So there must be a sense in which the doctrine of quantifier variance commits one to antirealism.

On the other hand, all those possible ontological languages describe the same reality. Whenever you switch to a different ontological language, your world of *empirical facts* remains the same. You do not change anything in appearance of a dog if you decide that "tail" will refer to legs. The dog remains the same: an ordinary dog still has four parts of its body used for running, scratching, and digging holes, and one used for waving whenever the dog is happy. So there must be a sense in which the doctrine of quantifier variance does not commit one to antirealism.

It seems that we need to think of the realism-antirealism distinction as applicable in two different areas. One is the area of ontological facts. Here you can be a realist if you believe in existence of mind-independent ontological facts, like Mereological Universalists and Nihilists do, as they believe in existence of joints in nature. In no way are the joints dependant upon human thought: they are out there, waiting to be discovered, not to be invented. The question is now: are the ontological pluralists like Hirsch antirealists about ontological facts? Well, I think they are. Full-blooded ontological pluralists who believe that all languages are equally good and correct, must think that there are no ontological facts beyond their linguistic decisions as to which ontological language they should speak<sup>10</sup>. This is a matter of choice. Ontological pluralists like Hirsch, who believe that one of ontological languages is privileged for reasons *different* that *reflecting the ontological facts* that would be able to settle ontological debates. What actually settles the debates is a *linguistic fact* that people happen to speak one particular language.

One could still attempt to save ontological realism here by saying that people happen to speak this particular ontological language *because* it mirrors the mindindependent, structured ontological reality. But I think this is something that people like Hirsch cannot really admit, as this would be to agree that there are ontological facts, and that they are being reflected in the language we speak. But the existence of ontological facts is just against the spirit of ontological pluralism. So this position is not tenable at all.

Ontological pluralists are *not* antirealists when it comes to *empirical facts*. I think this would be a very odd position. An empirical antirealist would be someone who says that the world of empirical facts is not really out there, independent of anyone's decisions or choices. And ontological pluralists do not say this. Whether you believe in existence of an object composed of Clinton's nose and the Eiffel Tower or not, your empirical world is the same. Clinton's nose travel with Clinton all over the world, and the Eiffel Tower overlooks Paris regardless of whether you believe in unrestricted composition or not. Or perhaps we should say: the particles arranged Clinton's-nose-wise change their location

<sup>&</sup>lt;sup>10</sup> And this is a more deflationary position than that of Hirsch's. Allan Sidelle (2002), believes that there are no ontological facts of the matter, and that all *descriptions* are equally eligible.

together with other particles arranged Clinton's-body-wise, and the particles arranged Eiffel-Tower-wise occupy the same location at all times. The world of *matter* is the same, in other words. And this is perhaps an intended meaning of Hirsch's example with dog's tail.

Still, it is possible that even ontological pluralists are *ontological realists* to a certain degree. It would be the case if there are some *atomic sentences* that are true for all quantifier meanings, and could be rendered false only by quantifier restriction (by change of context)<sup>11</sup>. Examples of such sentences could be: "There are electrons", or: "There are quarks". Those sentences should be really read as: "Electrons are objects" and "Quarks are objects", because this is what I think people have in mind when they say "there are". And so perhaps there are objects that are recognised by all possible ontological languages, when the quantifier is unrestricted. If this is the case, then there is some realism in ontological pluralism: there are some objects that are recognised by every language. Now, I do not think that such atomic sentences are actual. I do not think that there is a set of basic objects that are recognised by every language. Total ontological Nihilism – a doctrine according to which there are no objects whatsoever, is perfectly tenable to my opinion. The world according to the total Nihilist is a world made entirely of matter that fails to constitute any objects. It can be a world of someone who does not believe in composition, and does not believe in existence of the total object which is the whole world, and who believes that matter is gunky, as opposed to matter being composed of simples.

However, one might say that ontological realism based on existence of atomic sentences that are true in every languages is only apparent, as the truth of these sentences is not really due to ontological facts and joints being out there, but due to the fact that these sentences *happen* to be true in all languages. I would not know how to answer such an

<sup>&</sup>lt;sup>11</sup> See Sider (2007a, p.215).

objection. It actually seems that there is something more to ontological realism than linguistic agreement on certain facts.

Still, there are people who do not agree that ontological debates are merely verbal<sup>12</sup>. The reason why ontological debates cannot be treated as mere semantic debates is that it is difficult, or even impossible, to state one party's views in other party's language. When it comes to merely verbal debates about meaning of predicates, like in the example of the community using "cup" for any vessel for drinking, it is pretty easy to explain what the difference in meaning is. However, when one tries to explain or make intelligible different quantifier meaning, one might come across very serious difficulties.

Giving the meaning of the smaller quantifier by means of the larger quantifier is not a problem. This is provided that the larger quantifier recognises all objects that the smaller quantifier does. In this case you simply restrict your quantifier to a smaller domain and treat this restriction as giving you *unrestricted* meaning (this is how you change the meaning, not only the context). However, as the objection goes, you are in trouble when you try to state the meaning of the larger quantifier using the smaller one. You have to commit yourself, it seems, to existence of those extra objects that your original language does not recognise. Hirsch proposes to use a metaphor for this purpose, as it has been mentioned above. We speak metaphorically when we speak the larger language. We speak *as if* only. Can this answer be satisfactory for the quantifier variance doctrine objectors?

Another thing is that it is possible, even though perhaps not actual, to have two languages, such that one of them is larger given *the number* of objects it recognises, and the other is smaller given *the number* of objects it recognises. Still, the larger language does not recognise some of the objects recognised by the smaller language. This situation must be in principle possible, given that quantifier doctrine is not mere quantifier

<sup>&</sup>lt;sup>12</sup> See T. Sider (2001).

restriction. If you speak the larger language here, and you want to make the smaller quantifier intelligible, it is not enough just to restrict your quantifier. You must change your quantifier in such a way as to exclude some objects, and include some new objects at the same time!

How serious is the objection that it is not possible to make some quantifiers intelligible by means of some other quantifiers? If you switch to a different language, and if you make a new quantifier intelligible to yourself, you change your ontological commitments in some sense. You speak *as if* your really believed in those extra objects that the language larger than yours recognises. You become a Universalist when you use the Universalist quantifier, and that is the end of the story.

I do not think there are any formal reasons as to why ontological pluralism should be an untenable position. The alleged problems with making the larger quantifier intelligible do not worry me at all. Instead, I can think of a possible reason why some people might want to say that ontological disputes cannot be merely verbal. The *scope* of changes that need to be introduced to a language when a new predicate meaning is being introduced, and the scope of changes when a new quantifier meaning is being introduced, are extremely different. When you give an example of an ordinary debate on predicate meaning, like for instance the meaning of "cup", you usually describe a situation when only one predicate varies in meaning between two languages. The whole remaining language apparatus: other predicates, quantifiers, logical constants, reference and the like, remain the same. It is not difficult to introduce such a minor change to a language.

When you change the quantifier, on the other hand, you must change also other parts of language, like logical functions, names, reference, and the like. This is a vast area of a language. If you have languages with different quantifiers, the only parts that they have in common are predicates at most. It should not come as a surprise then that it is difficult to make alien quantifiers intelligible. It must be as difficult as having a debate over meanings of *all* predicates of a language, or as trying to introduce all new predicates into a language. Let us imagine an effort of making the whole lot of entirely new predicates intelligible to ourselves, using our old predicates. This is perhaps even more difficult than changing the quantifier meaning, names, and reference at the same time. But really it seems that difficulties with making alien quantifiers' meanings intelligible arise due to *the scope* of changes, and not due to the specific domain of changes. It is not difficult because you change your *quantifier meaning*, it is difficult because you change the *major part of your language*.

#### **1.2.** Other Ways To Be Shallow

Believing that ontological disputes are merely verbal is not the only way to be shallow about ontology. Following M. Eklund (2008), we can list at least four other deflationary positions: Maximalism, Nihilism, Absolute Fictionalism, and Agnosticism.

An Ontological Nihilist (not to be confused with a Mereological Nihilist) believes that there are no objects whatsoever (not only: no composite objects). Whatever exists, can be described according to him solely in terms of *matter* or *stuff*. An Absolute Fictionalist claims that ontological statements are in a sense fictional – when we utter them, we are not *really* committed to the existence of various objects; they are true *on the assumption* that the relevant objects exist. These two positions are what we could call "full-blooded deflationist positions". The other two, as it seems, are not as much deflationary.

Agnosticism about ontology is in some sense a non-deflationary position, since it admits that ontological questions are *genuine*, because there are facts of the matter as how to settle these questions. The problem here is merely epistemic: there are no ways to know

the ontological facts. Perhaps there might be another way to be an Ontological Agnostic – this would be to say that there is no way to know *whether* the ontological questions *are genuine* or not.

An Ontological Maximalist believes that there actually are any objects that could exist, given that the empirical facts are the same. This position might be a bit difficult to classify. On the one hand, Ontological Maximalism seems very similar to Mereological Universalism. The Ontological Maximalist believes in fact in existence of as many objects as the Mereological Universalist does<sup>13</sup>. However, Eklund sees a significant difference between these two positions. The difference lies in motivation, he claims. For the Mereological Universalist the ontological questions are genuine and there are facts of the matter as to what sorts of objects exist. For the Mereological Universalist there are joints in nature, and these joints are abundant enough to allow him to believe in all sorts of composite objects. And even though the Ontological Maximalist would believe in exactly the same number of objects, his motivation for doing so would be entirely different. The Ontological Maximalist does not believe in the existence of joints in nature first of all, and so for him anything goes, mereologically speaking. His ontology is as rich as the Universalist's ontology, but while for the Universalist everything corresponds to joints in nature, for the Ontological Maximalist the notion of a joint in nature is simply not applicable.

For Eklund this specific motivation makes Ontological Maximalism a deflationary position. I would rather say that difference between Ontological Maximalism and Mereological Universalism is not so significant as it might seem at first. The motivation only *seems* different. If you believe in abundant joints in nature, such that, mereologically speaking, anything goes – what sense can you make of a joint in nature? A joint in nature

<sup>&</sup>lt;sup>13</sup> If we restrict our domain to material objects only, as the Ontological Maximalist can also believe in existence of non-material objects, and objects with both material and non-material parts.

is supposed to be a *distinguished portion of reality*. But if you say that all possible simple and composite objects correspond to joints in nature – what sense of "being a distinguished portion of reality" are you talking about? Distinguished portions of reality come only as in opposition to non-distinguished portions. And it seems that for the Universalist there is nothing mereologically non-distinguished, because there is no such arrangement of objects that would not make another object. The whole idea of distinguished portions of reality seems to be of no application here.

It is important to realise that there are various ways in which one can be an Ontological Maximalist, Agnostic, Nihilist, or Fictionalist. Let us take Ontological Maximalism as an example. One could be an Ontological Maximalist and believe in all sorts of composite material objects. This is our familiar Mereological Universalism, I would say. But one could also be a Maximalist in different ways. One could for instance believe in existence of all sort of possible properties, and be a Property Maximalist, or one could believe in both material and mental substance, and be a Maximalist as compared to someone who believes only in material substance for instance. In other words, one can be a Maximalist with respect to many distinctions. Being an Ontological Maximalist is just one of the many ways. Being a Maximalist is like a general tendency to embrace all entities of a given sort, or as distinguished in a certain way (objects as material composites, properties, substances, etc.). Therefore Maximalism is more like an attitude that is applicable to all sorts of ontological questions.

And the same is true about the other ways to be shallow about ontology. This distinction is quite general. We can think of Pluralists, Nihilists, Agnostics and Fictionalists in all sorts of ontological disputes. Mereology is not unique in this respect. But this is the only ontological debate taken up here. Everywhere in ontology we can have radical and moderate positions as to what sort of entities, given a particular distinction or

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criterion, exist. A robust ontologist believes that there are different ontological facts settling different ontological disputes. And everywhere in the ontology we can have also deflationary ontologists saying that there are no facts of the matter settling ontological disputes. There are people who say that there are no facts of the matter whether coincidence is possible, and so there might be people who say that there are no facts of the matter as to which properties are genuine properties.

#### **1.3.** How To Be Deep About Ontology

If you are a robust ontologist you believe that there are some facts of the matter as to what objects exist. You believe then that even though there are multiple candidate meanings for the quantifier, some of them are (ontologically) more *eligible* that the others. If you believe in existence of logical joints in nature, you will say that the most eligible candidate meaning is the one which is closest to the joint in nature. You believe that the reality comes already structured, and that its structure settles ontological disputes. It is worth mentioning that people like Hirsch also believe in a certain sort of eligibility – but this is not ontological eligibility, steaming from structure of the reality, but *linguistic* eligibility, steaming from the real use of language.

Robust ontologists see ontological debates as debates over nature of ontological entities. The debate between the Mereological Universalist and the Mereological Nihilist is a debate over the nature of quantifier, or the nature of existence. There is, according to both parties of this debate, the most eligible meaning of the quantifier, and they are in a genuine disagreement as to which meaning this is. They are in a debate over an extraempirical facts. And so the methods they use to settle the debate are specific to philosophy. These are: thought experiments, considerations of simplicity, coherence, integration with other philosophical and peripheral domains (like physics for instance). The paradigm for all robust ontologists is that the reality comes structured, and that this structure is to be discovered. This structure gives meaning to the quantifier we use, and to our logical constants. It determines our reference and denotation of the terms we use. And even if it is intelligible to have multiple candidates for quantifier meaning and the whole apparatus related to it, there is only one correct meaning of existence, and there is only one domain of things. And this is what I believe to be the case.

### CHAPTER II MEREOLOGICAL NIHILISM

Mereological Nihilism is a doctrine according to which no thing whatsoever has *proper* parts (parts that are not identical to the whole; parts that are smaller than the whole). A consequence of this view is that all things that exist are just simples - "metaphysical atoms".

I admit that Mereological Nihilism is to a great extent at odds with what one can call a "commonsense ontology". Nihilism obviously implies denials of many commonsense existential statements concerning macroscopic objects of our everyday experience. We are invited to deny not only the existence of such "vague" objects as mountains or piles, but also the existence of such "well-defined" objects like tables, chairs and cars. Moreover, we are invited to share an extremely implausible view that there are no living organisms, including our pets, friends, or even our parents and partners.

However, I am not certain to what degree should plausibility make a reason for favouring one view over the other. Many philosophical analyses aim at demonstrating that what was once regarded as contradicting commonsense beliefs, after a sophisticated scrutiny turns out to be perfectly consistent with commonsense conception of the world. Of course there is a question of how much of the commonsense picture remains after philosophical analysis and whether there is anything "commonsense" in the picture still. Sometimes it seems that the attempts to reconcile some novel theories with commonsense views are so complicated and obscure that one may start to doubt whether preserving the commonsense picture is not lost on the way – whether there is still some sense in such enterprise. In other words: *plausibility* is often lost when one tries to reconcile new philosophical theories with old plausible views.

Therefore I do acknowledge that Nihilism is a departure from plausible views. Moreover, as I shall argue, the main rival of Nihilism – Universalism - is a departure from plausible views at least to the same extent.

The only things that exist according to the Nihilist are simples. These should be understood as the smallest, indivisible parts of matter. These are not the physical atoms, since physical atoms are composed of smaller parts, like electrons for instance. What are the simples then, speaking in terms of physics? To be perfectly honest, I would rather avoid speaking in terms of physics, as entities that are deemed simple by physics today, may turn out to be composite objects tomorrow. And so I do not want to determine what physical entities our simples stand for.

#### **2.1.** Arguments for Restricted Nihilism(s)

Two arguments for restricted versions of Mereological Nihilism have been presented by T. Merricks and P. van Inwagen. The common conclusion of these arguments is that there are no composite physical objects, except of human beings (and perhaps other living organisms). Both arguments consist of two parts: in the first it is argued that many commonsense macro-physical objects do not exist, and in the second part it is argued that there are some exceptions to arguments presented in the first part. These exceptions are either only human beings (Merricks), or human beings together with other living organisms (van Inwagen). As I shall claim, there are no reasons to restrict Nihilism in the manner that these two authors do. Therefore I will argue that if arguments for Nihilism presented by Merricks and van Inwagen are to have any force, they should be treated as arguments for unrestricted Nihilism.

#### 2.1.1. "To Be Is To Have Non-Redundant Causal Powers"

Merricks' argument for restricted Nihilism is based on the claim that for macrophysical objects to exist is to have non-redundant causal powers (2001, pp.33-82). Causal efficacy of complex material objects is, according to Merricks, entirely redundant: in fact there is nothing more and above causal powers of simples that acting jointly bring about certain effects. These effects occur primarily on the micro level. And so macrophysical objects do not have any non-redundant causal powers, and due to this fact their existence should be denied.

However, Merrick's Nihilism is limited only to non-human material objects; it has no application to human beings at all. Human beings in fact do display some nonredundant causal powers, and this is due to human beings' having some *mental* properties. These are defined as properties that are "not, of metaphysical necessity, implied by the existence and intrinsic properties of, and spatiotemporal and causal interrelations among, that object's constituent atoms" (2001, pp.88-89). Merricks relates the fact of having mental properties to the fact that one's evidence for one's existence is not straightforwardly sensory or causal, as it is in case of evidence for the existence of other macrophysical material things.

The argument looks, roughly, as follows:

- (1) Out of macrophysical things only those which have non-redundant causal powers do exist.
- (2) Only humans, due to having some sort of mental properties, display nonredundant causal powers.
(3) Humans (understood as macrophysical complex objects) exist.

Premise (2) is related to the Overdetermination Argument, which says that material objects are causally redundant. This argument is applicable, according to Merricks, to *any* non-human material things.

*The Overdetermination Argument* (2001, p.56):

- (1) The baseball if it exists is causally irrelevant to whether its constituent atoms, acting in concert, cause the shattering of the window.
- (2) The shattering of the window is caused by those atoms, acting in concert.
- (3) The shattering of the window is not overdetermined.

Therefore:

(4) If the baseball exists, it does not cause the shattering of the window.

The need of restricting Nihilism only to non-human material objects is presented in Merrick's Step One Argument, which says that humans have *some* non-redundant causal powers:

The Step One Argument (2001, p.89):

- (1) There is some intrinsic property F such that:
- (a) An object's existing and being F is not, of metaphysical necessity, implied by the existence and intrinsic properties of, and spatiotemporal and causal interrelations among, that object's constituent atoms,

and

(b) Humans cause things in virtue of (existing and) being F.

(2) If (1) is true, then there is some property F such that a human's causing effect E in virtue of (existing and) being F does not *all by itself* give one a reason to believe that human's constituent atoms cause E in virtue of their intrinsic properties and spatiotemporal and causal interrelations.

Therefore:

(3) There is some property F such that a human's causing effect E in virtue of (existing and) being F does not *all by itself* give one a reason to believe that that human's constituent atoms cause E in virtue of their intrinsic properties and spatiotemporal and causal interrelations.

The first part of the first premise of the Step One Argument (1a) is supported by rejection of the principle of Consciousness (C) (2001, p.94):

#### Consciousness (C):

Necessarily, if some atoms  $A_1...A_n$  compose a conscious object, then any atoms intrinsically like  $A_1...A_n$  interrelated by all the same spatiotemporal and causal interrelations as  $A_1...A_n$  compose a conscious object.

The conclusion of Merrick's reasoning seems to be the following: there *are* humans, since they display causal powers that cannot be attributed to their constituent atoms. My question is: why cannot we attribute these causal powers to the constituent atoms? Why should we assume that atoms *cannot* have mental causally effective properties? It seems that Merrick's argument would fail without this assumption being true. But *is* it true in the first place? The crucial question here is whether causally effective mental properties can be had only by complexes like human beings, or whether they can

also be attributed to mere collections of simples – the *xs*. The idea here is that it might make sense to ascribe mental properties to *many* objects (acting in concert) rather than to *one* object only.

Let us take the example of particles that allegedly compose a human body. Usually we are inclined to think that there is an object that the particles compose, and that to this object we can ascribe mental properties. Now I shall claim that it is possible to ascribe mental properties to the many particles, and so that "having a mental property" might behave like a *collective* predicate, like "surrounding" for instance. This latter predicate can be instantiated only by the many – we cannot sensibly say that one object surrounds another - there must be many objects to surround anything. However, one might object here and say that sentences like: "A police cordon surrounded the building" are perfectly legitimate. Well, they are, if one believes in spatially scattered objects. For those who do not believe in such objects (and we, being Mereological Nihilists, do not believe in them), the cordon, is just the many policemen. So this way or another, you cannot have one object surrounding anything else.

And likewise for "having a mental property" – there can be many objects that collectively instantiate a mental property. However, there is a difference between these two predicates: "surrounding" *requires* a plural subject, while it seems that "having a mental property" only *allows of* plural subject. And so "having a mental property" might have either singular or plural subject. I do not want to claim that plural subject is the only subject eligible for "having a mental property" here.

Mental properties can be thought of in at least four ways, depending on different ways of applying the physical-mental distinction. These result in the following positions:

#### 1) Strong Reductionism

- 2) Emergentism
- 3) Property Dualism
- 4) Substance Dualism

The first way of thinking about the physical-mental distinction is quite an a radical one: one may hold that mental properties are in fact reducible to physical properties found on the micro level of the brain. On this view there is only one substance, but there might be two ways for this substance to be. It can be either physical, or neutral with respect to the physical-mental distinction.

A more moderate position is Emergentism about mental properties. Mental properties do, on this account, supervene on physical properties in a special way. Mental properties are *produced*, so to speak, by some sophisticated physical entities, which display a sufficient degree of organisation and functionality. A distinctive feature of emergent properties is that their nature cannot be derived from nature of entities that are their supervenience base. On this account there is also just one substance, and it also can be either physical or neutral.

Another moderate position is Property Dualism, according to which the same substance can have both: physical and mental properties. If the substance underlying the properties is of a certain quality, it could be either physical or mental (assuming that these two exhaust all ways for a substance to be). For the sake of the argument, let us assume that the underlying substance is physical in its nature. The view would then be the following: there is a physical substance that can instantiate both: physical and mental properties.

Now, one can say that it is possible for the substance to be neutral with respect to the physical-mental distinction. This actually would bring more symmetry into the picture: we would have the neutral substance, which is able to instantiate both: physical and mental properties.

The other radical position, and the last on this list, is Substance Dualism according to which there are two substances: physical and mental, that instantiate physical and mental properties respectively. Which of these four views on the physical-mental distinction is actually held by Merricks? Or perhaps we should ask a slightly different question: which of these views would give Merricks' argument maximum power?

Merricks says that humans have causally efficient properties that are not implied by the existence and intrinsic properties of, and spatiotemporal and causal interrelations among, humans' constituent atoms. Whatever has such properties exists. Therefore, humans exist. But then, we are supposed to believe that humans exist conceived as *complex material objects*. And so it seems that there must be a very close relation between displaying mental (causally effective) properties and being an object. Otherwise why not say that the constituent atoms acting in concert are able to display mental (causally effective) properties?

What is *in virtue of* what then? Can humans display mental properties *in virtue of* being objects, or is something an object *in virtue of* displaying mental properties<sup>14</sup>? It seems that Merricks wants to say the latter rather than the former. What he really wants to say is that humans are objects in virtue of displaying causally effective mental properties<sup>15</sup>. Displaying causally efficient mental properties is a sufficient condition for being an object.

<sup>&</sup>lt;sup>14</sup> Further questions: are *all* mental properties causally effective? Are mental properties *the only* properties of complex objects that can be causally effective? How about some *emergent* strictly physical properties that can occur only on complex levels? For the sake of the argument let us assume that it is all and only mental properties that can be causally effective apart from causally effective physical properties ascribed to atoms acting in concert.

<sup>&</sup>lt;sup>15</sup> And if there were other than *mental* causally effective properties of complex physical objects, such as *physical* causally effective properties *not derivable from physical causally effective properties of the atoms*, I think that Merricks would have to be happy to accept existence of such complex physical objects as well.

It is not a necessary condition though, because atoms that do not display mental properties are objects as well.

The easiest way to challenge this claim is to say that this is simply not what objects are - that displaying mental properties is not what makes something an object. And this is what I am going to do, taking things from a different angle, so to speak.

According to Merricks the baseball, if it exists, is something that causes a nonoverdetermined shattering of the window. I would say that a baseball, if it exists, is a distinguished, non-vague portion of reality. But this is to give two different accounts of what things are. I say that things are distinguished, non-vague portions of reality. Merricks says that things are what is causally effective. Can there be any "bridging concepts" between these two accounts? Does it make sense to ask whether distinguished portions of reality – the joints – are causally effective, or if there is anything *apart from* them that is causally effective?

It seems that this is a question that should be rather put in terms of *vagueness*, since a necessary condition for being a distinguished portion of reality is to be non-vague (in terms of material composition). Hence any acceptable bridging concepts must depend on relation between being causally effective and being compositionally non-vague. The question is then: is there any such relation? Are all non-vague things causally effective? Are all causally effective things non-vague?

The latter seems dubious. If we are ready to admit that all causally effective things are non-vague, then we must say that the simples that caused shattering of the window (the simples that are causally effective) are non-vague. Well, the simples themselves are not compositionally vague, since they have no proper parts. We assume here that there is no vagueness as to what sort of entities they are, meaning that they are well-defined, we know what space they occupy and what their nature is. This again might be a simplification, but let us make these assumptions for the sake of the argument. The problem here is rather whether *the number* of simples that are actually causing the shattering of the window is also non-vague. I would not be inclined to say so. I would rather say that if vagueness is a challenge at all, it is also a challenge for the non-redundant account of objects. We cannot say how many simples are actually causing the shattering. This would be possible only if one simple could make a difference as to whether the window could be shattered or not. Now I do not think that one simple could actually make this difference. The case here is similar to the familiar Sorites Paradox. We have a clump of simples that actually shatter the window. Now we take one simple away, and the clump is still able to shatter the window. Now we take another simple away, and another, and another. And we repeat this step as many times as we like. Surely we will rich the point in which the remaining clump of simples is not able to shatter the window. But again - is there a single simple that makes the difference?

The conclusion is then the following: the effectiveness account of objects falls prey to the charge of vagueness as well. Hence it seems that there cannot be any bridging concepts between the causal effectiveness account and the joint-in-nature account of things. The former is quite happy with vague number of atoms being causally effective. The latter cannot accommodate any vagueness. Non-vague terms cannot be translated in vague terms. And *vice versa*.

Regardless of disagreeing with Merricks' definition of complex physical objects let us see what happens when we apply this definition to different accounts of the physicalmental distinction. In order to make his view coherent, Merricks must say that there is a kind of emergentism between the realm of the physical and the realm of mental. Now let us see *where* this emergentism can arise.

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To avoid any confusion, let us distinguish between two kinds of emergentism: partwhole emergentism, and physical-mental emergentism. Depending on which relation between the realm of the mental and the realm of the physical we believe to be true, different kind of emergentism comes into play. Assuming that Merricks' definition of complex material objects is correct, we have to say something along the following lines.

If one believes that one of the first three views (Strong Reductionism, Emergentism, and Property Dualism) is true, one must be committed to a certain kind of holism: one must say that mental properties of a complex object are not reducible to properties of the many simple objects. This is to say that properties of a complex object are *emergent* properties, since they cannot be reduced to properties of its parts, or obtained in any way by anything like summation of properties of the parts. This is a case of part-whole emergentism. A friend of Strong Reductionism (call him Merricks - Strong Reductionist) will have to say that mental properties instantiated by humans are reducible to physical properties instantiated by complex physical objects, but he will have to deny that the latter properties are reducible to properties of atoms that compose these complex objects. The latter sort of reducibility is the whole-part reducibility that is supposed to hold in the realm of physical properties: physical properties of wholes are supposed to be reducible to physical properties of parts. But the claim here must be that such reduction is not possible. Therefore the sort of emergentism that we can have here will be the part-whole emergentism that arises between the constituent atoms and the complex object (still within the realm of the physical). The mental properties of complex object must be reducible to its physical properties, which is the requirement of Strong Reductionism.

A friend of Emergentism, which in our terminology is the sort of emergentism that arises between the real of the physical and the realm of the mental (let us call him *Merricks* – *Physical-Mental Emergentist*), would rather say that the real supervenience base for

mental properties are physical properties of a complex object. He might or might not say that physical properties of a complex object are reducible to physical properties of its parts. If he says that they are not reducible, we have a case of double emergentism: emergentism between physical properties of the parts and physical properties of the complex object on the one hand, and emergentism between physical properties of the complex object and mental properties of the complex object on the other hand. However, this claim is not necessary for our account of the physical-mental emergentism. One level of emergentism will suffice here, and so the friend of Emergentism can claim that there is no part-whole emergentism within the realm of the physical. What is crucial for this view is that there is no reducibility between physical and mental properties.

In case of Property Dualism it must be claimed that only a complex object is such that it can instantiate both physical and mental properties. Now, an important difference between the former two views (Strong Reductionism and Emergentism) and the Property Dualism view is that physical and mental properties are not related on this view *at all*. They can exist or be instantiated by an object independently of each other, so to speak. Not even such a loose relation as emergentism is possible between these two sorts of properties. Where does emergentism come into play here? If mental properties of complex objects are to be emergent, then what is their base? On the two former views the supervenience base were either physical properties of the parts, or physical properties of the complex object. Here it seems that if the mental properties of a complex object are to be emergent in any sense, the only viable kind of emergentism is the part-whole emergentism that holds within the realm of mental properties alone. But this in turn would imply that actual simples – the parts – must have mental properties as well.

Can such a view be reasonably held? I really doubt so. It rather seems that whatever a mental property is, and regardless of how vaguely its concept has been put forward so

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far, it is *not* something that can be instantiated by such minute objects as our familiar physical simples<sup>16</sup>.

Is then emergentism at all possible on the Property Dualism account? It does not seem so. The physical-mental emergentism is not a viable option, since it is against the spirit of the Property Dualism view to bind physical and mental properties in any way. The part-whole emergentism is not viable either, since it would lead to an odd idea of *mental atoms* – objects whose mental or quasi-mental properties would make a supervenience base for mental properties as displayed by human beings. No other option seems possible here.

It seems that a similar problem arises for the Substance Dualism account. Here the bearer of the physical properties and the bearer of the mental properties are two different objects really. There is the physical and the mental substance, and there cannot be any bridging relation between them. And this is how the physical-mental emergentism fails. The part-whole emergentism would lead again to the bizarre idea of mental atoms. One problem with mental atoms is that it is not clear what the simple mental properties, as opposed to the complex mental properties, would be, and in turn – what the bearers of such simple mental properties would be. I cannot really think of any examples of simple mental properties that would do for a supervenience base for complex mental properties. Another problem is that in order to accommodate this view with Merricks' causal efficacy requirement the simple mental properties, or their bearers would have to be causally non-effective. Otherwise the complex mental properties would be simply redundant, and so there would be no reason to accept the existence of the complex objects that instantiate complex mental properties.

<sup>&</sup>lt;sup>16</sup> This last remark might be a bit at odds with what has been said before, namely that on the Property Dualism account the physical and the mental properties do not depend in any way on each other, and so can be instantiated independently. Here we have a case of *exclusion* between the physical property of being a physical simple and a mental property of any kind really. Exclusion is quite a strong relation, I would say. So there is at least one relation between physical and mental properties on the Property Dualism account. However, if we still want to adhere to the claim that there are *no* relations between physical and mental properties on the Property Dualism account, see will have to admit that there is nothing odd in a physical simple displaying a mental property.

Which of these four views concerning relations between physical and mental properties is most compatible with Merricks' argument for Restricted Nihilism? It seems that in order to make any use of the argument one has to adhere to a certain kind of emergentism. If mental properties instantiated by a complex material object such as a human being are not derivable from physical properties of that object's constituent parts, there must be some sort of emergentism either between physical properties of the parts and the object, or between physical and mental properties of the object itself. There are only two views that allow for such situations: Strong Reductionism and Emergentism. On the Property and Substance Dualism accounts there is no room for emergentism at all.

Is Merricks himself a Strong Reductionist or an Emergentist? Well, it seems that he is neither. T. Sider (in discussion) has suggested that Merricks is actually a Substance Dualist. But if this is really the case, then I cannot see how Merricks can argue for existence of humans as complex *physical* objects, if the substance that underlies mental properties is on his view a mental substance. If the Substance Dualism view is true, and if humans have mental properties, it only follows that they are mental substances. On the Substance Dualism view there is a gap between the two substances, and it seems that any argument that makes an attempt to prove existence of any of them on the basis of existence of the other is a failure from its very beginning. The only way to make a shift in any such argument is by an appeal to an external guarantor due to whom the two substances always go together: whenever there is a mental substance, there is also a corresponding physical substance. But in Merricks' argument no such guarantor is available. Still it might be claimed that all that Merricks' argument is supposed to show is not that we can prove that humans are complex physical objects, but that we have good reasons to believe that they are not eliminated together with the other complex physical things by the exclusion argument. However, one has these good reasons only insofar as one believes that Substance Dualism is true. And so all who do not share this belief remain unconvinced by Merricks' argument.

It seems then that Merricks' argument for Restricted Nihilism would be much better off if combined with a different view on the relation between physical and mental properties. Take Strong Reductionism for instance. We are supposed to believe in the existence of complex physical objects because they display some emergent properties, properties that cannot be reduced to properties of their constituent parts, even if these parts are taken as acting in concert. So far I have been speaking of these emergent properties as of mental properties. Merricks speaks of them in this manner as well. But it is not certain at all that these emergent causally effective properties are only the mental properties. Merricks says that humans cause things in virtue of these emergent properties. But still – is it certain that they are only the mental properties? All this does not exclude the existence of emergent *physical* properties that are causally effective – the properties that appear on a certain level of physical complexity, are not directly derivable from physical properties of object's constituent parts, and are such that humans do things in virtue of them. Would that mean that whatever instantiates these complex physical properties and does not instantiate relative mental properties also exists? Merricks rejects the principle of Consciousness and so according to him it is not the case that if some simples compose a conscious object (I think that this should be read as "an object instantiating mental properties") then any other simples alike in the spatiotemporal and causal relations binding them would compose a conscious object as well. So it is possible, looking at the Strong Reductionism account, to have something that instantiates only the complex physical properties, but not mental properties<sup>17</sup>.

<sup>&</sup>lt;sup>17</sup> Like the popular Zombie example.

Perhaps it should be made clear in the argument itself what is more important for the existence of complex physical objects: instantiating *mental* properties or instantiating *emergent* properties (mental or physical). Merricks strictly speaks only of emergent properties. And then it is somehow *assumed* that the properties that matter for humans' existence are emergent *mental* properties. If these are really emergent properties that matter for the existence, then I am sure we can have many more complex material objects that Merricks would accept. In principle, we can have physical emergent properties on any level of material composition.

Should we then worry that accepting emergentism in one case of composition will lead to accepting it in other cases too? After all, there might be many properties that are instantiated only by complex material objects, properties that cannot be instantiated by single parts alone: properties like colours or physical resistance cannot be ascribed to single physical particles. Moreover, it might be the case that emergentism occurs on *every* level of composition, and so we must take into account the possibility of *Global Holism*, according to which the only complete account of properties can be given in terms of the whole world (if we agree that there is such an object like the whole world). Global Holism is compatible with only one answer to the Special Composition Question, namely Monism about existence, according to which there exists only one total thing: the world. Monism about existence is a sort of Nihilism, since it allows only for objects without proper parts (actually – one such object). This way or another, it seems that we cannot have Restricted Nihilism, and we cannot say that humans are in any way *special* with respect to instantiating emergent properties.

Therefore if this is all about instantiating emergent properties, we will have many more objects that Merricks would like to accept. However, existential difference might be due to instantiating *emergent mental*, not *any* emergent properties. If this is the case then

Merricks would have to say that mental properties are in some respects *special*, so that whenever they are instantiated, there is an *object* that instantiates them. Once again: a complex object exists only in virtue of instantiating mental properties. Or: a composite object is something that instantiates at least one mental property. Here I can only say what has already been said before: this is not what objects are. Actually two remarks are in order here: one is that this definition of objects is still susceptible to the vagueness objection. The other is that it does not seem too odd to say that mental properties can be instantiated by many *x*s acting in concert, and not only by a single complex object.

The question here is whether the existence of physical-mental emergentism justifies *reifying* the complex. So far I have been following Merricks' assumption that there actually is a whole composed of parts, and that this whole is a bearer of mental properties. But is the existence of the whole as something over and above its parts necessary for instantiation of mental properties? I think that there are no plausible reasons to claim that emergent mental properties can be ascribed *only* to complex objects. Actually I shall claim that these properties might be ascribed also (or *only* – to make this claim compatible with Mereological Nihilism) to collections of simples that do not compose any further object. In other words, I shall say that it is the *x*s, taken together, that are able to instantiate mental properties. Existence of the *x*s, together with sufficient organisation and functions they can perform is enough to enable them to *collectively* instantiate mental properties.

There is a tendency in philosophy to argue from instantiation of certain properties to existence of certain objects<sup>18</sup>. However, it seems that this way of arguing cannot be accepted by someone who takes the threat of metaphysical vagueness seriously. If one wants to say that the *xs* compose a further object *in virtue of* the fact that there is a new property instantiated at the place occupied by the *xs*, one will have to accept the whole

<sup>&</sup>lt;sup>18</sup> P. van Inwagen argues in this manner from thinking to existence of the thinkers (1990, pp. 115-23). An argument from instantiating a natural property (in Lewis' sense) to the existence of an individual is mentioned also in Kris McDaniel's "Brutal Simples", unpublished).

bunch of metaphysically vague objects in one's ontology. It is because it might be vague *which exactly* complex object instantiates a given property. Take for instance a set of particles that allegedly compose a human body. Let us assume that these particles jointly instantiate some mental properties. Now let us take away one particle – are the mental properties still instantiated? Now let us take away another particle – are the mental properties still instantiated? And so on. Finally we will end up with a set of particles that definitely do not instantiate any mental properties. But where is the borderline? Which particle actually makes the difference?

The problem of vagueness does not threaten the existence of complex objects only. Another aspect of this problem is the following: given that the xs do not have to compose any further object in order to collectively instantiate a new property, it might be still vague exactly which xs instantiate the property. So the problem of vagueness has its analogues on both sides: on the side of complex objects and on the side of the xs. But it seems that the analogue on the side of complex objects is more threatening. After all, here the vagueness problem concerns the existence of complex objects, since one might want to say that in virtue of instantiating a new property, there exists a new object (a complex object). Vagueness of instantiation leads here to vagueness of existence. Sometimes it might be vague whether any new property is instantiated at a place which is occupied by some xs. This could be for instance the case when constitutive particles of a table are being annihilated one after another, and so there will be a moment in which we cannot be certain if the lump of particles still instantiates the property of "being a table" or not. But if instantiating a property can be vague sometimes, it is vague whether there is a complex object composed exactly of given xs. It is then a genuine example of vagueness of existence. If one does not believe in existence of anything over and above the xs, the problem of vagueness concerns only instantiation of a new property. It is sometimes vague

which *xs* collectively instantiate a new property. But there is no thing such that its existence is vague due to vagueness of instantiation of a new property.

One more remark about Merrick's argument is in order here: I do not think that his argument for Nihilism is a good argument. The reason for this is quite general – I am not convinced by exclusion arguments at all. Any argument from overdetermination is based on, in my opinion, some far-fetched philosophical thinking. This thinking consists in taking parts and wholes, or objects and events in which these objects are involved as two different causes that are able to bring about the same effect. This is how the problem of overdetermination is raised. Well, in my opinion, there are no two different causes really. The relations that parts bear to the whole, or objects bear to events in which they are involved, are too intimate to say that we have in fact *two different* causes.

Let us think of this problem from a slightly different angle. In the first premise of the Overdetermination Argument Merricks says that the baseball is causally irrelevant to what its constituent atoms do. So it is assumed somehow that we have got two entities here: the baseball (if it exists) and its constituent atoms. But what would be the baseball as something *in addition* to its constituent atoms?

One way to answer this question is to say that the baseball is something that is able to survive change of its constituent atoms, while *these* constituent atoms are not able to survive any such change – they would not be *the same* atoms after all. If the baseball was not able to survive any change of its parts – if it was composed (in this world and all possible worlds, now and in all past and future times) of exactly the same atoms, I would say that this baseball was nothing more and above, or nothing different from the atoms themselves, or else: nothing different from these atoms in this particular arrangement. But does Merricks - when he suggests that there might be both: the atoms and the baseball mean just this: that the baseball is able to survive changes that the atoms are not able to survive? Does he actually say that the baseball as something that is able to survive gradual replacement of all its constituent atoms is causally irrelevant to what the atoms composing it in a particular moment can bring about? I doubt it. Merricks speaks of two different entities: the baseball and its constituent atoms, as of two different possible causes of shattering the window. He does not strictly say that they can be taken as two different things *because* they have different survival and identity conditions. Perhaps having different survival and identity conditions is already implied in the claim that there are really two different things here: the baseball and the atoms. Perhaps not. But if Merricks does not speak of two different things being there *because* they have different survival and identity conditions, then I cannot see any good reason for having two things here.

Perhaps a more general observation about overdetermination is in order here. When talking about overdetermination, a certain kind of example is usually presented: let us imagine someone who dies from shot in the head, but who has been given a poison prior to the shot, so that if they did not die from shooting, they would undoubtedly die from poisoning at exactly the same time they actually died from shooting. Each cause alone is able to bring about the same effect at the same time. This is a standard case of overdetermination.

Now, in my opinion the case with the baseball and its constituent atoms is *entirely* different. There is *a difference* between the poisoning and the shooting on the one hand, and the baseball and its constituent atoms on the other. Surely the atoms and the baseball are *related* in the way that the poisoning and the shooting are not. The atoms and the baseball are bound with something we can call a *constitution relation* which might be thought of for instance as being at some time an improper part of each other. No such relation is available in case of the poisoning and the shooting (or the poison and the bullet if you are reluctant to mix things and events). Nothing even remotely similar can bind the

poisoning and the shooting. Therefore I cannot really see why there should be a problem of overdetermination of the event of shattering of the window caused by the baseball on the one hand, by the event of shattering of the window caused by the baseball's constituent atoms on the other. Perhaps there is something that I am missing here, but at the present moment I cannot see any depth of this problem. We might have two different things there as long as their modal properties are concerned, but it seems that there are no two different things when their causal powers are concerned. As fixed to this world and this particular time – there cannot be two different things there that could act as independent causes of the shattering. Perhaps I should say that what makes Merricks case of overdetermination so unintelligible to me is that one cause could not exist without the other: there could not be any baseball there without there being its constituent atoms, and there could not be any atoms (arranged baseball-wise) without there being any baseball<sup>19</sup>. Whereas obviously you could have someone dying from the shooting without them being poisoned prior to the shooting. This is why I think that Merricks argument from overdetermination does not make any appealing case for Nihilism. But nonetheless I think it is worth mentioning, perhaps to see *why* other people could be attracted by this view.

My conclusion is then the following: there is nothing problematic about overdetermination, at least in cases like the baseball and its constituent atoms causing shattering of the window. In the case of the part-whole overdetermination I want to say the following: as far as causal efficacy is concerned, parts that compose the whole and the whole itself are one and the same cause<sup>20</sup>.

At any rate, even for someone who believes in efficiency of exclusion arguments, Merricks' exclusion argument is not able to save human beings from elimination. On the

<sup>&</sup>lt;sup>19</sup> The latter is of course the case provided that we believe in existence of complex objects. The Mereological Nihilist would say that there are the atoms without there being the baseball. For the sake of simplicity I speak here as if I believed in existence of complex objects.

<sup>&</sup>lt;sup>20</sup> See also T. Sider (2003b) for similar remarks about overdetermination.

one hand, if the argument works for some complex material objects (if instantiating some emergent properties is a reason to reify the wholes) it works either for many complex material objects, or just for one complex material object, which is the world. If, on the other hand, it is instantiating mental properties that makes the existential difference, then I say that this criterion of existence allows for unacceptable vague existence.

Either way we cannot have humans as the only complex (non-vague) material objects. However, as I claim, it is not certain at all that in order to have something that instantiates part-whole emergent properties or mental properties we must reify the wholes, and so that we must be committed to their existence as single complex objects. I say that part-whole emergent properties and mental properties can be instantiated by the parts collectively, and so that there is no reason to postulate existence of any further objects.

## 2.1.2. "To Be Is To Be A Living Thing"

Another argument for Restricted Nihilism has been presented by P. van Inwagen (1990, pp.56-97). Van Inwagen starts his considerations from rejecting some intuitively plausible criteria for material composition (like: contact, fastening, cohesion, and fusion among alleged parts) as leading to counter-intuitive results. The proposed solution is that the *xs* compose something if and only if activity of the *xs* constitutes a living organism. Therefore, according to van Inwagen, there are no such complex physical objects like chairs and tables, there are not even arms and feet of human bodies. What there are, are whole human bodies and other living organisms, as well as simples that constitute them.

The main argument for restricting Nihilism so that it accepts only such composite objects like living organisms is that "you and I exist and we are composite objects" (1990, p.73). The argument can be stated as follows:

- 1) I exist
- 2) I have parts

Therefore: 3) Nihilism is false since there is at least one complex material object

However, it seems that this argument against total Nihilism faces some serious difficulties. My main objection is that the term "I" changes its referent between the first and the second premise. The first premise should be read as the *cogito* premise: it derives its certainty from certainty of one's existence, which is rooted in certainty of one's thinking ("I think, therefore I am"). Consequently, we can say that if the first premise of the argument is true on the basis of the impossibility of doubting it, then "I" refers to a thinking object, of whom it can be undoubtedly asserted that it exists.

On the other hand, "I" from the second premise does not refer to a thinking object, but to what we can call, following the Cartesian tradition, an "extended object". This is a complex physical object that has got parts, and as such is not really the thing whose existence is being affirmed in the *cogito* premise.

Still, one might want to say that the two uses of "T" refer to the same thing, although as given under different aspects. The idea here might be that the thinking and the extended thing are just the same thing given under different descriptions. However, this claim bears a strong commitment to a certain theory of mind-body identity, which should be argued for, and not presupposed.

Therefore, I shall claim that the only reasonable referent of "I", if it is used in the *cogito* premise, is the bearer of mental properties. It remains a mystery to me how this certainty of the *cogito* premise can be transferred to the conclusion concerned exclusively with the existence of a *material* complex object. We cannot simply take for *granted* that

"I" which in the first premise refers to the thinking subject also stands for a material complex object. This is something that needs to be proved.

Van Inwagen makes an attempt to bind the thinking object with the complex material object by claiming that only a *unitary* object is able to perform thinking (1990, pp.115-123). He is quite happy to admit that all activities performed by what he calls "artefacts" (non-living complex objects) are in fact performed collectively by their constituent simples, and as such do not really require existence of a single object. But it is entirely different in case of thinking (and other mental activities too). Here the *x*s are not able to act collectively to *do the thinking*. Thinking requires a single object.

Moreover, it seems that not only thinking and other mental activities, but also all other activities performed by living organisms are so special that they require existence of a single object. Van Inwagen populates the domain of complex material objects not only with human beings, but with all living organisms after all. It seems then that there is something about holistic nature of living organisms that is crucial for existence. Most probably these are the complicated functions that living organisms can perform, like sending information from one part of the body to another, reacting to pain, rebuilding damaged parts, exchanging parts, and the like. This might seem like a good reason for reifying them.

But still – is this reason *good enough*? In my opinion this is just another instance of reifying some arrangements simply *because* they are able to instantiate a new property. And like in other cases of this sort – one will finally end up postulating existence of vague objects, which is not acceptable. And so I am quite happy to admit that the xs are able to do the thinking, they are able to dispose of some of them and replace some of them with other xs, and so on.

At any rate it seems that if one takes the charge of vagueness of existence seriously, one cannot be convinced by the arguments for Restricted Nihilism (both Merricks' and van Inwagen's), since they still accept existence of complex objects that are composed of vague number of simples. In fact, one could say that these arguments simply *ignore* the charge of vagueness of existence. What they really say is the following: we have good reasons for believing that Mereological Nihilism is true (because of vagueness of existence), but we have even better reasons for restricting it (because it is *evident* that at least some composite objects exist). Still Merricks seems more consistent in his enterprise than van Inwagen. Merricks does not use arguments from existential vagueness to argue for Nihilism in the first place. Van Inwagen does: he employs existential vagueness to justify Mereological Nihilism and then he says that in spite of that there are good reasons to believe in existence of some mereologically fuzzy objects. This is inconsistency. The charge of vagueness of existence is not taken seriously enough, I would say. Mereological Nihilism should really be an *all or nothing* game: if you believe in it (because you do not accept vagueness of existence), you cannot restrict it only to *some* complex objects.

### 2.2. Argument From Science

Some people try to make a case for Mereological Nihilism by claiming that this view is perfectly agreeable with science. The argument from science is rather an argument from the lack of objections from a scientific stance. If science is to have any bearing on metaphysical theories, it must be noticed that Mereological Nihilism is compatible with the scientific approach. Obviously, we do not want to make science an ultimate guide for metaphysics (for some good reasons it is better to keep them apart). However, the scientific approach has some influence on metaphysical theories. This influence is apparent in the

fact that we hesitate to endorse metaphysical theories that are seriously at odds with current scientific theories. Mereological Nihilism is not a theory that would be contested by modern science.

It is true that our current scientific theories employ descriptions in terms of macroscopic physical objects. Apart from forces, influences, and relationship among various properties, the theories say something about plants, animals, minerals, planets and galaxies. Yet it seems that these descriptions can be translated into descriptions expressed solely in terms of the xs - particles. The idea here is that all terms referring to complex objects in all scientific statements (and perhaps in ordinary language as well) can be replaced by terms referring to simples or arrangements of simples. Quantifying over arrangements of xs allows to paraphrase expressions containing plural predicates and plural reference to complex objects<sup>21</sup>.

A possible objection to Mereological Nihilism might be raised due to behaviour of so-called "holistic systems", that allegedly cannot be explained purely in terms of the nature, arrangement and interactions among particles that constitute them. Examples of such systems are living organisms that are able to replace their parts in an organised and structured manner, or entangled system in quantum mechanics, whose state is not derivable from states of systems that compose them<sup>22</sup>. Some people might be inclined to say that existence of such systems proves that the wholes – these systems – are in the ontological sense prior to their constituents. Could that really be the case?

<sup>&</sup>lt;sup>21</sup> Quantifying over arrangements and sets does not contradict Mereological Nihilism as it is presented here. Sets of simples belong to a different ontological category than complex physical objects. Therefore to admit that there is a set of xs is not to say that there is a physical object composed of these xs. But does quantification over sets really commit one to the existence of sets? If this is the case, then there might be an objection to the whole project of paraphrasing, namely that it commits one to even more dubious objects than physical complexes.

<sup>&</sup>lt;sup>22</sup> The latter example is cited by J. Schaffer (2007). Existence of such entangled systems is, in Schaffer's opinion, a reason why one should prefer Monism to Nihilism, where Monism is in fact a sort of Nihilism – it is a qualified version of Nihilism, according to which there exist only one simple: the world. However, it seems possible that perhaps *we* do not know everything about entangled systems – or that we do not know much enough in order to explain their behaviour. But this does not mean that such knowledge is not possible at all.

If the holistic systems exist and are what we think they are, they make a case for *explanatory* priority of the wholes over the parts. It might be tempting to think that there is an analogy between *explanatory* and *existential* priority. After all – what could be a better reason for A to be explainable solely in terms of B, if not B's existential priority over A? But this in our terminology would mean that B curves nature at the joints better than A does. In case of holistic systems this would mean that the wholes are not only explanatorily, but also existentially prior to the parts. And in turn, that the wholes, rather than their parts, exist in the deep ontological sense.

There can be two possible answers to this challenge. One is to say that explanatory priority does *not* in fact entail existential priority. It might be tempting to think it does, but there are no compelling reasons to believe that this is actually the case. Another answer – and this is what I actually believe to be the case – is that the behaviour of the so-called "holistic systems" is in principle explainable by the behaviour of their parts, but given the present state of knowledge we cannot explain it yet. The idea here is that there is something more to be known about the parts in order to explain behaviour of such systems.

It seems that we might be sometimes too hasty in saying that something is not explainable or knowable in principle. There might be things or facts that cannot be known in principle, and an example of such a fact can be what the universe will be like one thousand years after human race go extinct, provided that determinism is not true, and so that given the whole present set-up of the universe and knowing all physical laws, one is not able to "foresee" what its future states will be like. However, knowledge of the entangled systems is not of such kind. It seems that we are not in a position to know that there is no such possible state of knowledge that would allow us to explain the behaviour of entangled systems. Entangled systems are most often discussed with connection to Heisenberg's Uncertainty Principle, as they are quite a popular example of "the unknown in principle". The Heisenberg's Principle is most commonly known under its Copenhagen Interpretation, which says that it is *not possible* to know all values of all properties of the system at the same time<sup>23</sup>. The Copenhagen Interpretation says that such knowledge is not possible *in principle*, due to the nature of the quantum mechanics. It does not say that our present state of knowledge is imperfect, and that we hope to find this things out in future, when our experimental apparatus is far more advanced. The Copenhagen Interpretation says that there are no determinate values of entangled systems to be known.

For some reasons this interpretation became dominant. But I really cannot see how one of its rivals – the interpretation saying that it is only our present state of knowledge that does not allow us to explain certain phenomena - could be ruled out. I shall claim that we should be more careful in saying that something is in principle unexplainable, even though we can know that something *is* explainable in principle without knowing its actual explanation. Moreover, there *might be* phenomena unexplainable in principle, but we can have no way of knowing that there are such. Because, for all we know, for many states of knowledge in which something is "unexplainable in principle", there might be a state of knowledge in which this phenomenon can be explained.

As applied to our problem of the holistic systems, this idea boils down to the following claim: it is not entirely certain that the nature and behaviour of the so-called "holistic systems" cannot be explained solely in terms of the nature, arrangements and interrelations among particles that constitute them. The sort of knowledge we are looking for here can be something like: *x*-type particles, when arranged *y*-wise, behave in such and such way. This definitely *is* knowledge about nature and behaviour of *particles* – the *xs*,

<sup>&</sup>lt;sup>23</sup> This formulation can be taken as one of the ideas associated with the Copenhagen interpretation of the Uncertainty Principle.

and not about the *ys* – the complex objects that the *xs* allegedly compose. Such knowledge of the nature and behaviour of particles constituting for instance living organisms will be sufficient to know how the parts of living organisms are rebuilt or how they grow. Such knowledge of the nature and behaviour of particles allegedly composing quantum entangles systems will suffice to know what the nature and behaviour of the systems are like. I shall claim that knowledge about complexes is derivable from knowledge about simples.

However, it still might be possible that all that has been said here about the nature of quantum entangled systems and living organisms is just wrong. It might be the case that nature of some systems is irrefutably holistic, and that there is really no way of knowing, having the particles alone, what the nature and behaviour of a system would be like. In this case we will have to retreat to another radical solution, namely Mereological Monism, which says that there is only one genuine thing – the whole world, which has the existential and explanatory priority over everything else. I will endeavour to explore this option in the following chapters.

# CHAPTER III ARGUMENTS AGAINST NIHILISM

#### **3.1. Implausibility**

Most of the people who opt for a radical answer to the Special Composition Question chose Universalism as the only acceptable doctrine<sup>24</sup>. However, reasons for this preference are not too appealing. The most popular reason for preferring Universalism over Nihilism is that the latter is deemed implausible, since it denies the existence of almost everything (and certainly it denies the existence of all objects that can be conceived in an empirical way; the only objects that remain have so far a status of theoretical entities only). It certainly denies the existence of most (if not all) objects recognised by the so-called "commonsense ontology".

Therefore Mereological Nihilism is challenged by the fact that we can *see* and *interact with* medium-sized goods like houses, tables, chairs, and other people. It is somehow being assumed that whatever is visible or tangible (or can influence human senses in other ways) must exist. But this way of reasoning seems too naïve. Philosophy is, after all, a discipline that has questioned testimony of human senses to quite a large extent. One reason for taking human senses as a bad guide to what exists is that they are *imperfect*. Some phenomena cannot be simply *seen*. You can look as thoroughly as you like, and yet you will not be able to see the difference between the table at  $t_1$ , and the same table at  $t_2$  less one particle. A difference of one particle is simply something that human senses are not able to detect.

However, this is not the main reason why our senses cannot tell us what things exist. The main reason is that existential questions are not of *a kind* that could be answered

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<sup>&</sup>lt;sup>24</sup> See for instance: M. Heller (1990, p.49), D. Lewis (2001, pp.211-13); T. Sider (2003a, pp.120-25).

by empirical testimony. In this respect they are *a priori* statements<sup>25</sup>. There is an example given in the literature where the author (whose name I unfortunately cannot remember) is trying to prove that the familiar medium-sized objects do really exist in the following way: we cannot *act as if* they existed while they do not exist in fact, because it would be like *acting as if* our rich aunt had died and we had inherited a fortune while we had not, in fact. *Acting as if* one had inherited a fortune is not really possible without inheriting the fortune *in fact*. And so the same must hold for the objects, the author says: you cannot *act as if* there were objects without there being objects *in fact*.

Now, I cannot agree with this conclusion. It is true that we cannot act as if we have inherited a fortune, and spend the money on anything we like, without inheriting the fortune, and so having the money in fact (unless we are prepared to put ourselves in debt). But I shall claim that it is possible to act as if there were certain objects like tables, chairs, other people, etc., while they do not exist. How is that possible? I do not want to say that we *pretend* to interact with some imaginary entities in the way children on actors on stage do. All I want to say is that the entities that we interact with do not belong to the metaphysical category we think they belong to. In other words: the fact that you interact with something cannot tell you anything about what metaphysical category this entity belongs to, if any. Definitely there is *something* we interact with, but this might not belong to the metaphysical category of *thing* understood as *joint in nature*. Undoubtedly there is *something* we interact with, clumps of particles, or chunks of matter for instance, and these are not imaginary entities.

There are two popular strategies of responding to the implausibility objection. One is to embrace the objection and to say that our everyday existence claims like "There is a house on the corner" or "There are some chairs in the room" are literary false, since there

<sup>&</sup>lt;sup>25</sup> To use the Kantian distinction, they are *a priori synthetic* in the sense that they are not related to empirical testimony of senses, and are not *analytic* either. Even if not related to empirical evidence, they still do assess of subject something more that is already contained in it.

are no such things whatsoever<sup>26</sup>. Another strategy is to say that sentences like those are not literary false, but that they mean something else than it is usually thought. "There is a house on the corner" means just: "There are some things arranged house-wise on the corner<sup>27</sup>. The claim that there are some  $x_s$  arranged house-wise or statue-wise (for short: y-wise) is a common assumption of both: Mereological Nihilism and commonsense ontology. However, according to the latter: whenever there are house-wise arrangements, there are houses as well. The only difference between Mereological Nihilism and commonsense ontology is that the latter is committed to there being something "over and above" y-wise arrangements.

For some people a good reason for preferring things over y-wise arrangements is the following: it is only if we know what a house is, that we can learn what a house-wise arrangement of simples is. But it is not certain that this is the right way to see how we grasp meanings of our words. It might be the case that names for macroscopic objects like "house", "chair", etc., are just names for particular arrangements of matter, bearing no further commitments as to whether those bits of matter constitute complex objects or not.

However appealing these responds to the implausibility objection might be, Mereological Nihilism is undoubtedly a doctrine which contradicts commonsense beliefs to a great extent. But this is not a reason why Nihilism should lose to Universalism. As I shall claim. Universalism contradicts common sense no less than Nihilism.

Universalism populates the world with any material objects you like. The only constraints are the actual regions of space-time filled with matter. If there is a region of space-time filled with matter, we can populate it with a vast number of objects – it is because any such filled region of space-time, regardless how scattered it is, contains at least one material object (and many other objects that are its proper parts). An interesting

<sup>&</sup>lt;sup>26</sup> This is a way employed by T. Merricks (2001, pp.13-19).
<sup>27</sup> See G. Rosen, C. Dorr (2002, pp.151-174), and P. van Inwagen (1990, pp.108-114).

property of these objects - a property that undoubtedly contradicts the commonsense beliefs about objects - is that objects postulated by Universalism are not able to survive any change of parts.

Mereological Universalism is a doctrine according to which every region of spacetime, no matter how scattered and discontinuous, is "filled up" with one object whose every part is another object. Mereological Universalism, when combined with the Doctrine of Temporal Parts according to which every object has temporal parts at every moment it exists, leads to Four-Dimensionalism, as presented for instance by T. Sider (2003a). Still, Mereological Universalism and the Doctrine of Temporal Parts are two separate doctrines, and can exist independently. You can believe that Mereological Universalism is true and not believe in temporal parts, or you can believe in temporal parts and not believe that Mereological Universalism is true.

Let us first consider Mereological Universalism on its own and let us ask if objects postulated by this doctrine can gain, lose, or change parts. Since every clump of matter is an object, it seems that any change of parts would result in object's becoming identical to another object. Let us think of a world in which there are only three particles: A, B, and C. According to the Universalist, in this world we have in fact seven objects, which are : A, B, C, AB, AC, BC, and ABC. Now, what happens with object ABC if it looses part C? Since sameness of arrangement of parts is not relevant for Universalist objects, simple detachment of a part will not be an instance of loosing it. C is a part of ABC as long as C exists, no matter what its spatial distance from other parts is. Let us then assume, for the sake of the argument, that part C has been annihilated. What is left there is AB, which cannot really be identical to the former ABC, since it is identical to AB which existed earlier as well. The only reasonable conclusion seems then the following: ABC ceased to exist at the moment part C was annihilated.

The same happens when we try to add a part to an existing object. Take again ABC as an example, and let us add to it another particle, D, which we have just created *ex nihilo*. Now – is ABCD identical to the former ABC? Well, it cannot be, since there still exists an object composed only of A, B, and C, and it seems that this object is identical to the former ABC.

Therefore, I shall claim that Mereological Universalism is identical to *Mereological Essentialism* as presented by R. Chisholm (1973, 1975, and 1989). No change of parts is allowed since objects are identified by the sameness of parts.

Moreover, it seems that possibility of changing parts is exactly the same when we combine Mereological Universalism with the Doctrine of Temporal Parts. Here objects are spatio-temporal entities: they have not only spatial, but also temporal parts. We cannot really ask what happens to objects if they gain or loose parts *in time*, since the parts already have the temporal dimension; they are extended in time, just like they are extended in space. And so if we have object AB at  $t_1$  and we try to add to it another part C at  $t_2$ , we cannot reasonably ask if AB has survived the change, because there are at least three objects we are dealing with: AB at  $t_1$ , ABC at  $t_2$ , and their sum, which is an object that exists from  $t_1$  to  $t_2$  and consists of AB at  $t_1$  and ABC at  $t_2$ . The idea of changing parts in time is therefore *not applicable* to Universalist objects at all.

Another problem is arrangement of parts. In commonsense ontology, the arrangement of parts together with sameness of parts are important for object's identity. Is the sameness of arrangement of parts important for identity of Universalist objects? It does not seem so. If we take any complex object and rearrange its parts by changing position of some of them relative to the others, or simply by scattering all the parts, we will still have the same object. It seems that there is no possible rearrangement of parts that could affect

object's identity. And this goes simply against our commonsense intuitions about the role of arrangement of parts for object's identity.

Change of parts (gaining, loosing, and exchanging) and change of arrangement of parts have been discussed above as applied *over time*. Still we can ask what happens to Universalist objects if we look at them *across possible worlds*. If I look at a commonsense object, myself for instance, it makes sense to ask whether I would be the same object if the particles that constitute me were different, or if I existed at a different time. Do the same questions make sense when applied to Universalist objects? Not at all. Universalist objects are identified by the sameness of parts, both over time and across possible worlds. ABC can be identical only to ABC at all times and in all possible worlds. Likewise, an object composed of ABC at  $t_1$  and AB at  $t_2$  can be identical only to the same particles at the same times in all possible worlds<sup>28</sup>.

This is not to say that sameness of parts is a bad criterion of identity for material objects. Actually, if we want to speak of objecthood in terms of mereology, it seems the only available criterion. But important thing about the sameness of parts criterion of identity is that it is not compatible with our commonsense intuitions about objects. And this incompatibility answers the implausibility objection, at least in a way that puts Mereological Nihilism and Universalism in the same position. The answer is: yes, Nihilism is implausible, but so is Universalism with its objects that cannot change parts across time and possible worlds. There is no way in which Universalism could be compatible with commonsense views. And if that is the case, the fact that neither Nihilism is compatible with them, cannot be used by Universalists as an objection against Nihilism.

 $<sup>^{28}</sup>$  If these are objects from different possible worlds we are talking about counterparts of A, B, and C and counterpart space-time. What *makes* the counterpart relation: in virtue of what is A at t<sub>1</sub> existing in this world a counterpart of A\* at t<sub>1</sub>\* existing in another possible world is a different question, and as such is not being addressed here.

The fact that among many objects postulated by Universalism there is this one which is  $me^{29}$  seems to be of no help as far as reconciliation with the commonsense is considered. It is because this object is quite different from what the commonsense "I" is. For one thing, they have different identity and survival conditions. For another, their metaphysical status is different: commonsense ontology, if it is able to recognise any metaphysical categories, must admit that "I" exists in some more important sense than "me plus the keyboard of my computer". Universalism cannot see this difference. This idea which is clear for the Nihilist, and which is perhaps shared by commonsense ontology (if there is one) is the following: there *must* be a difference between objects and non-objects. Universalism does not allow for such difference<sup>30</sup>. Nihilism does. And here I see the advantage of the latter over the former.

# 3.1.1. Ontological Commitments

Universalist objects are dubious entities for yet another reason. It is not entirely clear what their metaphysical status is: whether their existence increases the number of objects in the world or not. This problem might be called "the problem of ontological commitments of Mereology" and has been raised mostly due to certain passages from D. Lewis, who says the following:

"Given a prior commitment to cats, say, a commitment to cat-fusions is not a *further* commitment. The fusion is nothing over and above the cats that compose it. It just *is* them. They just *are* it. Take them together or take them separately, the cats are the same portion of Reality either way" (1991, p.81)

<sup>&</sup>lt;sup>29</sup> Let us refer to a temporarily flat object assuming, for the sake of simplicity, that there is a well-defined set of particles that compose me at this moment.

<sup>&</sup>lt;sup>30</sup> Perhaps the only instance of a non-object according to Universalism would be an empty region of spacetime.

"I say that composition – the relation of part to whole, or, better, the many-one relation of many parts to their fusion – is like identity. The 'are' of composition is, so to speak, the plural form of the 'is' of identity. Call this the thesis of *Composition as Identity*. It is in virtue of this thesis that mereology is ontologically innocent: it commits us only to things that are identical, so to speak, to what we were committed to before" (1991, p.82)

"Mereological relations (...) are strikingly analogous to ordinary identity. So striking is this analogy that it is appropriate to mark it by speaking of mereological relations – the many-one relation of composition, the one-one relations of part to whole and overlap – as kinds of identity. Ordinary identity is the special limiting case of identity in the broadened sense" (1991, p.83)

It seems that what Lewis wants to say in these passages is the following: something's being an object does not add anything to one's ontology. You can have two worlds exactly the same except that in one of them the principle of Unrestricted Composition holds, while in the other it does not. Ontologically speaking, these two worlds are identical.

If these passages from Lewis' are strictly and literally true, then it is difficult to see how anyone can sensibly engage in a debate on whether certain things have a fusion or not. If having a fusion is so trivial, and so if the fact that there are certain fusions does not add anything to the ontological set-up – why should anyone argue about principles of composition? I think that there must be something more to mereology than that. And so I assume that there really is something important in saying that certain things have a fusion while certain do not. I believe that by saying that certain objects have a fusion and thereby by committing oneself to the existence of another object, one does something ontologically significant. And so I believe that there is a difference in ontological commitments of one who says that certain things do not have a fusion, and one who says that they do. In other words – mereology *must* be ontologically committing if debates about it are to make any sense. An attempt of questioning the correctness of what Lewis says in the quoted passage has been made recently by B.-U. Yi (1999). Yi argues against ontological innocence of mereology in the following way. Apparently Lewis supports his claim that mereology is ontologically innocent (referred to as "the Innocence Conception of Mereology") with another claim – the thesis of Composition as Identity. The latter can have, according to Yi, two versions: a weak, and a strong one. However, the weak reading is too weak to support the Innocence Conception of Mereology, and the strong reading which would be sufficient for this purpose is not sound. The Strong Composition Thesis as formulated by Yi is the following: the predicate "are", used in the quoted passage from Lewis', is *literally* another form of "is" of identity. The Weak Composition Thesis says that composition is so much *analogous* to the identity relation that it is sufficient to classify them into the same group of relations and say that the "are" of constitution is, *so to speak*, the plural form of the "is" of identity. An argument for insufficiency of the Weak Composition Thesis is presented in more detail in van Inwagen (1994), and so it will be discussed in the part devoted to van Inwagen's views on this issue.

The Strong Composition Thesis fails according to Yi in the following way. Yi considers a fusion of a cat and a mouse: Tom and Jerry, to which he gives the name "Genie". The argument against the strong reading is the following:

We can reconstruct this argument in the following way:

1) Genie = Tom and Jerry

<sup>&</sup>quot;... according to the Strong Composition Thesis, Tom and Jerry *are* (viz. are identical with) Genie, where 'are' is *literally* another form of the 'is' of identity. If so, Genie must be one of *Tom and Jerry*, because Genie is one of *Genie*. But of course, Genie is not one of *Tom and Jerry*; for Genie is identical with neither Tom nor Jerry" (1999, p.146)

2) Genie is one of Genie

Therefore:

3) Genie is one of Tom and Jerry (by Leibniz Law)

The conclusion 3) is obviously false, because the correct reading of "being one of" is the following: x is one of y and z if and only if x is either identical with y, or x is identical with z. Genie is identical with neither Tom nor Jerry. Therefore we must reject either 1) or 2). Yi does not reject 2), and so the only way out for him is to reject 1) – the identity statement.

However, it seems that there is something wrong with this argument. First of all, I am not entirely sure if Yi uses the predicate "being one of" in the correct way. Yi uses this predicate to bind two individual objects with each other (actually - with itself – if the statement of identity is true), and so in the formula: "x is one of y" we have a *single* term on each side. I think that this is not the right way to use this predicate. The right way is rather to say: "x is one of ys", and so to have a single term on the left-hand side, but a *plural* term on the right-hand side: "the ys". It seems that what the predicate "being one of" says, is that a certain thing is a member of a collection of some things, or that it is a member of a certain set. Therefore I cannot see how the use of "being one of" in the sentence "Genie is one of *Genie*" can be correct. It seems that in the argument above it is 2) that should be rejected, not 1).

Actually, Yi realises that this objection might be raised, and he wants to avoid it in the following way (1999, p.147). He proposes to replace the second occurrence of "Genie" in 2) with "Genie and Cicero", and consistently "Tom and Jerry" with "Tom and Jerry, and Cicero". This is supposed to introduce a plural term after *every* occurrence of "being one
of", and so "Genie is one of Genie" is here replaced with "Genie is one of Genie and Cicero". The argument would then look as follows:

1') Genie = Tom and Jerry

2') Genie is one of Genie and Cicero

Therefore:

3') Genie is one of Tom and Jerry, and Cicero (by Leibniz Law)

Still, according to Yi, the conclusion is obviously false, since Genie is neither Tom, nor Jerry, nor Cicero, and so we should reject the identity statement which must be false.

However, even if these manoeuvres exclude such odd uses of *being one of* as in "Genie is one of Genie" and so even if we guarantee that the term occurring after "is one of" is always plural, there is still a more serious problem with Yi's argument.

Yi says the following:

"(...) Genie is not one of *Tom and Jerry*; for Genie is identical with neither Tom nor Jerry"

How can that be correct? At first glance it seems that putting "Tom and Jerry" in italics suggests that we should take this name as referring to one whole - to a mereological sum of Tom and Jerry. But then why should one say that Genie is not one of Tom and Jerry *because* Genie is identical with *neither* Tom *nor* Jerry? Obviously Genie is not identical with Tom, and Genie is not identical with Jerry, because Genie is identical with a fusion of Tom and Jerry namely *Tom and Gerry*. It is like saying that a bed set is identical neither with sheets, nor with pillowcases, because what it is identical with is *sheets and pillowcases*. Or that a four-pack of Guinness is not identical with any of the four bottles,

because it is identical with *the four bottles*. One does not have to be a keen friend of mereological sums (in the sense in which someone who believes in unrestricted mereological composition is) to see the difference.

It seems then that Yi mixes up two logical operators: conjunction and disjunction. In "Genie is Tom and Jerry" Yi obviously wants to say that Genie is identical with a sum of Tom and Jerry. But then Yi rejects "Genie is one of Tom and Jerry" because Genie is neither Tom nor Jerry. However, this latter use of *Tom and Jerry* is obviously disjunctive. Surely Genie cannot be either Tom or Jerry (*one of Tom and Jerry* in disjuntive use), because Genie is *Tom and Jerry* in the proper, conjunctive use. To avoid any misunderstanding: "Tom and Jerry" has only one, conjunctive meaning, this is rather "one of" that brings disjunction into play. It seems that this predicate is bound with disjunctive use of whatever names occur after it. Whenever we use "one of *x* and *y*", then even though we use "and" – a conjunction operator, it really stands for "*x* or *y*", logically speaking. And so "*x* is one of *x* and *y*" always means "*x* is either *x*, or *y*" This must be an example of an abuse of a logically sloppy language.

The confusion with the use of "being one of" is evident also further in Yi's paper. Yi says that one might challenge his argument against the Strong Composition Thesis by claiming that Genie *is* one of Tom and Jerry indeed, and that this is because it is not the case that:

"Something is one of Tom and Jerry if, and only if, it is identical with either Tom or Jerry"

(this principle is actually held by Yi), but rather that the following is the correct use of "being one of":

"Something is one of Tom and Jerry if, and only if, it is identical with either Tom or Jerry or else the fusion of Tom and Jerry" (1999, pp.147-8)

Obviously, as Yi points out, the latter principle is not correct. But again, the initial statement: "Genie is one of *Tom and Jerry*" suggests that we take Genie to be a fusion of two other objects from the very beginning, and this implies that Genie cannot be identical either with Tom or with Jerry. On this assumption Genie is identical only with "Tom and Jerry". But perhaps Yi does not want to make this assumption here. In such a case it is *not* correct to say, first of all, that Genie is one of *Tom and Jerry*, or that Genie is identical with *Tom and Jerry*. But believing in mereological sums requires accepting that Genie is *Tom and Jerry*, and so requires assuming that *Tom and Jerry* are referred to as a whole.

Is Yi's way the only way of reading the first premise? T. Sider (2007b) offers quite a radical way of reading the Strong Composition Thesis. Sider gives the following example. To say that Ted is composed of a head, h, a pair of arms, a, a pair of legs, l, and a torso, t, and to express this fact in the following notation:

T = h, a, l, and t

is not to say that T is identical to any of h, a, l, or t, and so the identity statement cannot be put as: "T=h and T=a and T=l and T=t". This is also not to say that there is any further object O, which is composed of h, a, l, and t, and to which Ted bears identity relation. The identity relation in this case behaves, according to Sider, like a *collective*, rather than *distributive* predicate. Identity is like "carry" in sentence: "Tom, Dick, and Harry carried the casket". A distributive reading of "carry" is something like: "Tom carried the casket and Dick carried the casket and Harry carried the casket". However, the latter might not be true, even if the original sentence is. The latter sentence means that each of the men carried the casket himself. And it might be the case that the casket was too heavy for a single man to carry it, whereas it was not too heavy for three men to carry it *together*. Still, there is no further object composed of Tom, Dick, and Harry, which carries the casket. *They* carry it. And likewise the identity relation: it does not hold between Ted and an object composed of h, a, l, and t, but directly between Ted and h, a, l, and t.

However, as Sider points out, this reading of the Strong Composition Thesis has, among others, the following disadvantage: it gives the unwanted reading of "being one of". If Ted is identical to h, a, l, and t, then, by Leibniz Law, whatever can be ascribed to Ted, can be also ascribed to h, a, l, and t. And so whatever is one of Ted, is also one of h, a, l, and  $t^{31}$ . But this would in turn mean, according to Sider, that h, which is one of h, a, l, and t, is one of Ted, and that a, which is one of h, a, l, and t, is Ted, etc. All identity statements that we can come up with in this way are obviously false.

I think that both Sider and Yi use "one of" in the way which I believe is not eligible. It is true that h is one of h, a, l, and t. And this reflects the distributive sense of "being one of". But is the sentence "h is one of Ted" really false? I would not say so. I would rather say that the apparent falsehood of "h is one of Ted" is due to collective reading of "h, a, l, and t" that we apply here. And so the falsehood arises because we switch the reading from one use to another. Why do we do this? I think that the use of both plural and singular objects is a bit misleading here. We have h, a, l, and t on the one hand, and Ted on the other. It is not difficult to apply the distributive reading to a name that comes in a plural form and refers to many objects at the same time. We just take *one* of the listed objects and say that something is identical with it. Now, it is far more difficult to see this distributive identity relation in "h is one of Ted", where Ted has been picked as a single object (or at least in the form of a single subject). Shall we see "Ted" entirely as "h,

<sup>&</sup>lt;sup>31</sup> This way of using "being one of" has been questioned above.

*a*, *l*, and *t*", things would have been different. When we say that it is not true that "*h* is one of Ted", we are not using "being one of" in the distributive sense. We are switching to the collective reading encouraged by the single object. It is, after all, very odd to *distribute from* a single object! In order to be able to distribute from correctly we need the many objects there. Well, there are many objects there in a sense – there are many parts of the single object after all. But this is *hidden* in the single object. It is all very misleading. But this is mostly due to the plural-singular confusion. Now, do not take Ted as a single object, or do not take it as a single object *only*. Try to *see* the many parts in Ted, so to speak. There is nothing odd then in saying that *h* is one of Ted.

Another attempt to analyse Lewis' claim that mereology is not ontologically committing has been made by P. van Inwagen (1994). According to Van Inwagen it would be odd to say that mereology is ontologically innocent. He describes two cases in which mereology *is not* ontologically innocent. The first is Mereological Nihilism: if mereology was ontologically innocent, there would be no obstacles for the Nihilist to believe in mereological fusions – after all he would not be thereby committed to existence of anything more than mereological simples. The other case concerns someone who believes in coinciding distinct material objects: like a statue and a lump of clay that the statue is made of. Such a person actually believes that there are two objects at the same place at the same time. But if they are made of the same parts, then – by the principle of extensionality of mereological fusions – they must be the same (1994, pp.208-9). So this specific view about objects and the possibility of coincidence cannot, as it seems, be even sensibly held if mereology is ontologically innocent. If mereology is ontologically innocent, there are no two things that could really coincide. And yet Lewis wants us to believe that mereology is ontologically innocent, even though it makes certain ontological positions untenable.

Van Inwagen's general objections to Lewis' account of the thesis of Composition as Identity are the following. First of all: when Lewis says that things are nothing over and above their parts, he never explains what being over and above amounts to, and he makes an unintelligible "hybrid" use of "is" and "are", mixing them together and saying that "are" is really the plural form for "is". These are objections to what Yi calls "the Strong Composition View". And as for the Weak Identity View, van Inwagen explicitly rejects the supposed analogy between composition and identity. Out of five points of this analogy listed in Lewis' (1991, p. 85):

- 1) "just as it is redundant to say that x and y exist when x is identical with y, so it is redundant to say that x and the ys exist, when x is a fusion of the ys,
- 2) just as, given that x exists, it is automatically true that something identical with x exists, so, given that the xs exist, it is automatically true that a fusion of the xs exists,
- 3) just as there cannot be two things both of which are identical with *x*, so there cannot be two things both of which are fusions of the *x*s,
- 4) just as fully to describe *x* is fully to describe the object that is identical with *x*, so fully to describe the *x*s is fully to describe their fusion,
- 5) just as *x* and *y* must occupy the same region of space-time if the former is identical with the latter, so *x* and the *y*s must occupy the same region of space-time if the former is the fusion of the latter",

van Inwagen accepts with no qualification only 3) and 5), while 1) and 2) are being rejected. And so the analogy between composition and identity, according to van Inwagen, does not hold to a degree that would enable one to say that identity is a limiting case of composition. Van Inwagen's conclusion is that the thesis of Composition as Identity might be convincing only for someone who already believes that unrestricted composition is a correct theory of composition. And so only assuming that unrestricted composition is true and that composition is identity, one can conclude that mereology is ontologically innocent<sup>32</sup>.

<sup>&</sup>lt;sup>32</sup> However, it is not at all certain that the conclusion that mereology is ontologically innocent would be accepted by Lesniewski who believed that it is a correct theory of composition. If his claim that there are

Yet another interesting approach to the thesis of Composition as Identity has been presented by D. L. M. Baxter (1988). Baxter distinguishes, after Bishop Butler, two senses of identity: a loose and popular, and a strict and philosophical. Strictly speaking, Baxter attributes to Butler the following idea: there are two kinds of identity, and one of these kinds can hold between things on two different standards. There is then one kind of identity that holds between one thing and itself (let us refer to this identity as "one-one identity"), and another kind of identity that holds between many things and one thing (to be referred to as "many-one identity"). Actually, the predicates "loose and popular" and "strict and philosophical" are here more directly applicable to two different ways of counting things. And so the one-one identity holds either between two things counted both loosely, or between two things counted both strictly; at any rate the two singular terms occurring in an identity statement must refer to things counted *on the same standard*. The many-one identity holds between many things counted strictly and one thing counted loosely.

This distinction between the loose and the strict identity can be avoided and replaced by an alternative view. According to this other view we do not count distinct things loosely as one thing, but we count distinct parts as one whole. Baxter calls this view *the mereological view*, and introduces it in the following way:

"On this opposing view there are not different standards for counting and so there is no case of identity on loose standards of things distinct on strict ones. There is just the joint parthood in an identical whole of what are distinct" (1988, p.578)

Baxter discusses two different views concerning the part-whole relation. One is that the whole is a numerically distinct thing from its parts (the Non-Identity View), and the other is that the whole is the many parts counted as one thing (the Identity View). The

really seven objects where we have only three objects-parts is to have any significance, he could not believe that mereology is ontologically innocent.

latter view is not to deny that there exists a whole as such, but it is to deny that the whole is something additional to the parts' existence.

A motivation for the Non-Identity view is, as Baxter claims, the fact that the whole has at least one relational property that none of its parts has: it *comprises* all its parts. None of the parts has this property. Therefore, we are inclined to think that the whole is not identical with any of the parts. And of course there is some motivation for the opposite view, namely the Identity View – and it is the fact that it would be odd to say that in addition to the parts collectively occupying the location the whole occupies it too. Taking the above opposing motivations, Baxter proposes the Combination View, according to which the parts are each distinct from the whole, and yet the parts collectively are identical with the whole.

However, there is a price that one has to pay for accepting the Combination View, and apparently for Baxter this price is too high. A consequence of the Combination View is that any whole that has parts is a *multitude*, and so that no single thing can have proper parts. Baxter believes that there actually exist single things with parts, namely persons, and this is a sufficient reason to reject the Combination View. Therefore Baxter goes back to the distinction originating in Bishop Butler's writings and adheres to the view that a whole is all its parts counted loosely. Accepting this distinction enables him to say that a whole is a multitude on a strict count, and a single thing on a loose count.

At any rate there are *never* n+1 things where one has n parts that compose a whole. It is because the two ways of counting things: the loose and the strict count are mutually exclusive. If we count things, we count them *either* on the loose count, *or* on the strict count. And so there is no possible count on which we can count things counted loosely and things counted strictly together. In other words, there is no single count on which we are able to count both: the parts and the whole. And so whenever we have n parts, we have n things on the strict count, and we have one thing on the loose count.

Where does this leave us when it comes to the Innocence of Mereology claim? I am inclined to say that Lewis might be right *in a sense* in what he says about composition being identity. For a Universalist like himself, who believes that all possible combinations of parts do have mereological sums, composition must be identity. This is because according to Universalism composite objects are identified by their parts. Objects are nothing over and above the parts. Objects are parts.

However, anyone who believes in restricted composition cannot adhere to the view that composition is identity. Whenever some objects-parts have a fusion, there is a further object that they compose. And the relation between the parts and the further object is *composition* which should be distinguished from *identity*. Composition can be easily confused with identity, since they are similar in many respects. For instance, composite objects cannot occupy different space than their parts. They cannot weight any more or less than their parts. They cannot have different colours than their parts have. But there are some differences between the parts and the composite object. These are: modal properties and persistence conditions. For anyone who believes in restricted composition composite objects are the sort of entities that can survive change of parts and that could have been composed of different parts. We cannot say the same thing about any given collection of parts. It cannot survive any change of parts – it would not be the same collection then.

Are things something "over and above" their parts and what exactly does this claim amount to? On the one hand, it is very plausible to say that a whole is nothing over and above its parts, because there is nothing, in terms of composition, that is in the whole apart from its parts. So as far as the composition is concerned, the parts exhaust the whole. But again – if this is all that can be said about wholes – the debate about correctness of certain principles of composition is quite shallow. Actually, if this is the case, I do not know what this debate is about. But obviously it cannot be true – when people say that some objects have a fusion this must mean that there exists another object in addition to the parts. I believe that being committed to the existence of a certain fusion is to believe that there is another thing-joint in reality, and so that this fusion occupies a distinguished position in the ontological structure. And in this sense I can say that things are something over and above their parts. If I believed in restricted composition, I would also say that things are something over and above their parts because they can survive change of parts, and they do not have their parts necessarily. But I do not believe in restricted composition, so I must restrain from saying so.

I do not share Yi's and Sider's objections to the Strong Composition Thesis. I find this thesis unacceptable for a different reason: it does not provide for modal properties and persistence conditions of complex objects. Only someone who believes in unrestricted composition can adhere to the Composition as Identity thesis. Anyone who believes that things can change parts or that things do not have their parts necessarily must reject this thesis. How about the Nihilist – the one who does not believe that the composition ever occurs? He cannot accept the thesis either, since this would mean that the debate between him and the Universalist is pointless.

## 3.2. Existence of Atomless Gunk As a Challenge To Mereological Nihilism

Perhaps the most powerful challenge to Mereological Nihilism is the possibility that the world might consist solely of atomless "gunk"<sup>33</sup>. A world consisting of gunk is a

<sup>&</sup>lt;sup>33</sup> The term "gunk" is borrowed from D. Lewis (1991, p.20).

world in which everything has proper parts; everything is divisible *ad infinitum*. It is claimed that such a world is incompatible with the Nihilist's world in which nothing whatsoever has proper parts.

However, if we want to make the conflict between Mereological Nihilism and the Gunk Hypothesis evident, we must state these two doctrines more carefully. Both doctrines can be put explicitly in terms of *objects* understood as entities that carve nature at the joints. Let us then state them as the following principles:

Mereological Nihilism:  $\forall x \sim \exists y (xPy)$ 

Gunk Hypothesis:  $\forall x \exists y (xPy)$ 

where the variables x and y stand for objects, and "xPy" should be read as "y is a proper part of x".

Mereological Nihilism is a claim that no objects have other objects as their parts, or that no objects are composed of other objects, or that no parts of objects are themselves objects. However, it is still compatible with objects having parts that are *not* objects: if someone believes in stuff as opposed to things, one might say that a simple object has portions of stuff as its parts. There are various ways in which stuff might be related to objects. One might for instance believe that things are *constituted* by stuff and so that there are both objects constituted by stuff and stuff that constitutes objects in the world. Or one might think that there are objects and stuff, but that if stuff constitutes an object it ceases to be *mere* stuff, and that there is some stuff in the world that fails to constitute any object. Or one can believe that the world consists exclusively of things or exclusively of stuff. "Stuff" is usually taken as a synonym of "matter", and it seems that these two notions are equally vague. I will use "stuff" here to refer to something that underlies objects: a raw material that objects are made of. I am then committed to the view that objects are constituted by stuff. I am not sure if there can be stuff that does not constitute any objects. If a simple can be extended – there are portions of stuff that are smaller than the simple, and they do not, on their own, constitute any object. However, they constitute an object together with other portions of stuff. Still, it seems that there are no portions of stuff that do not at all, even together with other portions of stuff, constitute an object. There are no portions of stuff that are not bound in objects, so to speak.

Mereological Nihilism is not a claim about indivisibility of objects *in general*. The requirement here is only that the parts of objects are not objects themselves. Mereological Nihilism is a claim about indivisibility into objects.

The Gunk Hypothesis, if it is to be a challenge to Mereological Nihilism, should therefore also be stated in terms of objects. As it is stated above, the Gunk Hypothesis says that every object has another object as a proper part. It *does not* say that every object is a proper part of some other object. There might be the biggest object that contains all objects, and that is not a proper part of any other object.

Mereological Nihilism and the Gunk Hypothesis as stated above are apparently inconsistent. However, it seems that the Gunk Hypothesis is not always understood in this way. Rather, what is understood by the possibility of gunk existence is some sort of *divisibility*, not necessarily divisibility into objects. The Gunk Hypothesis does not put any requirement that the parts should be objects themselves. Something is gunky if it can be cut into halves that in turn can be separated – to put this in a more picturesque way.

This way of understanding the Gunk Hypothesis opens the door to reconciliation of this doctrine with Mereological Nihilism. Actually, to clarify possible relations between gunk and Mereological Nihilism, it might be useful to talk about various kinds of Nihilism

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instead of one sort only. Let us then distinguish, following J. Shaffer (2007), three kinds of Nihilism:

- 1) Minimal Nihilism according to which there are only point-sized simples,
- Intermediate Nihilism(s) according to which there are intermediate simple objects

   –extended simples,
- 3) *Maximal Nihilism* according to which there is only one simple the world.

It should be noticed that the characterisation of Mereological Nihilism that has been given in the beginning of this chapter as a claim that no object is a proper part of a further object might not be sufficient for some sorts of Nihilism. Minimal Nihilism and some kinds of Intermediate Nihilisms require something stronger: that a simple is indivisible physically or even metaphysically. Therefore, we need to distinguish three kinds of divisibility that are important for stating different sorts of Nihilism:

- indivisibility into objects an object is indivisible in this way if it can be physically divided into parts that are not objects themselves (this kind of indivisibility captures the meaning of the principle of Nihilism as it was stated in the beginning of this chapter),
- *physical indivisibility* an object is indivisible in virtue of the laws of physics holding in the actual world; it is indivisible only in the possible worlds that are nomologically accessible from the actual world (that obey the physical laws of the actual world),
- metaphysical indivisibility an object is physically indivisible in all possible worlds.

When I say that an object is "physically divisible" I mean that it is divisible in the manner analogous to what has been proposed in the case of gunk: that it is possible to cut this object into halves and separate them – to put them apart, so to speak. The three kinds of indivisibility are listed from the weakest to the strongest. The stronger kind implies the weaker: if something is metaphysically indivisible, it is implied that it is physically indivisible, which in turn implies that it is indivisible into objects. And so there can be no objects such that they are parts of something that is physically or metaphysically indivisible.

Different kinds of Nihilism are based on different sorts of indivisibility. But indivisibility, as we will see, is not always necessary for being a simple.

One might object at this point to my use of divisibility as applied to the talk about parts of objects and parts of non-objects. The objector might say that it is possible that there is an indivisible object with parts that cannot be separated<sup>34</sup>. Therefore, I have to make it clear that I do not use the notion of parthood as a primitive notion. My view on parts is that something is a part *in virtue of* some other facts. These facts are the facts concerning separability. And so I assume that a given entity is a part of some other entity if and only if it can be separated from the latter. Whatever entity is such that it can be divided into smaller entities that can in turn be separated, is a complex entity. Whatever entities can be separated from each other, are parts. And whatever is such that separation is not possible, is a simple. However, I should also say something about whether the possibility of being separated should be understood as physical, or as a metaphysical possibility. If I say that it is enough if the possibility is physical, then we will have different simples and different complexes in different possible worlds. Is this acceptable? Perhaps it is, if for

<sup>&</sup>lt;sup>34</sup> This is an objection raised by T. Sider, in discussion.

some reasons we want to keep the distinction between *physical* and *metaphysical* simples. But still, what is physically simple in the actual world might be *metaphysically* complex, because in some remote possible world it can be physically divided into smaller entities that in turn can be separated. Does that mean that the only metaphysical simples are pointsized entities? It is very likely so.

However, the separability criterion might be problematic when applied to Maximal Nihilism. We want to say that if there is one total object only – the world – it can be divided into parts that are not objects themselves. But how can we make sense of separating two halves of the world? Where would there be any space to move them apart, if space is supposed to be a part of the world too? One solution to this problem might be to say that the world does not contain space, but that the world – as a sum total of all entities that can be located in space-time – is itself *located* in space-time. If we are not ready to accept this solution, the separability criterion might be very hard to come by.

## **3.2.1. Stuff And Things**

In my exposition of Mereological Nihilism I want to use the notion of material stuff. I believe that material reality comes in two ways: either as things, or as stuff. I also believe that these two modes of being for material entities do not exclude each other; I believe that in one world there might be both: things and stuff.

Stuff, as I understand it, is the material content filling regions of space-time. Things are made of stuff, but stuff is not made of things. There is no stuff that would not constitute a thing. There is no stuff floating free, so to speak. All stuff that there is, is in things.

A note on terminology: I will use the term "entity" in the most generous way, for both: things and stuff. "Thing" is to be used interchangeably with "object", and "stuff" – interchangeably with "matter". "Constitution" is a relation between stuff and things. And "composition" is a relation between many smaller objects and one bigger object whose parts the smaller objects are, or between many smaller portions of stuff and one bigger portion of stuff whose parts the smaller portions are. Composition is therefore related to the parthood relation. The difference is that composition relates many entities to one entity (parts to a whole), while parthood can occur between single entities as well (a part to a whole). Neither composition nor parthood is a relation that stuff bears to things, although both these relations hold among different portions of stuff, and among different things. The only relation that binds stuff and things is constitution. As for now I assume that stuff comes in portions that have their sub-portions. However, there might be some problems posited by the stuff-portions-talk, which will be discussed in turn.

The nature of the composition relation is usually understood in the manner presented by J. J. Thomson (1998). However, Thomson's account of composition is in many respects different from the account proposed here. Thomson's standard case of composition is a relation between clay and a statue; and although she speaks of a lump of clay as of a portion of stuff, she does not treat stuff in the same way that I do. First of all, she binds portions of stuff and things with parthood relation, saying that a portion of stuff is a part of thing, and a thing is a part of a portion of stuff (Thomson uses the notion of "improper part" here, but not in the sense of identity, but in the sense of mutual parthood). She puts the following constraints on the parthood relation:

- 1) x exists at  $t \rightarrow x$  is part of x at t (parts are not only proper parts),
- 2) *x* is part of *y* at  $t \rightarrow x$  and *y* both exist at *t* (parthood entails existence),
- x is part of y at t ↔ the space occupied by x at t is part of the space occupied by y at t.

4) x is part of y at t → x and y belong to the same ontological category (this constraint will be discussed in more detail below).

Another difference between Thomson's and my account of stuff is that she does not take stuff to be an ultimate entity that constitutes things (artefacts), because such portions of stuff like a lump of clay or a lump of gold are in turn constituted by atoms. Thomson distinguishes three ontological levels: atoms, stuff, and things; atoms constitute stuff, and stuff constitutes things. Atoms are not, according to Thomson, portions of stuff. Apparently they are too small – she stipulates that "portion" is to be so used in such a way that a thing cannot be a portion of stuff unless it can from time to time possess one of shape-constrained temporary properties, like being a piece, puddle, lump, or heap (1998, pp.161-3).

Thomson defines the constitution relation in the following manner. She believes that the necessary and jointly sufficient conditions for the truth of "CLAY constitutes ALFRED at 2PM" are the following (parthood for Thomson is relative to time; "CLAY" refers to a portion of stuff, and "ALFRED" refers to a statue; I assume that the same relation of constitution should hold for any portion of stuff and any thing if this portion of stuff and this thing occupy the same place at the same time):

- (i) CLAY is part of ALFRED at 2PM and ALFRED is part of CLAY at 2PM
- (ii) There is a z such that z is part of CLAY at 2PM, and such that z is essential to CLAY, and nothing that is part of z at 2PM is essential to ALFRED

(iii) NOT-(There is a z such that z is part of ALFRED at 2PM, and such that z is essential to ALFRED, and nothing that is part of z at 2PM is essential to CLAY)

(iii) is supposed to prevent things from constituting portions of stuff – we do not want to say that ALFRED constitutes CLAY.

Assuming, as I do, that things and stuff belong to different ontological categories and that they cannot be bound with parthood relation, one might say that the constitution relation obeys the following principles:

- (i\*) CLAY and ALFRED occupy the same space at 2PM
- (ii\*) There is a *y* such that *y* is part of CLAY at 2 PM, and such that *y* is essential to CLAY, and nothing that is constituted by part of *y* at 2PM is essential to ALFRED
- (iii\*) NOT-(There is a z such that z is part of ALFRED at 2PM, and such that z is essential to ALFRED, and nothing that constitutes part of z at 2PM is essential to CLAY)

These principles point out to a distinctive property of stuff – stuff is individuated by its parts, whereas things are not.

Stuff and things belong to different ontological categories – I believe that they are different entities and that they are governed by different principles. If I am supposed to take a stance on what is more basic: stuff or things – I am somehow inclined to say that stuff is more basic than things. This would mean that any fact about things supervenes on

fact(s) about stuff. Or that, to make the connection between things and stuff even more intimate, that every fact about things is such-and-so in virtue of fact(s) about things.

But if this is really so – if facts about things are reducible to facts about stuff – is there a reason why we would need to have these two ontological categories? Well, there might be some important reasons to keep stuff and things apart. One is the following: one might want to say that things are something *over and above* stuff (in a way analogous to the way in which composite objects are something over and above their parts). The idea here is that if one might want to say that things are something over and above their parts). The idea here is that if one might want to say that things are something over and above the stuff that constitutes them, one must not claim that things are simply reducible to stuff. The "over and above" phrase introduces some extra properties that must be "added" to stuff in order to "obtain" a thing. And this solution requires that stuff and things belong to different ontological categories, such that one category cannot be reduced to the other.

Whether things are really something over and above stuff is an open issue so far. I believe that the idea that things are *nothing* more and above stuff means the following: take the stuff, its arrangement, and relations among various portions of stuff that constitute a thing – and you have the thing described - there is nothing else to be said about the thing. This is to say that particular stuff in particular arrangement constitutes a thing. What more can count for a thing than that?

However, one might want to say that a thing usually has different persistence conditions than stuff does. A thing might survive change of stuff, loss of stuff, and addition of stuff. A thing might survive rearrangement of stuff. These changes can be carried out usually to a certain extent only, but nevertheless a thing can survive quite a lot of them. In such cases the thing is still the same, while stuff and its arrangement are different. It seems then that stuff and its arrangement do not exhaust the nature of a thing. Moreover, the thing could have been constituted of different stuff, still being the same thing. And so particular stuff and its particular arrangement are not necessary for this thing's continuous existence or identity.

What else can matter for existence of a thing? One might want to say that it is functionality that matters: we are inclined to say that a certain thing persists as long as it performs certain function. But it might be vague sometimes if a given function is still performed or not. Moreover, we can think of things that perform no function whatsoever. Or we can say that many of them perform functions only from human perspective – there would not be any function for them to perform if there were no human beings.

Another possibility is that to be a thing, and to remain the same thing, is to continuously instantiate the same property, or the same set of properties. Obviously not each and every property matters for thing's persistence – things can instantiate different, often contradictory properties at different times. Therefore, we must narrow the set of important properties down to the so-called *essential properties* – such that cannot be lost without the thing's ceasing to exist. But which properties are those? Are these properties like "being a table", or "being a stone"?

One might think that properties important for existence of certain things should be understood analogously to *natural properties* postulated for instance by D. Lewis (2001, pp.59-61). The important difference is that Lewis would not probably consider properties like "being a table", or "being a stone", or "being a thing" as natural. But nonetheless he mentions a nominalistic theory of properties that draws primitive distinctions between particulars (1983, pp.343-377). And my claim is that perhaps there can be such a primitive distinction between things and non-things.

The idea behind comparing properties like these to Lewisian natural properties is the following: perhaps properties like "being a table" or "being a stone" carve reality at the joints better than other properties, just like Lewisian natural properties do. Carving reality at the joints means (or at least this is how I understand it) that certain predicates standing for properties manage to pick some distinguished aspects of reality, or at least manage to get closer to picking them than some others predicates. This view presupposes that there are some distinguished aspects of reality, or, in other words, that reality has certain mindindependent structure. I am not certain whether, and if so – to what extent, this is to say that some properties are less real than the others. Perhaps it might be claimed only that all other properties are reducible to the "natural" ones.

The talk about carving reality at the joints takes us back to the thing-joints conception. Just to remind, on the thing-joint view there are certain facts of the matter concerning existence of things – facts of the matter concerning *thinghood* or *objecthood*. The idea here is the following: just as there might be certain distinguished aspects of reality concerning properties, so there might be certain distinguished portions of reality concerning things. Or in other words: there are things *that are* distinguished portions of reality. Things understood in this way are made of stuff arranged in particular way, but they are something more and above the stuff. We might call the things that carve reality at the joints *natural things*, and then say that people who seriously disagree about ontology, in the sense of disagreeing on what objects or things there are, disagree in fact on which things are *natural*. And so for instance according to van Inwagen the natural things are mereological atoms (basic particles) and living organisms. For someone who believes in unrestricted Nihilism the natural things are only mereological atoms.

It seems that there are two views that can be associated with the idea of a thingjoint<sup>35</sup>. One is that a thing is a portion of stuff that instantiates certain natural property, while natural properties are for instance: "being a table", "being a dog", or "being a thing". The other view is that there is a special, distinguished meaning of a quantifier, such that it

<sup>&</sup>lt;sup>35</sup> I am indebted to T. Sider for this distinction.

manages to pick these and only these entities that are things. Things would be, on this view, the entities that exist according to this natural quantifier<sup>36</sup>. These two accounts of the thing-joint conception may result in different inventories of things being accepted. Things that might be picked by the natural quantifier might not necessarily instantiate natural properties.

Another dimension of this distinction is the following: on the natural property account there would be just one realm of entities, namely portions of stuff, and some of these entities would instantiate natural properties. On the alternative view there would be two realms: the realm of things, and the realm of portions of stuff. Perhaps on the latter view we would need to postulate two natural quantifiers: one for things, and the other for portions of stuff.

I do not really intend to address the question of whether the most fundamental ontological entities are things, portions of stuff, or properties. This paper is about material composition within the realm of things, and therefore the first and foremost assumption here is that there are things that carve nature at its joints. There might be other questions worth asking in the vicinity of this problem, like for instance what makes portions of stuff that instantiate certain properties things. My answer, if any, is that things are primitive entities. They just *are there*, sitting comfortably in ontological structure, not *in virtue of* anything else. I believe that there *must be* some things, to start with.

I will use "stuff" more as a technical term to refer to something that the things are made of. I do not intend to address the question of what makes certain portions of stuff

<sup>&</sup>lt;sup>36</sup> The idea of the natural quantifier, as presented by Sider (2001), is the following. There is only one notion of existence, and our unrestricted use of " $\exists$ " should correspond to this notion. Existence is a logical natural kind. This natural meaning of the existential quantifier is determined by joints in reality: just as natural properties in Lewisian sense carve reality at the joints, so does  $\exists$  carve reality at the joints too. This idea is being opposed to Carnap/Hirsh's idea of *quantifier variance*, according to which there are different, equally natural meanings of  $\exists$ . A consequence of believing that there are different possible meanings for  $\exists$  is that most of ontological debates are regarded "shallow", since they boil down to picking different meaning for  $\exists$ , and are therefore only accounts of how different parties use  $\exists$  in different ways.

things. One might want to say that my view is that what makes some portions of stuff things is that they are the smallest portions possible. Perhaps I should agree with that.

Friends of unrestricted composition, like Lewis for instance, believe that any portion of stuff constitutes a thing, and so that for any portion and any arrangement there is a joint in reality. Actually, they seem to say that arrangement does not matter for whether there is a thing or not, since their approach to thinghood is extensional. Or, strictly speaking, *extensionality* is one of principles describing nature of their things – mereological sums. To say that mereology is extensional is to say that mereological sums are unique: any parts have just one fusion. No two fusions can be fusions of exactly the same parts.

But this would be to say that any portion is a distinguished portion of reality. And if everything is distinguished – does the distinction make sense at all? The problem is that the friends of unrestricted composition postulate so many thing-joints in reality that they make the notion of a thing trivial. My view is that unrestricted composition goes against the spirit of conceiving things as distinguished portions of reality, and so also against the idea of carving reality at the joints, at least in case of things as opposed to portions of stuff that do not constitute things.

One reason to have both things and stuff in our ontology is that they have different modal properties and persistence conditions. It might be odd to talk about persistence of sub-atomic particles that change their constitutive stuff. Is that possible for such a simple to change the stuff it is made of? If we think that a sub-atomic particle is not physically divisible, this idea makes no sense indeed. However, if one is a Maximal Nihilist, it makes sense to speak of the total thing gaining and loosing stuff so that the thing still persists while certain portions of stuff do not. This, however, can occur only if some stuff is coming into existence *ex nihilo*, and some stuff is ceasing to exist. And of course this talk makes sense for the Intermediate Nihilist. In all of these cases it makes sense to ask if things could have been made of different stuff.

N. Markosian (2006) lists ten other reasons why one should believe in stuff in addition to things (here I quote only eight of them, since I think that the last two are not plausible at all). These reasons are the following:

- 1) stuff is included in our commonsense ontology,
- 2) believing in stuff reflects the way we use our language,
- 3) it is possible that there are extended mereological simples; those simples might be not homogeneous; and it is only if we have stuff in our ontology that we are able to give an account of their heterogeneity, saying for instance that one subportion of stuff filling the simple is red and the other is blue,
- 4) it is possible that the world consists solely of gunk there are no mereological atoms; this might be a problem for the Mereological Nihilist who believes that the only objects there are, are atoms; postulating stuff will give the Nihilist a device to describe a gunky world; the problem arises also for the believer in Restricted Nihilism, like van Inwagen, and in general for any ontology postulating fewer objects than commonsense ontology does,
- 5) postulating stuff is supposed to answer the problem of coincident objects; the problem is solved by co-constitution: this is to say that there is one portion of stuff constituting both a statue and a lump of clay,
- 6) there are two mereological principles that seem to be at odds with common sense; these are: *The Principle of Unrestricted Fusions* which says that any physical objects have a fusion which is also a physical object, and *The Principle of Mereological Essentialism* which says that every physical object has its parts

essentially; together these principles entail that each fusion of physical objects exists for exactly as long as all of its parts exist; common sense, on the other hand, seems to reject them both, *at least as applied to objects*; however, common sense seems to accept both principles *as applied to portions of stuff* - there is nothing controversial in saying that any two portions of stuff make another portion of stuff, and that all sub-portions of stuff are essential for any portion of stuff – take away any sub-portion of a portion of stuff and the portion is not the same.

Out of these reasons I find 3) and 4) really plausible. I am not convinced by 1) and 2), since I do not think that ontological solutions employed in commonsense ontology and natural language should be any more plausible than the other answers *precisely because* they come from commonsense ontology or natural language. I am not convinced by 5) since I do not believe that statues or lumps of clay are objects. And I am not convinced by 6) since I do not believe that common sense delivers any clear ontological claims. In short – I believe that Mereological Nihilism is a true ontology of things, and 3) and 4) are reasons for believing in stuff that must be appealing to any Mereological Nihilist.

One remark made by Markosian seems to point out to an important difference between things and stuff: they are (at least according to most ontological doctrines) governed by distinct mereological principles. The Principle of Unrestricted Fusions is applied to things only on one view – the Unrestricted Composition view. Any sort of restricted view, various Nihilisms including, does not allow to apply this principle to objects. On the other hand, there seems to be nothing odd in applying this principle to portions of stuff, according to any ontology. Portions of stuff are considered rather by analogy with regions of space, or regions of space-time: any regions of space-time fuse into a bigger region, and any portions of stuff fuse into a bigger portion, and there is nothing odd in *scattered* regions of space-time or *scattered* portions of stuff.

The second principle - The Principle of Mereological Essentialism – is even more distinctive of stuff. Usually the application of this principle to things is attributed to R. Chisholm (1989, pp.65-82). However, I am not entirely sure whether strict application of this principle exhausts Chisholm's position. This is for the following reason: Chisholm speaks of *constitution* relation, as holding between two types of things: temporally intact things and temporally non-intact things (clearly this is not the constitution relation in the sense intended in this paper!). The former are things existing at some time in which they don't change their parts, and the latter are four-dimensional things that survive changes of parts. Chisholm speaks explicitly of "four-dimensional" things and their "temporal parts". He also says that temporal parts cannot be strictly identical with four-dimensional things, and so that there is only identity in "a loose and popular sense", which is a disguised relation of constitution in fact. He also says that a "strict and philosophical" identity holds only between a given temporal part and itself, and between the whole four-dimensional thing and itself. Four-dimensional things that change parts during their careers are mere "logical constructs" (1970).

It seems that this position is quite similar to the Temporal Parts Doctrine as presented by Sider. An important difference is that for Chisholm the temporally intact things that are temporal parts of four-dimensional objects do not seem to have any proper temporal parts. In other words – it seems that as long as the thing remains intact, it counts as one temporal part without any proper temporal parts, and not, as in case of the Temporal Parts Doctrine presented by Lewis and Sider, as a part that consists of many other, smaller temporal parts. The point of making these remarks is to say that on Chisholm's view there

is something that goes out of existence whenever a part of a thing is removed, and there is something that *persists* through this change.

It seems there is an analogy between Chisholm's position and the presented view on stuff and things. A thing that ceases to exist whenever any part of it is removed behaves very much like a portion of stuff – this thing is individuated by sameness of its parts, and so cannot survive any changes of them. A portion of stuff also cannot survive any change of its sub-portions, because it is individuated by sameness of these sub-portions. Still, there is an important difference in the way in which change of parts is conceived on Chisholm's view and on the present view. On my view a genuine loss of a sub-portion of stuff is only when this sub-portion is annihilated (see below). Mere change of position of the subportion, even if the sub-portion has been separated from other sub-portions, does not count as a loss, since I believe in scattered portions of stuff.

However, in order to draw the analogy between Chisholm's talk of temporally intact things going out of existence and my talk of stuff, I must make some accommodations in my theory. I must assume, for the sake of this analogy, that there are no scattered portions of stuff. Only then I can say the following: *if it is true that there are no scattered portions of stuff*, and so *if it is true that whenever a sub-portion is separated from the original portion, the original portion goes out of existence and a new portion comes into existence*, then the analogy between portions of stuff and Chisholmian temporally intact objects holds.

At any rate, it seems that all doctrines apart from Mereological Essentialism (and as I claim – Mereological Universalism) allow things to change, lose, or gain their parts. Nonetheless, it seems that *no* ontological doctrine allows portions of stuff to change, lose, or gain their sub-portions. In other words – portions of stuff are individuated by their sub-portions, and any slightest change will result in the portion's going out of existence. I do

not believe that this effect can be simply brought about by removal of a sub-portion understood as change in stuff's arrangement. It is not the case that by simple "putting aside" one atom we can destroy a given portion of stuff. Only *annihilation* of an atom of any bigger sub-portion would result in the original portion's ceasing to exist, and in another, smaller portion's starting to exist. This is because portions of stuff, just like regions of space-time, can be scattered. A particular arrangement of matter has nothing to do with existence of a particular portion of stuff. Change the arrangement any way you like, and the portion of stuff remains the same. This property of portions of stuff makes them very similar to mereologically unrestricted objects (objects as conceived by the friends of Unrestricted Composition), and I am inclined to think that some Universalists (like T. Sider for instance) actually believe in existence of stuff, but they "disguise" stuff for things.

However, stuff is not entirely unproblematic. The main problem with stuff is that stuff-talk expressed in terms of portions of stuff might be considered as a disguised talk about things. After all we quantify over portions of stuff, we ascribe properties to them, and we claim that portions of stuff stand in various relations to one another. This makes the stuff-talk sound very like thing-talk<sup>37</sup>. The answer to this objection has already been given by Markosian: stuff and things are different, since they are governed by different mereological principles. Things do not always have fusions, whereas portions of stuff do. Still, there is an attempt made by Markosian to eliminate the talk about *portions* of stuff and replace it with the talk about *some stuff*. Here is an example given by Markosian. The original sentence expressed in terms of portions of stuff:

<sup>&</sup>lt;sup>37</sup> See also K. McDaniel (2003).

"The portion of stuff that constitutes the sphere has a sub-portion that is blue and another sub-portion that is red"

can be translated into:

"There is some stuff,  $s_1$ , such that  $s_1$  constitutes the sphere and there is some stuff,  $s_2$ , and some stuff,  $s_3$ , such that  $s_2 \neq s_3$ ,  $s_1$  is the fusion of  $s_2$  and  $s_3$ ,  $s_2$  is blue, and  $s_3$  is red"

This solution might not seem satisfactory for someone who finds the objection from the similarity of stuff-talk to thing-talk plausible. After all, it is not the use of the singular term "portion" in the phrase "a portion of stuff" that makes the talk about stuff sound very like the talk about things. Mere elimination of this term will not solve the problem. Rather, as it has been already said, it is all we can do with portions of stuff: quantifying over, and ascribing properties and relations to, that makes stuff similar to things. Especially, as it seems, the possibility of *quantifying over* makes portions of stuff problematic.

However, I do not find this objection too threatening. This is because I do not believe that quantification is ontologically committing in any sense. The idea that whatever can be quantified over is actually a thing is due to the famous slogan ascribed to Quine, namely that to be is to be a value of a variable (1951 and 1953). Actually Quine says the following:

"To be assumed as an entity is, purely and simply, to be reckoned as the value of a variable. In terms of the categories of traditional grammar, this amounts roughly to saying that to be is to be in the range of reference of a pronoun" (1953, p.13)

Quine does not speak clearly of a *thing*, but of an *entity*. But this remark would be perhaps unfair to Quine, since for him there is no distinction between matter or stuff on the one hand, and things on the other hand. Things simply are portions of matter, and portions of matter simply are things (1976). Obviously, Quine does not believe that there is any distinctive ontological structure and any joints in nature that would have any bearing on what things there are. Things are entities. But can one say that there are no other entities? It does not seem so. Still, there are other candidates for entities, like places and times that can also be quantified over. One might want to utter the sentence: "Ana was married twice", thereby saying that there is a two-place relation "being married at", M, that holds between Ana and a particular time (perhaps not even a moment of time, but an interval)<sup>38</sup>. We might express this sentence in the following notation<sup>39</sup>:

 $\exists x \exists y \exists z (x = a \& Mxy \& Mxz)$ 

Does this possibility of quantifying over times and places mean that they are, strictly speaking, things? I don't believe that this is actually the case. Here we speak only of material things, and so let us assume that we don't believe in abstract things: do we really want to say that times and places are things? They are not material, in the sense of having material content – so how can they be things if we believe only in material things? We might want to say that they are entities that exist independently of our mind, just like material things do. Fair enough. We have then three sorts of entities that we can quantify over: material things, places, and times. We can add to this list properties as well, if we like. And we can add portions of stuff, or some stuff, if we like. Still, this does not make them things in any sense.

For one thing then I do not agree that to be is to be a value of a variable, since I believe that to be is to carve nature at its joints. But for another – I cannot see how the truth

<sup>&</sup>lt;sup>38</sup> One might of course expand the number of places of the basic relation "being married" by saying that it is in fact a three-place relation "being married to ... at...".

<sup>&</sup>lt;sup>39</sup> The friend of temporal parts would rather say that two temporal parts of Ana were married one at each time, but here I assume that we do not believe in temporal parts.

of this Quinean slogan could contribute to reifying portions of stuff. If you really want to think that quantification is ontologically committing, and so whenever you quantify over properties or times you do accept these entities in your ontology, you can still add another category to it, namely stuff, without any need of reifying its portions.

Moreover, it seems that the objection that quantifying over portions of stuff makes them actually things in disguise has a broader application. There might be various objections of a similar sort: like for instance that it is not acceptable to believe and quantify over spatio-temporal points, if one wants to be a mereological monist<sup>40</sup>. The bottom line of objections of this kind seems to be the following: one cannot sincerely say that one does not talk about things, if one is committed to existence of any entities that can be reidentified. Now, I don't think that being possibly re-identified is a criterion of being a thing. Unless, of course, one's definition of a thing is "what can be possibly re-identified". But this is *not* a definition of a thing that I employ here. However, if people who are inclined to object in this way still want to say that being possibly re-identified and being a thing are two *different* properties, then I have to say that I do not know where their objections come from.

Another question related to the conception of stuff is whether there are the smallest portions of stuff. Whatever the smallest things are: extended sub-atomic particles or pointsized simples, they are filled with or made of stuff. If simples are extended, they are filled with extended portion of stuff; and if they are points, they are filled with point-sized portions of stuff. This answer perhaps calls for another principle differentiating stuff from things: dividing stuff into portions corresponds to dividing space into regions. And this

<sup>&</sup>lt;sup>40</sup> This is an objection raised by Ted Sider in discussion. Sider's view is that any argument that works for monism in case of material things should also work for monism in case of any other entity. And so if one has good reasons to be a monist about things, one should also, consistently, be a monist about any other entity, space-time including. The general idea behind this view is that the direction of explanation should always be preserved: if one is a monist about things, one gives an account of parts in terms of an account of the whole. And likewise one should give an account of space-time points in terms of the whole space-time.

correspondence does not hold in case of things. Therefore, even if there are the smallest *extended* things, there cannot be the smallest *extended* portions of stuff. The smallest portion of stuff must then be a portion that occupies exactly one spatial point.

## **3.2.2.** Minimal Nihilism

According to Minimal Nihilism the only objects are point-sized simples. These objects are metaphysically indivisible. They fall under the strongest criterion of being a simple. It seems that they are the only metaphysically indivisible objects - no other material entities can meet this criterion. Any extended simples (that are simples according to the criterion of physical indivisibility for instance), even if indivisible in the actual world, might still be divisible in other possible worlds. This is the case of extended physically indivisible simples postulated for example by P. Simons (discussed below): it seems that it is only the actual physical laws that make them indivisible. In some other possible worlds in which the physical laws are different those entities might be divisible<sup>41</sup>.

The conception of point-sizes simples might pose some problems of topological nature. One of them is that we will need to postulate an infinite number of simples within any extended portion of stuff. The other is the problem of possibility of *genuine* contact between two solid material objects<sup>42</sup>. Given description of material objects in terms of point-sized simples, there are three topologies of objects affecting the possibility of contact between them. According to this distinction things can be either:

## 1) closed, or

<sup>&</sup>lt;sup>41</sup> Still there might be no such possible world in which our physically indivisible extended simples are divisible. This would be a case of extended simples being metaphysically indivisible, so in fact there would be some metaphysically indivisible simples other than point-sized simples.  $\frac{42}{2}$  Some there  $\frac{2}{2}$  Some  $\frac{2}{2$ 

<sup>&</sup>lt;sup>42</sup> See also: P. Simons (2004, p.373), D. W. Zimmerman (1996, pp.5-19).

2) open, or

3) partially closed and partially open.

The difference between these topologies depends on whether the object includes the outermost skin of simples or not<sup>43</sup>. If the object consists of its inner particles as well as of its boundary particles, it is a closed object. If the object consists only of its inner particles and does not include the boundary particles – it is open. The object with open boundaries might be characterised as one whose boundaries approach the limit of a boundary, but never reach it<sup>44</sup>. If the object consists of inner particles and only *some* of the boundary particles – it is partially open and partially closed.

I will use the concepts of closed, open, and partially closed and partially open objects in line with definitions formulated by D. Zimmerman (1996, p.6):

(D1) Object x is *adjacent to region* R =df the region exactly filled by x has no points in common with R, and the union of the two regions is a connected region

(**D2**) x is a *closed object* =df x is a spatially located object; and for every y such that y is a part of x adjacent to a region which is not filled by a part of x, there is a set A of simple parts of y such that each member of A is adjacent both to regions filled by parts of x and regions not filled by any part of x

<sup>&</sup>lt;sup>43</sup> I do not intend to take a stance on whether boundaries of objects are *real* entities or not. See A. Varzi (1997) for a discussion on various approaches to the boundary problem.

<sup>&</sup>lt;sup>44</sup> In fact I am not sure whether we can have a non-vague and non-formal conception of an open object. An open boundary seems to be something like a moving spot: if you think you have found its location in a given space, it always turns out that you have to take a small step "backwards", because the boundary is "not really there", since it only "attempts" to reach, but never actually reaches, a given point in space.

(D3) x is an *open object* =df x is a spatially located object; x has proper parts; and there is no set of simple parts of x such that each member is adjacent both to regions filled by parts of x and regions not filled by any part of x

(D4) x is a *partially open object* =df x is a spatially located object; x has proper parts; and x is neither open nor closed

I will say that two extended material objects are in genuine contact if and only if they are adjacent, in the meaning provided by (D1). That is, if the regions of space they occupy have no points in common, and if these regions add up to one connected or continuous region. If I believed that extended objects had parts, I could say that two objects being in genuine contact cannot be any further apart than two adjacent parts of one extended object are. One of the naïve views on material composition says that two or more objects compose another object when they are in contact<sup>45</sup>. This is the notion of contact that I have in mind here<sup>46</sup>.

One might object at this point that this view of objects as entities filling up space with their constitutive matter is the old-fashioned Newtonian picture which has no application to the view presented by modern physics. However, we need to remember that this is not only the actual world that we are talking about here. I am very much inclined to believe that in the actual world simples are extended physically indivisible entities that should be understood rather as fields extended across some regions of space. These fields most probably penetrate each other and we might find forces belonging to different fields ranging across the same regions of space. And as much as this modern picture should not posit any topological problems for material objects, nevertheless I would like to address

<sup>&</sup>lt;sup>45</sup> See P. van Inwagen (1990, pp.33-37).

<sup>&</sup>lt;sup>46</sup> In a similar manner: D. W. Zimmerman (1996, p. 9). This kind of contact is what Ned Markosian calls a "perfect contact" (2004, p.416).

the problem of genuine contact in a world with point-sized simples filled with matter. The reason is that this is a possible way for things to be.

The requirement of genuine contact being possible concerns the very possibility of material composition: if parts come together to compose a complex object at all, it must be possible for them to be as close as parts of these parts are. If we consider composition from the level of basic particles: we take two particles and put them so close together that they reach the limit of closeness. This is a case of genuine contact. If we want to bring them to contact with another object, it seems that again we have to reach the same limit of closeness. Accepting a different level of closeness would seem unjustified. If contact matters for composition, and if all parts – parts on every level of composition – are ontologically on a par, we should have the same closeness of parts on every level of composition the parts have to be equally close.

One might say that since I believe that Mereological Nihilism is true and so that composition never occurs, I should not be really worried about application of problems of genuine contact to material composition. Nevertheless I want to discuss this problem here because it sheds some light on how problematic the doctrine of point-sizes atoms is. Mereological Nihilism is *not motivated* by problems stemming from topology of spatially extended objects; composition does not occur, but not *because of* the problem of genuine contact and topology. Therefore, I will discuss the problem of genuine contact here *as if* composition was true.

If composition occurred, one might want to say the following: even if genuine contact is necessary in case of parts *composing* an object, it might not occur in case of objects that do not compose any other object. This would be to say that we should not demand that distinct objects can be in genuine contact at all. I think that this is not

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plausible at all. The idea here would be to introduce a distinction between two kinds of contact: *genuine* contact in case of parts of one object and *alleged* contact in case of objects that are not parts of any further single object. But this seems unmotivated. If composition was possible at all, it seems that genuine contact would be a necessary, but not a sufficient condition for composition to occur. It would have to be possible for two distinct objects to come into genuine contact with each other, and do not compose a further object thereby.

Given the three possible topologies of objects, it seems that genuine contact can occur only in two cases:

- 1) when a closed object is in contact with an open object,
- when two partially closed and partially open objects are in contact in such a way that every open boundary point of one object is in contact with a closed boundary point of the other object.

In any other combination the distance between two objects being in alleged contact is bigger than a distance between two adjacent sub-regions of continuous region of space. Therefore, the contact is not genuine. Two closed objects when put together "touch" each other's boundary particles. But if any two boundary particles are touching each other, there is still infinitely many points between them, as it is between any two points of any continuous entity. Therefore it seems that two closed objects cannot be as close to each other as the adjacent regions of space are. On the other hand, if we take into account two open objects, even when they are touching each other there is still a single spare point between them. Therefore in both cases the distance between two objects is larger than in case of two adjacent regions of space that are genuinely touching each other, in the sense
that they are genuinely adjacent and there is not even one single point between them that would not belong to one of them. For two partially closed and partially open objects it would be very unlikely to be in genuine contact, since that would require a perfect match: every closed point on the boundary of one object would have to "touch" an open point on the boundary of the other object.

At the same time it seems that two things that are in contact cannot share any of their boundary simples, nor can their boundary simples coincide. If the former was the case, we would encounter serious problems while trying to decompose such objects into simpler objects. If we were to divide a complex object into two halves, one of them would have to have its boundaries closed, while the other would have to have at least one boundary open (I assume that we divide an object by breaking it along a straight line). Another possibility is that the new boundaries of the two objects would be partially closed and partially open. In the former case – what would decide which object is to have a closed boundary, and which is to have an open boundary? In the latter case – which boundary points of one of the two halves are to be closed, and which are to be open? A further issue is that if we would like to replace a part of an object, we would have to find a new part whose topology would allow to bring it to genuine contact with the other part.

I reject the possibility of coinciding simples<sup>47</sup>. The main and perhaps the only motivation for this move comes from the very nature of material entities. They must be impenetrable, at least with respect to entities of the same kind<sup>48</sup>. This is to say that one material thing cannot occupy a position that is already occupied by another material thing. The boundary point-sized atoms should be no exception here. It is because if we allow for

<sup>&</sup>lt;sup>47</sup> This problem has nothing to do with something that is more widely known as the problem of coincidence, namely the problem of coinciding statues and lumps.

<sup>&</sup>lt;sup>48</sup> If we want to think of simples as of fields of energy, this idea has its application as well. However, the fields cannot be totally impenetrable. They can be penetrated by other fields, depending on what forces the other fields display. However, there must be some rules excluding the possibility of some fields ranging over exactly the same regions of space. And this means that two fields cannot really coincide even if they are penetrable.

coincidence of point-sized atoms, we have to allow also for coincidence of the whole extended objects composed of them. There would be no reason to restrain from this extension. Otherwise we would have to come up with a very implausible account of partial impenetrability, saying for instance something along these lines: a material thing is impenetrable only on that parts which are composed of atoms that are not boundary atoms, that is, that are wholly surrounded by other atoms. A solution of this sort seems unconvincing because it binds impenetrability with relations that the atoms stand to each other, and not with their intrinsic nature<sup>49</sup>.

Nonetheless, it is worth mentioning that an ontology that accepts some sort of coincidence of material objects has been proposed as a solution to the genuine contact problem. D. Zimmerman (1996, pp.27-29) presents an ontology that originally comes from Brentano, and which offers an account of material objects in terms of both: atomless gunk and point-sized atoms. The ultimate constituent of the world is, according to this doctrine, gunk that "fills in" material objects, is the real bearer of extension, and grants impenetrability. The point-sized atoms are *dependent* entities, in the sense that they can exist only as boundaries of extended objects. The boundaries of objects are closed. But genuine contact is possible since boundary point-sized atoms can coincide.

I find this doctrine quite mysterious. First of all, it is not entirely clear to me what the relation of dependence between point-sized atoms and atomless gunk is. It is not the case that the atoms somehow spring into existence whenever there is a new boundary for them to "sit on" – for instance in cases when the object gets broken; they are already there.

<sup>&</sup>lt;sup>49</sup> T. Sider (2000) claims that there is nothing objectionable in coincidence of material objects, and that this is only our *definition* of "material" that posits the problem. We define "material things" in terms of impenetrability and so this definition already excludes coincidence of material objects. Sider's idea is then that there cannot be any real problems posited by definition alone. There might be a world, according to Sider, in which objects are not impenetrable, so when pushed towards each other they do not stop, but pass through each other. Such object do not fall under our definition of material objects, but nonetheless, as Sider claims, coincidence in such a case is not problematic. I, at any rate, want to claim that coincidence is impossible as applied to material objects as conceived in accordance with our definition of "material". And so my view is that coincidence is impossible at least in these possible worlds which are nomologically accessible from the actual world.

It seems then that they coincide also with atomless gunk that is the real filler of extended objects. Another peculiar issue is that on the boundary of an object adjacent to another object we can find point-sized atoms coinciding with those from another object's boundary. Is there any gunk located exactly at the points occupied by atoms? It seems that there cannot be any gunk at these locations, since then gunk from one object would have to coincide with gunk from the other object.

All these investigations show how difficult it is to conceive of the material world as made of point-sized simples. It seems that any account of contact and decomposition concerning extended material objects composed only of point-sized atoms looks very odd. It allows only for *some* extended objects to be in genuine contact with *some* others, and in the case of decomposition it puts strong requirements on replacement of parts. Actually if diverse topologies of objects matter for the possibility of contact, there are *some* complex objects (if there are any) whose parts are in genuine contact, but the vast number of objects have parts that are in quasi-contact.

These problems posited by point-sized simples might be the reason why the pointsized atoms are sometimes thought of not as real entities but rather as limits of analysis of composition. When we try to get to the bottom of composite objects and see what the smallest parts are, and if for some reasons we are not happy with accepting extended simples, we want to arrive at something that cannot be divided. The only entity that cannot be divided in any possible world is the point-sized simple. However, given all these difficulties with point-sized simples – can they be real?

## **3.2.3. Intermediate Nihilisms And Extended Simples**

"Intermediate Nihilisms" is a name for various doctrines putting different constraints on what the nature of simples is, yet accepting plurality of simples (the doctrine according to which there is only one extended simple is Monism). I would like to discuss two views on which simples are extended entities: the physically indivisible simples view presented by P. Simons (2004) and the maximally continuous simples view presented by N. Markosian (1998)<sup>50</sup>. None of these two views is Nihilism since none of the two authors is committed to the view that there are not composite material objects. However, they provide some interesting views on what extended simples might be.

Simons' main argument for existence of extended simples starts with familiar problems with point-sized simples. Simons rejects the so-called "Geometric Correspondence Principle" which binds spatial extension with having spatial parts:

(GCP): Any extended object has parts corresponding to the parts of the region it occupies (2004, p.372)

and replaces it with The Extended Simples Principle:

(ESP): Every physically basic item (simple) occupies at any time an extended region, called its *locus*, but it has no physical proper parts. In particular it has no parts corresponding to sub-regions of its locus (2004, p.376)

<sup>&</sup>lt;sup>50</sup> Other authors who employ the conception of an extended atom are: R. J. Boskovich (1922), R. Harre (1970), I. Kant (1755-1770, pp.45-65), A. N. Whitehead (1978).

This characterisation does not say in virtue of what something is a simple. It says only that having spatial extension does not imply having parts. And this is exactly what can be said about extended physically indivisible simples. A simple, according to the physical indivisibility criterion, is something that cannot be divided into parts that in turn can be separated. This impossibility is set by physical laws. According to Simon, whether something is a simple or not should be discovered in physical inquiry, and cannot be decided on a priori grounds. Extended simples might have different sizes – but what sizes they in fact have is a matter of empirical discovery. Therefore, it seems that the physical indivisibility criterion should be really applied to Simons' extended simples. What would the physics recognise as simples, if not something that is physically indivisible?

An example of such extended particle is a wave-particle, which in principle might be as large as a galaxy (2004, p.378). Another examples are electron or quark. The modern physics describes these objects as *behaving* like points in space, having no measurable size<sup>51</sup>. However, it is not certain that they have no size whatsoever. Perhaps they are so small that their size cannot be detected by available apparatus. Nonetheless they do not behave like spatial points in some other respect: we cannot put infinitely many of them in limited space since they display some nuclear forces that keep them at some distance apart from each other.

Quite a different view of simples has been presented by N. Markosian. The view departs from any indivisibility criterion whatsoever. Nevertheless I want to mention this view because it offers another, quite interesting view of what being a simple amounts to. The criterion for being a simple object is on this view the criterion of maximal continuity:

<sup>&</sup>lt;sup>51</sup> "Subatomic particle" *Encyclopaedia Britannica* from Encyclopaedia Britannica Online. <u>http://search.eb.com/eb/article-60729</u> [Accessed October, 31, 2005].

The Maximally Continuous View of Simples (MaxCon): necessarily, *x* is a simple if and only if *x* is a *maximally continuous object* 

*x* is a *maximally continuous object* =df *x* is a spatially continuous object and there is no continuous region of space, R, such that (i) the region occupied by *x* is a proper subset of R, and (ii) every point in R falls within some object or another (2004, p.405)

A consequence of this view is that whenever there is a portion of continuous stuff, there is a simple. Therefore, we have simples like tables, chairs, and human beings. Another consequence is that every complex object is a scattered object. Yet another consequence is that things go out of existence whenever they come into contact and become continuous with anything else. After coming into contact things simply cease to be, and instead of them a new bigger simple springs into existence. This is not to say that some stuff is annihilated in the process of coming into contact. These are only the *things* (understood as something over and above the stuff) that cease to be. And so the portions of matter that used to constitute separate things, once arranged in a continuous manner constitute one bigger simple (2004, pp.417-425).

The view seems quite incredible at first glance. It goes far against our intuitions that two distinct things can be in contact without loosing their distinctness. It also forces us to believe in existence of many counter-intuitive objects, resulting from connecting any two or more familiar physical objects, like two or more people for instance.

In order to avoid these unwanted consequences, Markosian proposes two alterations to his original doctrine. One option is to go back to the distinction between open and closed objects (or more precisely: between open and closed boundary points, which, I think, boils down to the same thing), and to say that genuine contact that gives raise to a continuous entity occurs only when an open and a closed object come into contact. Perfect contact between two people would be impossible since they are both closed objects. The only kinds of contact that two people can be in are: ordinary contact – when it appears to the naked eye that they share a boundary point, and real contact – when they really share a boundary point, but it is not the case that the boundary point is open for one of them and closed for the other (this case is reserved for perfect contact). Being in ordinary or in real contact does not result in forming a continuous entity, so there is no threat for distinctness of the two objects.

However, this solution is not satisfactory for Markosian since, as he claims, we don't have any decisive intuitions concerning topology of objects. Therefore he prefers another solution which consists in making distinction between *things* and *stuff*. The final position is then as follows. The properties that we think belong to a thing, such as: being alive, being conscious, or being a person, are supported by both: stuff and things. When two things come into contact, becoming thereby one thing, there are still two portions of stuff that support all the properties that a human being normally displays. Therefore, even if a thing goes out of existence, there is still a portion of stuff that supports all the properties to that thing. And so to say that a human being goes out of existence is ambiguous between saying that a thing goes out of existence and that a portion of stuff goes out of existence. In case of two people coming into contact only the former is really the case.

I am not sure which of these two solutions to the problem of things ceasing to exist whenever they come into contact is in fact better. As for the first one – it seems that the problem is not the lack of strong intuitions about topology of things (whatever this claim amounts to), but rather that traditional topology of objects in terms of spatial points occupied by matter might be entirely wrong. An appealing alternative to this traditional view is that simples might be best describable in terms of fields of energy. If their energy comes in continuous values they might range over very large regions of space, or even over the whole universe. If there is a value of the field for every point is space, simples have no borders at all, and so the problem of contact posited by traditional topology does not exist at all. However, if this is the case, the first solution to the problem of two things ceasing to exist when they come into contact cannot really be applied. Contact, on the field account, would be a limit of closeness. Two things come into contact on this account if they come as close to each other as the repulsive forces displayed by them allow. Since the fields can penetrate each other, at least to a certain degree, the idea of having objects with close (or open) boundary points is not applicable at all. But if we cannot have closed objects, we must admit that a consequence of Markosian's view of simples is that whenever two objects come into contact they cease to exist.

As for the second solution, it does not seem convincing either. What is controversial in case of two objects coming into contact is exactly that they cease to be the two distinct *things*, given that they were these two things before the contact. I think that it is already quite problematic to say that anything new comes into existence when two people come into contact, for instance by shaking hands, let alone to say that this new thing is a simple. It seems that whatever it is that matters for things' ceasing to exist, it is not coming into contact with other things. This simply seems irrelevant.

At any rate it is worth noticing that Markosian employs something that I would call "an external criterion of objecthood". A simple is on this view an object that occupies a region of space that is not a sub-region of any region occupied by another object. It means that in order to say whether something is a simple or not we have to look at its surrounding and check whether there is no bigger object whose part the object in question could be. The novelty is that we do not look in the interior of an object to say if it is a simple or not – that would be "an internal criterion". Markosian's criterion for being a simple is a great departure from this standard approach.

It seems that motivation for the external criterion is the lack of a satisfactory internal criterion for being a simple. Actually, Markosian rejects both the metaphysical indivisibility and the physical indivisibility criterions for being a simple. Accepting a metaphysical indivisibility criterion would, according to Markosian, boil down to accepting only point-sized atoms. The physical indivisibility criterion for being a simple is rejected for the following reasons: Markosian thinks that it is possible that there exist some physically indivisible complex objects, like for example a chain whose links are made of physically unbreakable material, or a bomb made of various materials in such a way that any attempt to separate the materials from one another would result in annihilation of the whole thing. These things are obviously complex, but nevertheless physically indivisible. However, according to the physical indivisibility criterion these things would count as simples.

Is existence of such things a real problem for the physical indivisibility criterion for being a simple? I am not entirely sure. If we want to claim that they are complex, it will suffice to add to the physical indivisibility criterion that something that was *created* from separate parts is not a simple.

Even though one finds Markosian's maximal continuity criterion quite peculiar, there still might be a lesson to learn from this view: due to the lack of a satisfactory criterion or definition of indivisibility, one that would allow for there to be truly extended simples and not only point-sized atoms, we might have to appeal to an external criterion for being a simple. I think that the Maximally Continuous View of Simples is not that much incredible, if only it is employed with some caution. In fact, most of the objects that Markosian considers to be simple, like people, chairs, and statues, do not meet the criterion of being maximally continuous. Being spatially continuous does not allow of gaps or holes, and as we know, medium-sized material objects are full of gaps – regions not filled with any matter. In fact these objects have more gaps than filled regions. They should not really count as continuous.

If, on the other hand, simples should be understood rather as fields, it seems that nothing is more continuous than a filed. We cannot really say that a region where two fields penetrate each other is more continuous than a region occupied by one filed only, since this is not a case of overlapping in the sense of adding to continuity or density of the field. It is rather a region where repulsive powers displayed by the fields clash, "struggling for space", so to speak.

And so we have arrived at the concept of extended simple which is maximally continuous and physically indivisible (at all times). If it is a field then it is not totally impenetrable. If energy of this field comes in continuous values, it can range across the whole universe, since for every point in space there will be a value of this field's energy. I think this is the best candidate for a simple so far.

#### **3.2.4.** Maximal Nihilism

Maximal Nihilism has been recently presented by Schaffer under the name: "existence Monism". This is a view according to which there is just one object – the world. Anything else, especially objects of commonsense ontology are just cases of *the world aspected object-ishly* (2007). The criterion for being a simple is here something that I would call "the criterion of maximality": x is a simple if and only if x contains everything. The simple object postulated by Monism is indivisible only in one, the weakest sense: its proper parts are not objects themselves. It is physically divisible - in the sense that it has physical parts that can be separated<sup>52</sup>, and so it is also divisible metaphysically – in the sense that if the laws of physics were different, the parts that are physically indivisible now would be physically divisible.

What could be the motivation for having only one simple and therefore only one object in the world? It seems that Maximal Nihilism is compatible with the gunk scenario. The Maximal Nihilist can easily embrace the gunk scenario, since he is not looking for the smallest objects in the world; he is happy with the largest simple that contains everything.

However, it seems that there are also other kinds of Nihilism that are compatible with the Gunk Hypothesis. We will look at these possibilities in the following chapter.

# 3.2.5. Is The Gunk Hypothesis Destructive For Nihilism?

The atomless gunk scenario is usually characterised as a doctrine according to which everything has proper parts. The concept of "being a proper part" presented and explored here is based on criterion of physical separability – something is a proper part only if it can be separated and physically moved away from a bigger whole. Still, as it has been mentioned before, we need to look at what kind of entities the proper parts are: whether they are objects or non-objects.

As it was emphasized earlier, one way to understand the Gunk Hypothesis is to put it in terms of everything being divisible into *objects*. This would be to say that according to the Gunk Hypothesis every object has proper parts that are objects themselves. Actually it seems that this view can be held only by a Mereological Universalist who believes in existence of gunk. It is because only Mereological Universalists believe that every portion

<sup>&</sup>lt;sup>52</sup> Provided that space in which we move it's parts apart does not belong to this maximal object.

of stuff is an object. This version of the Gunk Hypothesis is obviously not compatible with any sort of Nihilism. After all, this is the very idea of Nihilism that no object is a proper part of another object.

Another way to understand the Gunk Hypothesis is to say that proper parts descending infinitely are not objects themselves, but they are physically distinct entities, in the sense provided by the physical divisibility principle. This is to say that an object has proper parts if it is physically divisible – if it can be cut into halves that in turn can be separated. The mere possibility of *drawing a line* across the object and *conceiving of* the two halves as separate entities will not suffice here. If there are physically divisible complex objects in the actual world, it means that there is a possible world nomologically accessible from the actual world, in which these two halves exist separately. Such an object is then physically divisible even if in the actual world it remains continuous through its entire life. It seems that any commonsense composite object that we can think of can be possibly divided: it is for example possible that the two halves of my body are separated in some possible nomologically close world, although there is no me (understood as a living organism) in that world.

If a complex object can be divided into parts that are not objects themselves, we can say that this object can be divided into portions of stuff (only). I will refer to this version of the Gunk Hypothesis as to "divisibility into portions of stuff", as opposed to "divisibility into objects". It seems that infinite divisibility into portions of stuff is the prevailing understanding of the Gunk Hypothesis. I think that very few (if any) people who make distinction between things and stuff, and recognise fewer objects than portions of stuff would be inclined to say that it is actually possible that objects are infinitely divisible into objects. It is quite clear that the Gunk Hypothesis understood as divisibility into portions of stuff is compatible with Maximal Nihilism. It seems that this version is also compatible with Markosian's maximally continuous simples like people, chairs, and plants for instance. The criterion for being a simple that has been proposed by Markosian is based on *actual* continuity, and so the actual inventory of simples changes with almost every rearrangement of matter in the world. Simples on this view are divisible into portions of stuff, but as soon as they are actually divided they cease to exist. For this reason someone might want to say that this in fact means that they are *not* divisible, since after the division the simple does not exist any longer. However, it seems that once we put the same portions of stuff back together, we bring to existence the same simple again. Therefore I am rather inclined to say that Markosian's simples are divisible into portions of stuff.

It seems that there is yet another kind of simple that is compatible with the Gunk Hypothesis. This is the point-sized simple which actually seems to set the limit for infinite divisibility. If there are entities of size of a spatial point, how could they be divided? What would there be to be divided? How could that be possible if points have no spatial extension and at the same time we understand divisibility as a possibility to be cut into halves that can be separated? This notion of division implies, as it seems, spatial extension. How could this sort of divisibility be applied to a point-sized entity? We might have to say that the two halves of the point-sized object are points-sized objects themselves. The pointy parts either *coincide* in the sense of being at the same place at the same time, or they are *adjacent*. The possibility of coincidence of even point-sized entities has been already rejected earlier in this paper. The other option is not really tenable either. The reason is that the concept of adjacency is not applicable to spatial points at all since between any two points there is infinitely many other points.

Perhaps there is a concept of a point-sized entity to which the idea of divisibility could be applied<sup>53</sup>. However, this is not how I use the concept of a point-sized entity here. If the Gunk Hypothesis is true and if point-sized entities are real entities (as opposed to mere limits of conceptual analysis), it seems that gunk is actually *made of* point-sized simples. To be more precise, the Gunk Hypothesis should rather say that all *spatially extended* entities are infinitely divisible, which implies that the process of dividing spatially extended entities never ends. However, even friends of the Gunk Hypothesis must recognise that point-sized entities cannot be divided.

Therefore, it seems that the only kind of simple that is not compatible with the Gunk Hypothesis understood as divisibility into stuff is the extended physically indivisible simple. Surely if all extended entities are infinitely divisible then there cannot be physically indivisible extended simples. However, this incompatibility does not mean that Mereological Nihilism is not true if the world consists of gunk, even if the Mereological Nihilist believes that the only objects that there are, are physically extended simples. If there are no entities in the world that he recognises as objects, he must be happy with *objectless ontology* and with description of the physical reality given solely in terms of portions of stuff. Is there anything wrong with ontology of this sort? I cannot really see why we should think it is unacceptable.

An objectless ontology has been proposed by A. Sidelle (1998), however, for different reasons. Sidelle's motivation for "Pure Stuffism", as he calls his objectless ontology, starts from rejection of the possibility of coincidence of such things as a trunk or a piece of wood. In order to eliminate coincidence, Sidelle introduces a distinction between substantial and non-substantial properties, and claims that whether something is an object or not depends on whether it instantiates a substantial property or not. A substantial

<sup>&</sup>lt;sup>53</sup> T. Sider (2000, p.585) actually seems to believe that point-sized entities are divisible.

property is one whose instantiation is necessary and sufficient for that thing's continuous existence. A thing that ceases to instantiate its substantial property ceases to exist. An example of a substantial property is "being a quark"; an example of a non-substantial property is "having a certain spin". "Being a tree" and "being wood" are also nonsubstantial properties that can be ascribed to collections of some more basic objects. Objects cannot coincide, and so trees and pieces of wood are not objects. In general, any complex entity that can be subject to the coincidence charge is not an object. Actually, it seems that all complex entities can be subject to the coincidence charge, since even a molecule could coincide with particles that compose it. Therefore, the only objects are simples.

However, according to Sidelle even simples are dubious entities, since their existence is threatened by the charge of arbitrariness. Perhaps the property of being a quark is not any more substantial than the property of being a tree, and so our choice to have quarks rather than trees in our ontology is arbitrary. Therefore, as he claims, perhaps the best way is to abandon all distinctions, and so to eliminate all objects from our ontology.

Objectless ontology does not seem untenable. Actually, there is something appealing in Sidelle's motivation for rejecting all objects: due to the possibility of coincidence and due to the charge of arbitrariness. The possibility of coincidence seems to point out that there is something wrong with the multitude of objects that we accept in our ontologies. A desired solution to this problem is to reduce their number somehow. However, how to reduce the number of objects and what criterion to employ without falling prey to the charge of arbitrariness, is a serious problem indeed.

How serious is Sidelle about ontology when he says that our choices of the correct ontological categories might be arbitrary? Does he want to say that there is nothing more to ontology than our choices? I would not say that. Even if we are ontological realists and believe that the world comes ontologically structured, there is still the question of *how we know* that. This question is really about how we are linked to this knowledge, or what our ontological senses are.

As it was said earlier, I believe that our ontological knowledge is a priori synthetic. But like for any other synthetic claims, there is a possibility of error here. We do not have a direct insight into the realm of ontological categories, and therefore we have to chose them on the basis of "circumstantial evidence", so to speak. Most often we look at how a given category solves various ontological puzzles, how coherent with other accepted doctrines, and how simple it is. This is because we assume that the ontological reality is simple, coherent and structured. However, we must reckon with the possibility that our ontological doctrines might be wrong. And this would be not because the general assumptions about ontological structure are incorrect, but because for some reasons we arrive at wrong conclusions; because what seems simple and problem-solving is not such in fact.

Therefore I sympathise with Sidelle's worry that our ontological choices might be arbitrary. However, I would not go as far as to reject the category of object for that reason. I think that for all that we know, extended physically indivisible simples are best candidates for objects. I might be wrong, for instance because the world is made of gunk. In which case I have to opt either for the Maximal or for the Minimal Nihilism, or, if I think that these options are for some reasons untenable, I can opt for objectless ontology.

However, ontology without any objects seems a departure from the spirit of ontological realism to a certain degree. The fundamental assumption of ontological realism is that there is ontological structure, and so that certain entities are genuine ontological categories, while other are not. When we say that there are no objects in the world, we reject one of the most important ontological categories. We say that describing the world in

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terms of things makes no sense. We say that there is no difference between things and nonthings, mere collections of things for instance. I would not like to do this really, since I have a strong inclination to think that there are objects as opposed to non-objects. Therefore if it turns out that the world is made of gunk, I would rather opt for one of the extreme Nihilisms<sup>54</sup>.

We can see then that it is not really true that the Gunk Hypothesis is destructive for Mereological Nihilism. The most popular understanding of the Gunk Hypothesis – divisibility into portions of stuff – is compatible with existence of the maximal simple (the world), maximally continuous simples (as understood by Markosian), and point-sized simples. These are three out of four concepts of a simple presented in this paper. The existence of atomless gunk is not compatible only with one concept of a simple – an extended physically indivisible simple, understood in a manner similar to Simon's. Still, a way out for the Mereological Nihilist who is prepared to accept only extended physically indivisible simples in his ontology, is to go for objectless ontology, as the standards he sets for being a simple are not fulfilled. However, the core claim of Mereological Nihilism even in this case remains true: there are no objects that are proper parts of other objects. The objection from existence of atomless gunk has been thereby refuted.

<sup>&</sup>lt;sup>54</sup> We should mention also another possible approach to the problem of compatibility of gunk and Mereological Nihilism. Some atomless mereologies treat atoms as *conventional entities*. See: P. Simons (2000, p. 96-70), and D. M. Armstrong (1989, pp.66-76). However, these solutions seem to be of no use here. They might provide only some means for formal analysis, but not any means to settle ontological questions.

# CHAPTER IV MEREOLOGICAL NIHILISM VS. COMMONSENSE ONTOLOGY

Since Mereological Nihilism is at great odds with commonsense ontology, we need to say something about possible ways of reconciling these two. Apparently there is a clash between them: Mereological Nihilism denies most of the existential claims of commonsense ontology. We cannot then take both doctrines as strictly and literally true, it seems. If we are committed to existential denials of Mereological Nihilism, we need to take a stance towards existential claims of ordinary language.

# 4.1. No Clash - Ordinary Language As Not Ontologically Committing

One of possible solutions to the clash problem is to say that in fact there is no clash between the language of Mereological Nihilism and ordinary language, since only the former is ontologically committing, while the latter lacks existential input at all. Plain English (and other plain languages too) is not, according to this approach, an ontological language at all – it is just a language spoken by no-philosophers, bearing no ontological weight whatsoever. According to this approach there is no such thing as commonsense ontology. By uttering statements about chairs, books, and human beings, the speakers express no attitude towards their existence.

This would mean that ordinary language is designed to convey only reports of empirical facts. No ontological content can be found in commonsense statements. If one believes that this is actually the case, one does not have to worry about reconciliation of ordinary language with Nihilist's existential denials.

We speak ordinary language most of the time, and only when exposed to philosophical reflection like for instance problems posed by composition and mereology, we might start to speak ontological language. Majority of our statements are not about philosophical issues. Most often we use our language for so-called "everyday communication purposes". We live in a world of what appear to be composite, medium-sized material objects. It should not come as a surprise then that we take their existence at face value. It is easy and convenient to talk about tables and chairs when we organise conferences or furnish our study rooms. It comes quite natural. However, when we give it a "second thought" under close philosophical scrutiny we are likely to deter from this kind of talk (if we are Mereological Nihilists for instance).

For one thing ordinary language lacks consistency that is required from an ontological language. Ordinary language does not use "exist" in one meaning, and has more than one existential quantifier, it seems. You can think of two ordinary language speakers that are in a non-philosophical disagreement over whether a galaxy is an object or not (if a non-philosophical debate on subjects like this is possible at all). Or perhaps we should say that any debate that is concerned with objecthood is not a commonsense, but a philosophical debate (it would be the subject then that determines if the debate is philosophical or non-philosophical). In such case we would have to say that as long as the speakers of ordinary language are not in a philosophical debate, they do not use a nonvague existential quantifier.

Anyway, it seems that expressions like "exist", or "there is" do not have one welldefined and determinate meaning in ordinary langue; they only get determinate meanings in philosophical analysis. But if this is really the case, once we have determined meanings for such expressions, we are not dealing with ordinary language any longer. We have abandoned this field and started to speak one of the precise ontological languages. Ordinary language is ontologically vague, in other words. Strictly and literally the common language says nothing about the ontological commitments at all.

## 4.2. Ordinary Statements As Strictly False

Another possible way for the Mereological Nihilist is to say that strictly and literally existential claims of ordinary language are false. Ordinary language is here taken on a par with other ontological languages, like the language of Mereological Nihilism or Mereological Universalism for instance. It is assumed that ordinary language is ontologically consistent, and so that its ontologically significant expressions have well-defined and determinate meanings<sup>55</sup>.

If you believe that this is actually the case, you must face a puzzling question: why out of so many possible ontological languages have we chosen to speak an ontologically false one? A plausible answer to this question might be: because it offers useful fiction as a device to describe the world. The world appears to us under certain form. And we have chosen the language that suits this form best – the language that recognises medium-sized homogeneous entities as objects. This language is very convenient when it comes to giving reports of what the empirical facts – the facts of matter arrangements – are. However, when it comes to describing ontological structure of the world, we must say that ordinary language is false. It is giving us false impressions and is leading us astray.

Why have we chosen to speak this language then? Well, the most important reason is, in my opinion, that human beings do not need to be concerned with ontological structure of the world too often. For one thing, it seems that these are mostly the empirical facts that matter for things like survival of species. The hunter-and-prey, or supply-anddemand issues are best describable in ordinary language of empirical facts, and this explains its popularity.

<sup>&</sup>lt;sup>55</sup> This assumption must be also shared by people like Hirsch, who believe that we are able to settle ontological disputes by looking at how ordinary language is used.

However, we should be careful and not reduce this approach to the no-clash position. So far we have a full-blooded ontological language on the one hand (like language of Nihilism or Universalism for instance), and ordinary language that describes empirical facts on the other. One could easily say that the latter lacks ontological commitment, and boil everything down to the no-clash approach. But here the picture is more complicated.

We need to picture ordinary language that has got ontological input, and we need to claim that this language does not give the correct description. It seems that someone who believes that ordinary language is ontologically committing must believe also that there is some sort of *correspondence* between the statements expressing empirical facts and statements expressing ontological facts. Somehow, starting from ordinary language he must arrive at ontologically committing language. Once again: there is no confusion between the language of empirical facts and the language of ontological facts. It is not the case that someone who makes an empirical statement mistakenly takes it for an ontological statement. This really would be the case of ordinary language having no ontological input. But on the presented view statements about arrangements of matter must be somehow related to statements about objects. If one believes that it is possible to use ordinary language to state both empirical and ontological facts, he believes that commonsense ontology is a genuine ontological doctrine. Moreover, if one believes that commonsense ontology is correct, he must assume that empirical facts are able to serve as guidance to ontological facts: ontological facts are in a way a *reflection* of empirical facts (or the other way around). Anyway, something like *correspondence* between the realm of the empirical and the realm of the ontological must be presupposed.

If we are to say that commonsense ontology is genuine but incorrect, we must say, I think, that this correspondence between the realm of the empirical and the realm of the

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ontological fails for some reasons. Perhaps a good reason for thinking so is that the realm of the empirical and the realm of the ontological are so distinct and remote that they cannot be related in any significant way.

As for my opinion, I do not think that ordinary language is ontologically committing. I do not believe that ordinary language, not "infected" by any philosophical investigation, pure in its form and innocent as it might be, does in fact contain non-vague ontological expressions and uses a well-defined and determinate quantifier meaning. I do not think that ordinary language is ontologically precise. Ontological claims of ordinary language can be neither true nor false, since they fail to express unique ontological statements. They are incurably vague.

# 4.3. Ordinary Statements Misunderstood

Yet a different approach to this problem is to say that the clash is only apparent, because ordinary language existential claims *do not mean* what they appear to mean. A Nihilist who believes that this is actually the case would say that "There is a table" means really: "There are some particles arranged table-wise"<sup>56</sup>. Ordinary existential claims are not about composite material objects, but about arrangements of particles. Moreover, this view assumes that all statements concerned with medium-sized material objects are translatable into statements concerned exclusively with simples and their arrangements.

And this is where the idea of a *paraphrase* comes into play. If, as it is assumed, every statement about composite material objects can be translated into statement about particles and their arrangements, there must be a systematic and universal method of

<sup>&</sup>lt;sup>56</sup> Van Inwagen actually believes that this is the correct answer to the clash problem (1990, pp.102-14).

paraphrase available. This method must be applicable to every statement concerned with composite material objects.

The method of paraphrasing consists first of all in replacing singular reference to composite object with plural reference to simples. Instead of a variable *x* in " $\exists$ x" we have plural variables *xxs* in " $\exists$ xxs" which should be read as "there are some x's" or "there are some things". Another step of paraphrasing is replacing predicates that are applicable to composite material objects (like "being a table") with predicates that are applicable to collections of simples (like "being arranged table-wise").

Both these steps are problematic. The quantificational part is threatened by the problem of *reification* of pluralities, which consists in treating arrangements of variables as single complex objects. And reification is exactly what the Nihilist must avoid. The whole idea of paraphrasing sentences concerned with composite material objects is that we need to end up with sentences where variables stand only for simples, and nothing else. However, it is claimed that for various reasons the simples, being referred to by plural variables, should be treated as a *group* or one *whole*. And this clearly undermines the whole idea of paraphrasing.

The predicative part of paraphrase is threatened with the objection that the predicates that must apply to arrangements of simples are *made up* for the use of paraphrase, and as such do not stand for any natural properties. These are, as it is claimed, artificial predicates that are "nowhere to be found", apart from the vein attempt to eliminate reference to all composite material objects.

Paraphrase of sentences concerned with plurality of composite objects is even more problematic than of those concerned with single composite objects only. Usually, when one thinks of paraphrasing ordinary language existential statements into statements concerned exclusively with simples and their arrangements, one brings simple examples,

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like the one mentioned above, when reference to complex material objects is replaced by reference to particles arranged *x*-wise. But ordinary language statements are very often concerned with arrangements of composite material objects, or arrangements of arrangements of composite material objects. In ordinary language these arrangements can be referred to as further complex objects. It seems that similar method must be also available for our paraphrase.

Gabriel Uzquiano (2004, pp.434-35) lists the following examples of sentences that posit problems for paraphrase:

- (1) The chairs outnumber the tables
- (2) Some computers communicate only with one another
- (3) Some bricks are touching each other
- (4) Some brick houses are mixed together with some cobblestone houses

What do these sentences have in common? They all contain *plural reference to composite objects*. And it seems that we need some extra tools in order to paraphrase this sort of statements into statements concerned exclusively with simples.

Normally, we are able to replace singular reference to composite objects with plural reference to simples. The *x* standing for a single variable in a paraphrased sentence is replaced with *xxs* standing for plural variables. This method of paraphrasing still works for sentences containing multiple reference to composite objects, like for instance:

(5) Some chair is heavier than some table (2004, p.431)

where by "multiple reference" I mean referring more than once to a single composite object (not necessarily the same object), as opposed to referring once to many objects. A sentence of this kind can be with no problems paraphrased into:

(5') Some simples, the *xxs*, are arranged chair-wise and some simples, the *yys*, are arranged table-wise and the *xxs* are heavier that the *yys* (2004, p.431)

It seems that there is no problem with paraphrasing as long as we refer to a single composite object, and are able to replace every occurrence of single variable x with plural variable xxs, single variable y with plural variable yys, and so on. The problem arises only for sentences that contain reference to a plurality of composite objects. The plural variable xxs is here used to refer to a plurality of composite objects, like in paraphrase of (2):

(2') Some composites, the *xxs*, are such that (i) for every *x*, if *x* is one of the *xxs*, then *x* is a computer, and (ii) for every *x*, for every *y*, if *x* is one of the *xxs* and *x* communicates with *y*, then *x* is different from *y* and *y* is one of the *xxs* (2004, p.434)

What we need in order to paraphrase a sentence like (2') into a sentence concerned solely with simple objects, is another device that would enable us to refer to simples that allegedly compose complex objects. We need a new way to refer to the plurality of pluralities of simples, that would preserve the "compositional" structure of plurality of composite objects. Whenever we speak of some computers for instance, we need to be able to quantify over simples "composing" them is such a way, as to highlight that there are some simples arranged computer<sub>1</sub>-wise, and some other simples arranged computer<sub>2</sub>-wise and so on. Therefore we need to introduce some new devices to enable us to express the pattern of arrangements without committing us to existence of composite material objects.

As Uzquiano correctly notices, the problem is not specific for this particular level of composition. We will say, for the sake of simplicity, that things like computers, tables and people are *first-order* composite object, which means that they are composed of simples only, and not of other composite objects. For someone who believes that commonsense ontology is true these objects are not really first-order composite objects, as he believes also in existence of such composite objects like micro-processors, hard disks, table tops and legs, human torsos, and human arms. These, or at least some of them, might be better candidates for first-order composite objects. We, however, stipulate on this instance that there are no composite objects that are parts of computers, tables, and humans, and say that these are genuine examples of first-order composite objects (or that they would be if there were any composite object in the first place). All first-order composite objects, like computer networks, table chains, or committees. And so our old familiar means of plural quantification are not sufficient also when we consider statements like:

- (6) Some committees consult only one another
- (7) The ethics committees jointly issued a recommendation (2004, p.436)

when all we want to be committed to are members of the committees – composite objects of a lower order. It is not possible to paraphrase these sentences in such a way that they quantify only over the members of the committees. In other words, it seems that the problem is quite general: we cannot avoid commitment to existence of higher order entities when we quantify plurally over them.

Hence the need for further devices. So far only three of them have been named:

- a) plurally plural quantification,
- b) sets,
- c) plural properties.

They will be discussed in turn.

### **4.3.1.** Paraphrasing Using Plurally Plural Quantification

The first method of eliminating reference to composite objects has been introduced by Allen Hazen under the name of "plurally plural" or "perplural quantification". As Hazen puts it, "a perplural (noun, pronoun, verb form...) is related to plurals as plurals are to singulars" (1997, p.247). In this method our familiar plural quantification is supposed to gain multiple levels so as to enable us to express the alleged "compositional" structure. As developed by Uzquiano (2004, p.4348), this method consists in adding plurally plural endings to existing nouns. And so as we can obtain plural form "simples" from a singular noun "simple" by adding "-s", in the same manner we can obtain reference to plurality of plurality of simples by adding "-es" again, ending up with a new perplural noun "simpleses". We simply add the ending "-es" to refer to plurality of plurality of familiar objects, without being therefore committed to existence of a further object composed of them. And so we will refer to simples that allegedly compose a computer as to "simpless", but to simples that allegedly compose some computers we will refer as to "simplesses". Using this method we can paraphrase our initial sentence about computers that communicate only with each other into:

(2a) Some simpleses, the *xxxxs*, are such that (i) for any simples, the *xxs*, and for any simples, the *yys*, if the *xxs* are among the *xxxxs* and the *xxs* communicate with the *yys*, then the *xxs* are different from the *yys* and the *yys* are among the *xxxxs* (2004, p.438)

A challenge to this solution is, according to Uzquiano, the fact that there are no phrases expressing plurally plural quantification in ordinary language – no simpleses are to be found in ordinary English. Also, it is difficult to think of any predicates collectively instantiated by pluralities of pluralities of simples. There are predicates collectively instantiated by pluralities of simples, like "being arranged computer-wise" for instance. But it seems that there are no predicates reaching further into compositional depth.

However, it seems that we can think of predicates like "being arranged manycomputer-wise", or even more specific: "being arranged two-computer-wise", or "being arranged three-computer-wise". They might seem odd at face value. But on the other hand – is not "being arranged computer-wise" odd at face value as well? If we are happy with the latter, why should not we be happy with the former? They are both born in the philosophical discourse, and do not function in ordinary language at all. Still, this does not mean that they cannot stand for some natural properties.

## 4.3.2. Paraphrasing Using Reference To Sets

An alternative way of paraphrasing sentences containing plural reference to composite objects is by the use of means of set-theoretical entities. If one believes that sets are not mereological composite objects (like Lewis and van Inwagen believe), one would be happy enough to use reference to sets in order to eliminate quantification over composite objects. This would enable us to paraphrase sentences containing plural reference to composite objects in the following manner:

- (2b) Some sets of simples, the *sss*, are such that (i) for every set of simples, *s*, if *s* is one of the sss, then the members of *s* are arranged computerwise, and (ii) for every set of simples *s*, for every set of simples *t*, if *s* is one of the *sss* and the members of *s* communicate with the members of *t*, then *s* is different form *t* and *t* is one of the *sss*
- (3b) Some sets of simples, the *sss*, are such that (i) for every set *s*, if *s* is one of the *sss*, then the members of *s* are arranged brick-wise, and (ii) the *sss* are touching one another (2004, p.445)

Uzquiano objects to this solution claiming that sentences like (2b) and (3b) are in fact concerned with *sets*, not simples themselves. The charge here is that sentences like these *disguise* composite material objects for sets, and do not treat them as mere arrangements of simples as it was intended. At the same time Uzquiano points at a possible, but according to him unsatisfactory remedy of this method of paraphrasing by introducing a complex predicate which would enable to eliminate any direct reference to

sets. In case of (3b) this predicate will be: "are *brick-touching-one-another*". Such predicate would suffice for paraphrasing (3) into

(3\*) There are some simples, the *xxs*, such that the *xxs* are *brick-touching-one-another* 

Of course we need to state some conditions as to when this predicate is applicable to simples, and the way Uzquiano offers is by reference to sets. And so the required condition is the following:

> "Some simples, the *xxs*, are *brick-touching-one-another* if and only if there are some sets, the *sss*, such that: (i) the *sss* are sets of simples arranged brick-wise, (ii) for all *x*, *x* is one of the *xxs* if and only if there is exactly one *s* such that *x* is one of the *sss* and belongs to *s*, and (iii) the *sss* are touching one another" (2004, p.448)

According to Uzquiano this attempt to replace direct reference to sets by reference to simples fails, as this is really a disguised reference to sets. The simples can satisfy the predicate "are brick-touching-one-another" only if there are some sets that satisfy certain conditions, namely sets that touch each other.

I must admit that I do not share Uzquiano's objections regarding the use of sets as disguised reference to composite material objects. After all, the assumption that we work under here is that sets are not complex entities. And so if we refer to sets, all we intend to refer to is single objects – members of the sets. I do not think that someone who is seriously committed to the nihilist picture would try to smuggle composite objects disguised for sets. If you believe that sets are not mereological composites, the use you intend to make by reference to sets is just to refer to some simples that are members of

these sets. Relation of set-memberhood is distinct from relation of parthood, and these two must not be confused. As long as one remembers that these two relations are entirely different, one is able to use sets to refer to plurality of simples paraphrasing any statement concerned with no matter how complex objects.

### 4.3.3. Paraphrasing Using Plural Properties

Another way of solving the problem of paraphrase is to quantify over properties that are collectively instantiated by simples. Uzquiano calls them "plural properties" as opposed to properties that can be instantiated by single objects alone. This solution is in close connection to George Boolos famous discovery that plural quantification and monadic second-order logic are definable in terms of each other (1984, pp.430-49) (1985, pp.327-44). Originally Boolos' intention was to prove that monadic second-order logic does not bear any further ontological commitment *because* it is definable in terms of plural first-order logic, which in turn, as he assumed, is concerned exclusively with first-order logic are *ontologically innocent* since they do not require commitment to any other entities that those that the first-order variables stand for.

The route here is taken in the opposite direction, so to speak. While Boolos intended to prove that second-order logic is free from commitment to dubious entities like properties, we are trying to use quantification over properties to justify dubious plural quantification. In standard second-order logic we usually quantify over *distributive* properties, that is over the properties that are instantiated by each and every member of the plurality of objects. We quantify over properties like "being a critic", "being a computer", or "being white". But when we make an attempt to paraphrase ordinary language sentences

into sentences compatible with Mereological Nihilism, we are rather concerned with predicates that enable us to refer to some arrangement of simples. In order to do that we need to use *collective (non-distributive)* predicates, that is predicates that can be satisfied by some simples only collectively, like for instance "being arranged critic-wise", or "being arranged computer-wise".

Our initial sentence about computers communicating only with one another (2) can be paraphrased using this method into:

(2c) For some plural property of simples X, (i) there are some simples, the xxs, such that X applies to the xxs, (ii) for any simples, the xxs, if X applies to the xxs, then the xxs are arranged computer-wise, and (iii) for any simples, the xxs, for any simples, the yys, if X applies to the xxs and the xxs communicate with the yys, then the xxs are different from the yys and X applies to the yys

One objection against this method of paraphrasing, raised by Uzquiano himself, is that there would have to be a property for every arrangement of simples. In other words, the properties over which we can quantify here would need to exist in such a great abundance so that they cover every possible arrangement of simples. And by "arrangement" we do not mean only a group of adjacent simples, but absolutely every possible grouping of them, no matter how scattered they are. The worry is that there would have to be a property instantiated collectively by all and only the simples that are members of such an arrangement. Is this credible at all?

However, do we really need to postulate this great number of collective properties? Scattered arrangements of simples would correspond to bizarre scattered objects postulated only by Mereological Universalism. In ordinary language we never really quantify over them. And these are ordinary language statements that we want to paraphrase. Ordinary language is concerned with adjacent clumps of matter, homogeneous and unitary. And so we can expect that the properties that we need in order to paraphrase ordinary language sentences will be familiar and natural. Most probably in ordinary language we would never refer to an object composed of Clinton's nose and the Eiffel Tower, so we do not really need to worry about existence of a property collectively satisfied by simples arranged Clinton-nose-wise and simples arranged the-Eiffel-Tower-wise.

Interdefinability of second-order logic and plural quantification is not usually put in question. What is being questioned, is ontological innocence of these two. The most well-known objection against ontological innocence of plural quantification (and thereby against ontological innocence of second-order logic) is due to Charles Parsons (1990)<sup>57</sup>. Parsons' main concern is that sentences containing plural quantification say rather something about *the pluralities* of objects than about objects themselves (where by pluralities Parsons means something more like a composite object than mere collection of simples). For Parsons sentences like the following one about natural numbers:

"Whenever there are *some natural numbers* such that 0 is one of *them* and for every natural number n that is one of *them*, n+1 is one of *them*, then every natural number is one of *them*"

are clearly about pluralities. This sentence is, according to him, about a plurality of natural numbers, and not about natural numbers themselves. And so it seems that the mere reference to plural objects suffices for reification of the plurality. If this is the correct way of thinking of pluralities, then the use of plural quantification is no good for the Nihilist at

<sup>&</sup>lt;sup>57</sup> Similar objection: Michael Resnik, (1998, pp.75-87).

all. Whenever he makes use of plural variables, he is committed to existence of a further object composed of them. Can this be avoided?

In this objection Parsons uses the concept of an object in a very specific way. It seems that he uses what is commonly known as *the logical concept of an object*<sup>58</sup>. What is significant for this concept is that facts concerning objecthood are determined by the logic, scope of quantification, and range of variables. In order to be an object, according to this conception, it is enough if something appears as a variable in the scope of the existential quantifier. And this is the only requirement for being an object. Nothing about the *nature* of objects is said here. The conditions of objecthood are purely *formal*.

Does that disable plural quantification? I think that what really matters for Parsons' objection and for the logical concept of an object is the following understanding of the meaning of existential quantifier: whatever is bound by a single existential quantifier is a single object. It does not matter what occurs after the quantifier: whether it is a singular variable or plurality of variables. What really matters is that there is a single existential quantifier, which indicates existence of a single object.

If one believes that this is the correct reading of the existential quantifier, one will have to *reify* or *singularise* whatever occurs after the quantifier. Plural quantification will not be available at all. I do not think this really should be so, since I do not believe that there is any singularity already presupposed in the existential quantifier, so to speak. The existential quantifier itself does not determine what it can range over in terms of number of its variables. I think that Parsons' stipulation on this specific reading of the existential quantifier is implausible, to say the least. There is nothing to forbid the existential quantifier from having irreducibly plural variables in its scope.

<sup>&</sup>lt;sup>58</sup> See C. Parsons (1982).

Still it is worth noticing that Parsons' argument appears to be very powerful in case of non-distributive predicates, like those in the sentences "Some simples are arranged computer-wise", "Some simples acting together caused shattering of the window", and the like. Since it is not single objects, but an arrangement of them taken together that instantiates the predicate, we are inclined to think of them as of a further complex object. Still, when we are faced with sentences like: "Men lifted the car together", we are more reluctant to treat the plurality as one complex object. Is it a further complex object that lifted the car, or rather, is it *the men* acting in concert? This example, I think, points at something important about the non-distributive predicates: they are instantiated by arrangements of simpler objects or by alleged complex objects only as long as the simpler objects (or objects-parts) instantiate some distributive properties. And so in this case the men can lift the car only if each of them is doing some lifting, so to speak. Some simples are arranged computer-wise only if each and every simple is in some relation to other simples. In this way the non-distributive properties are dependant on the distributive properties.

Let us take another collective predicate, like "outnumber" for instance. It is not a standard property but a two-place relation: "xs outnumber ys". But we are not able to apply this relation to a single x and a single y – we need to have plurality of xs and plurality of ys. This predicate is obviously a non-distributive one. Still, even if one shares Parsons' inclination to think of plurality of objects that instantiate a non-distributive property or relation as of a complex object, it is very hard to think so in this case. Take for instance the following sentence: "Chairs outnumber tables in every restaurant room". Are we really invited to believe that there is a complex object composed of chairs, and another complex object (or, which sounds even more incredible, that the single object composed of chairs

outnumbers the single object composed of tables)? This reading seems implausible, to say the least. The sentence says something about chairs and tables, not about bigger complex objects composed of them, or about parts of these objects.

For some people instantiating a non-distributive property can be a good reason for reifying a plurality. I do not think it is a good reason for doing so. The non-distributive properties can be derived from distributive properties, and that is why I think that the latter are in some important sense prior to the former. This way of strengthening Parsons' objection is not appealing to me.

And as for the basic objection itself and for what seems a core idea behind Parsons' argument – that whatever is bound by one existential quantifier should be taken as one object – I do not agree that this is the correct reading of " $\exists xxs$ ". The correct reading in my opinion is something like " $\exists x_1 \& \exists x_2 \& \exists x_3 \& \dots \& \exists x_n$ ", which is irreducibly plural.

Parsons-style objection against plural quantification being ontologically innocent is often supported by the claim that English (and other ordinary languages) does not contain devices for higher plural quantification<sup>59</sup>. However, plural quantification as such seems not to be a problem. The problem appears when we try to quantify over pluralities of pluralities of objects. When we want to quantify over plurality of pluralities of our familiar objects, the most natural thing to do seems to singularise or reify them into one complex object. Once this is done, we can quantify only over plurality of complex objects, which does not seem problematic at all.

Does this tell us something about nature of things, or only about devices for quantification that are available in our language? We can imagine a language that offers quite extensive devices for plurally plural quantification. It might not be too elegant, but it is possible. We do not happen to speak this language. Does this tell us anything about

<sup>&</sup>lt;sup>59</sup> See for instance Oystein Linnebo, (2003, p.87).
nature of things? Why should it? It tells us only something about our language. I am very far from believing that ordinary language has something important to say about the nature of things. Or to put it in different words: I do not believe that facts about structure of language should indicate something important about ontology. They might, they might not. Anyway, they should not be taken as a guide in matters of ontology. Therefore I am not too worried about the lack of plurally plural quantification and predicates that can be applied to pluralities of objects in ordinary language.

## 4.4. Mereological Universalism vs. Commonsense Ontology

If the clash with ordinary language posits any challenge for Mereological Nihilism, it must be problematic for Mereological Universalism as well. However, the situation is slightly different here. While commonsense ontology is concerned with objects that are not recognised by Nihilism, Universalism is concerned with objects that are not recognised by commonsense ontology. If the Nihilist is supposed to find a solution to the clash problem, so is the Universalist. Similar solutions are available to both of them.

The Universalist can, just like the Nihilist, claim that ordinary language is not ontologically committing (and that in fact there is no such thing as commonsense ontology), and so that there is no need to reconcile these two. Another option for the Universalist is to say that ordinary language existential denials (like: "There is no such object that is composed of Clinton's nose and the Eiffel Tower") are strictly and literally false, as commonsense ontology fails to recognise some genuine types of objects. Yet another option for the Universalist is to try to reconcile his position with commonsense ontology by the method of paraphrase. The Nihilist was looking for a paraphrase that would enable him to make sense of sentences concerned with commonsense composite objects. Since Universalism recognises far more objects that commonsense ontology does, it seems that the Universalist will have to find a paraphrase that would enable ordinary language speaker to make sense of sentences concerned with typically Universalist objects - objects recognised by Universalism only. Therefore, the paraphrase would have to provide a general and systematic method of replacing any reference to typically Universalist objects with reference to objects recognised by commonsense ontology. Let us then take the following sentence:

"The object composed of Clinton's nose and the Eiffel Tower is bigger than George Bush"

A satisfactory paraphrase would have to enable us to put this sentence in such terms so that it is meaningful for ordinary language speaker who does not recognise such spatially scattered objects like the sum of Clinton's nose and the Eiffel Tower. It seems that we can paraphrase this sentence into sentence concerned with stuff rather than with objects, along the following lines:

"The portion of stuff that is a sum of the portion of stuff that constitutes Clinton's nose and the portion of stuff that constitutes the Eiffel Tower is bigger than the portion of stuff that constitutes George Bush"

We might also try to paraphrase this sentence in terms of discontinuous regions of space that objects that are recognised by commonsense ontology occupy:

"The region of space that is a sum of the region of space that is occupied by Clinton's nose and the region of space that is occupied by the Eiffel Tower is bigger that the region of space that is occupied by George Bush" The main problem with paraphrase for the Nihilist was apparent reification of plurally quantified variables, sets, and simple objects collectively instantiating plural properties. It seems that according to the foes of paraphrase, it is not possible to make sense of ordinary language statements without thereby being committed to existence of objects recognised by commonsense ontology. If this is a genuine problem for Mereological Nihilism, there is a similar problem for Mereological Universalism too.

Actually, it seems that this is a problem for ordinary language rather than for Mereological Universalism. In fact it is a more general problem of how a smaller ontology (ontology that recognises fewer objects) can make sense of a bigger ontology's talk without thereby being committed to the existence of bigger ontology's objects. But if it is a problem for commonsense ontology, why should it affect Mereological Universalism?

The reason is that for many people commonsense ontology and commonsense language play important role in ontological debates. And this is not because these people believe that commonsense ontology is true, or that the commonsense language describes ontological structure correctly. If the problem of clash between the commonsense language and Mereological Nihilism exists, it is because there are some people who believe that Mereological Nihilism is true, but nonetheless they think that commonsense language that stands for a false ontological doctrine, is in some sense more important than other incorrect ontological languages, and so they feel that there is a need to reconcile the commonsense language with Mereological Nihilism. Why is the commonsense language so important? Perhaps due to the fact that this is the language we speak most of the time. If we follow this thread, we must admit that the clash problem exists also for Mereological Universalism. There are claims that cannot be reconciled and these are the existential statements. There is no way to paraphrase them so that they come out true according to the rival ontology. They are genuine "difference makers" – they are precisely what is different between rival ontologies. No compromise is possible here – different ontologies use different criteria of existence and objecthood, and hence different existential claims. However, claims that contain reference to objects but do not assert their existence directly can be paraphrased into other ontology's language, and it seems that the whole sense of such claims is preserved, with exception of their existential assumptions of course – that the objects we originally refer to exist.

The point of the discussion of the clash problem is the following: it is not specific to Mereological Nihilism. If someone believes that there is a need of reconciliation of ordinary language with non-existential claims of a rival ontological doctrine, this works for all rival doctrines, not only Mereological Nihilism. And so Mereological Universalism is in the same position.

## **CONCLUSIONS**

Mereological Nihilism does not lose in any way to Mereological Universalism when it comes to answering the Special Composition Question. Mereological Nihilism solves all puzzles posited by material composition just as well as Universalism does - these two doctrines actually solve the same bunch of problems. If there is a problem about coincidence of a statue and a lump of clay Universalism says that there are two fourdimensional objects sharing some temporal parts, while Nihilism says that there are no statues or lumps that could coincide. If there is a problem about persistence of a composite object with a complicated career (fusing, splitting, changing parts) Universalism says that there is no strict identity across change, and that what is strictly identical are the unchanged parts (with themselves), and that these parts compose different four-dimensional objects (this is if we combine Universalism with the Temporal Parts Theory), or that an object ceases to exist whenever we introduce any change of its parts (this is if we believe that Mereological Essentialism is true). The Nihilist says that there are no composite objects and so there are no problems about their persistence. Persistence of simples does not seem problematic: point-sized and extended physically indivisible simples cannot change parts, and I cannot see how the idea of fusing or splitting could be applied to them. If they could fuse or split, some sort of coincidence of two simples would have to be possible, but we have already established that it cannot be the case. If coincidence is not possible, splitting and fusing of simples is not possible either. As for the maximal simple - any change of parts (portions of stuff) within the simple is not problematic, since the simple contains all that exists. There is no problem about this simple's identity, since it continues to exist as long as there is any portion of stuff. As for maximally continuous simples: regardless of how odd this concept is, they cease to exist whenever any change in matter's continuity is introduced. Still, this doctrine also gives a clear answer to problems of identity.

Mereological Nihilism has a very important advantage over Universalism: it takes things seriously. Nihilism is able to accommodate the difference between things and nonthings. It seems that no such possibility exists within Universalism: even if the friends of Universalism claim that they believe that things are distinguished portions of reality that figure in the mind-independent ontological structure, they populate reality with so many things that the idea of a distinguished portion of reality becomes trivial. A distinction makes sense only if there are at least two kinds of entities to be distinguished from each other. If things are to be distinguished portions of reality, there must be both things and non-things within the material world. Obviously, the friends of Universalism are free to believe in any non-material non-things, like abstract objects or tropes for instance. However, this is not the kind of non-things that I have in mind here. The point is that we want to draw the distinction between things and non-things in the realm of material entities, and so we want to have material things, as opposed to material non-things. However, it seems that there is no room for the latter in Universalist's ontology. Any material entity is a thing according to Universalism. And so being a thing makes no distinction in the realm of material entities.

There are two main objections to Mereological Nihilism: that Nihilism's existential denials are implausible and that Nihilism is not compatible with the gunk scenario. As we have seen, the former objection can be applied in a slightly modified form to Universalism as well – it is not really convincing that any, regardless how scattered and discontinued, portion of matter is an object. It is also not convincing that composite objects, if they exist, cannot change their parts. Therefore I am not too worried about the objection from implausibility and I am ready to admit that Mereological Nihilism cannot be reconciled

with commonsense intuitions of what objects exist and what their nature is. To be perfectly clear - I believe that there is no such thing as commonsense ontology and so that there are no clear genuine commonsense ontological claims that are a threat for Mereological Nihilism. Those who are not happy with this solution might want to reconcile Mereological Nihilism and commonsense ontology by the means of paraphrase. Claims regarding commonsense objects can be put solely in terms of sets or arrangements of simples, and this should allow to state all facts about the alleged composite objects.

The objection from the Gunk Hypothesis has been proven harmless: all forms of Nihilism are compatible with the gunk scenario. The maximal simple can be infinitely divisible into portions of stuff, and it seems that point-sized simples are perfectly compatible with gunk, since gunk must ultimately consist of them. The maximally continuous simples can be made of gunk as well, since they remain simple as long as they are continuous. The only problematic simples are the extended physically indivisible simples. The price that we might need to pay in this case is having an objectless ontology, if the world consists of atomless gunk and for some reasons we do not find Maximal Nihilism and Minimal Nihilism acceptable.

The original motivation for Mereological Nihilism comes from the charge of vagueness. Simples are better candidates for objects than living organisms or artefacts since they cannot be compositionally vague, whereas it is unclear in case of living organisms or artefacts how many and which simples compose them. One might say that there are other non-vague entities that are as good candidates for being objects as simples are, since they are not vague at all. A molecule of water is such candidate. Or an atom. Why should we then opt for electrons and bosons rather than for atoms or molecules of water<sup>60</sup>?

<sup>&</sup>lt;sup>60</sup> I am indebted to Howard Robinson for this observation.

The simplest objects have some advantage over any complex entity. First of all let us say that it is desirable to have only one *level* of composition in our ontology. If we have more than one it means that some objects are able to compose another objects. And this gives rise to various coinciding entities, like trunks and pieces of wood, or statues and lumps of clay. In case of molecules of water or atoms, if we had both them and simples in our ontology, we would end up with the problem of coincidence. One might say that we might be happy having only one type of objects – atoms – and in this way we can avoid the problem of coincidence. If this solution is as good as having sub-atomic simples only it means that our choice of simples is arbitrary.

However, simples understood as sub-atomic particles seem to be better candidates for objects than any non-vague complex entities at least for two reasons. The first reason is that they are immune to the problem of identity through change of parts. As long as there any parts within an object that can be changed or lost, or some other potential parts that can be gained, the problem of identity arises again. Another reason for preferring sub-atomic particles is that if we had only atoms as objects in our ontology, there would be still a lot of sub-atomic stuff floating around, stuff that could become a part of a thing when attached to an atom. This would mean having both things and free-floating stuff in our ontology. Do we really need this?

Sub-atomic simples provide neat and elegant solution to problems concerning composition and identity. If the world is ultimately made of gunk and extended physically indivisible simples are not a reasonable option, we can consider other options within Mereological Nihilism: the Minimal or the Maximal Nihilism. All three options allow us to make a genuine distinction between things and non-things and so to be ontological realists.

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## **BIBLIOGRAPHY:**

Armstrong, D. M., A Combinatorial Theory of Possibility, Cambridge University Press, 1989

Baxter, D. L. M., "Identity in the Loose and Popular Sense", *Mind*, vol. XCVII, October 1988, 575-582

Boolos, G,:

- "Nominalist Platonism", *Philosophical Review*, 94, 1985, 327-44 (reprinted in *Logic, Logic, Logic*, eds. R. Jeffrey and J. P. Burgess, Harvard University Press, 1998)
- "To Be is to Be a Value of a Variable (or to Be Some Values of Some Variables"), Journal of Philosophy 81:8, August, 1984, 430-449 (reprinted in Logic, Logic, Logic, eds. R. Jeffrey and J. P. Burgess, Harvard University Press, 1998)

Boskovich, R. J., The Theory of Natural Philosophy, Chicago: Open Court, 1922

Chisholm, R. M.:

- On Metaphysics, University of Minnesota Press, 1989
- "Mereological Essentialism: Further Considerations", *Review of Metaphysics*, 28, 1975, 477-84
- "Parts as Essential to Their Wholes", Review of Metaphysics, 26, 1973, 581-603
- "Identity Through Time", in: *Language, Belief, and Metaphysics*, Howard E. Kiefer, Milton K. Munitz (eds.), Albany, State University of New York Press, 1970, 163-182
- Davidson, D.: "Radical Interpretation", *Dialectica*, 27, 1974, 314-28; reprinted in *Inquiries into Truth and Interpretation*, Oxford: Clarendon Press, 2001
- Eklund, M. "The Picture of Reality as an Amorphous Lump", in: Contemporary Debates in Metaphysics, ed. by J. Hawthorne, T. Sider, and D. Zimmerman, Blackwell Publishing, 2008

Harre, R., The Principles of Scientific Thinking, London: Macmillan, 1970

- Hazen, A. P., "Relations in Lewis's Framework Without Atoms", *Analysis*, 57:4, October, 1997, 243-8
- Heller, M., *The Ontology of Physical Objects: Four-Dimensional Hunks of Matter*, Cambridge: Cambridge University Press, 1990

Hirsch, E.:

- "Physical-Object Ontology, Verbal Disputes, and Common Sense", *Philosophy and Phenomenological Research, Vol. LXX, No. 1, 2005*, 67-97

- "Quantifier Variance and Realism", Philosophical Issues, 12, Realism and Relativism, 2002a, 51-73
- "Against Revisionary Ontology", *Philosophical Topics*, vol. 30, No. 1, 2002b, 103-127
- Kant, I., "The Employment of Natural Philosophy in Metaphysical Combination with Geometry, of which Sample I contains a Physical Monadology", in: I. Kant, *Theoretical Philosophy*, 1755-1770, Cambridge: Cambridge University Press, 45-65

Lewis, D.:

- "On the Plurality of Worlds", Oxford: Blackwell, 2001
- Parts of Classes, Oxford: Basil Blackwell, 1991
- "New Work for a Theory of Universals", *Australasian Journal of Philosophy*, Vol. 61, No. 4, December 1983, 343-377

Linnebo, O., "Plural Quantification Exposed", Nous, 37:1, 2003, 71-92

Markosian, N.:

- "The right stuff", 2006, unpublished
- "Simples, Stuff and Simple People", The Monist, 2004, vol. 87, no. 3, 405-428
- "Simples", Australasian Journal of Psychology, 1998, vol. 76, no. 2, 213-228

McDaniel, K.:

- "Against MaxCon Simples", Australasian Journal of Philosophy, Vol. 81, No. 2, 2003, 265-275
- "Brutal Simples" (unpublished)

Merricks, T., Objects and Persons, Oxford: Clarendon Press, 2001

## Parsons, C.,:

- "Objects and Logic", *The Monist* 65, 1982, 491-516
- "The Structuralist View of Mathematical Objects", in: Synthese 84, 1990, 303-46 (reprinted in: *The Philosophy of Mathematics*, ed. W. D. Hart, Oxford Readings in Philosophy, Oxford University Press, 1996, 272-309)

Putnam, H.:

- "The Question of Realism" in: *Words and Live*, Cambridge: Harvard University Press, 1994
- "Truth and Convention: On Davidson's Refutation of Conceptual Relativism", *Dialectica*, vol. 41, 1987, 69-77

Quine, W. V.:

- "Worlds Away", Journal of Philosophy, 73, 1976, 859-63
- "On What There Is", in: From a Logical Point of View, Cambridge, Harvard University Press, 1953
- "On Carnap's Views on Ontology", Philosophical Studies, 2, 1951

Resnik, M., "Second Order Logic Still Wild", Journal of Philosophy 85, 1998, 75-87

Rosen, G. and Dorr, C., "Composition as a Fiction", in: The Blackwell Guide to Metaphysics,

Richard M. Gale (ed.), Oxford: Blackwell, 2002, 151-174

Schaffer, J., "From Nihilism to Monism", *Australasian Journal of Philosophy*, 85, 2007, 175-91

Sidelle, A.:

- "Is There a True Metaphysics of Material Objects?", *Philosophical Issues*, 12, *Realism and Relativism*, 2002, 118-145
- "A Sweater Unravelled: Following One Thread of Thought for Avoiding Coincident Entities", *Nous*, 32:4 (1998), 423-448

Sider, T.:

- "NeoFregeanism and Quantifier Variance", Aristotelian Society, Supplementary Volume, 81, 2007a, 201-32
- "Parthood", Philosophical Review, 116, 2007b, 51-91
- Four-Dimensionalism. An Ontology of Persistence and Time, Oxford: Clarendon Press, 2003a
- "What's So Bad About Overdetermination", *Philosophy and Phenomenological Research*, 67, 2003b, 719-726
- "Criteria of Personal Identity and the Limits of Conceptual Analysis" *Philosophical Perspectives*, 15, *Metaphysics*, 2001, 189-209
- "Simply Possible", *Philosophy and Phenomenological Research*, Vol. LX, No.3, May 2000, 585-590

Simons, P.:

- "Extended Simples: A Third Way Between Atoms and Gunk", *The Monist*, 2004, vol. 87, no. 3, 371-384
- Parts, Oxford: Clarendon Press, 2000

Thomson, J. J., "The Statue and the Clay", Nous, 32:2, 1998, 149-173

Uzquiano, G., "Plurals and Simples", The Monist, vol. 87, no. 3, 2004, 429-451, 434-35

Van Inwagen, P.:

- "Composition as Identity", In *Philosophical Perspectives*, 8, *Logic and Language*, 1994, 207-220
- Material Beings, Ithaca: Cornell University Press, 1990
- Varzi, A., "Boundaries, Continuity, and Contact", Nous 31:1, 1997, 26-58

Whitehead, A. N., Process and Reality, New York: The Free Press, 1978

- Yi, B.-U., "Is Mereology Ontologically Innocent?", Philosophical Studies 93, 1999, 141-160
- Zimmerman, D. W., "Could Extended Objects Be Made Out of Simple Parts? An Argument for 'Atomless Gunk'", *Philosophy and Phenomenological Research*, 1996, vol. 56, no. 1, 1-29