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In Defense of Existence Monism

Peter Finocchiaro

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Peter Finocchiaro

Candidate for B.A. Degree
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Capstone Project Advisor: _____
                             Kris McDaniel

Honors Reader: _____
                     Mark Heller

Honors Director: _____
                     James Spencer, Interim Director

Date: _____

ABSTRACT

The objective of this paper is a defense of a particular answer to van Inwagen's Special Composition Question: when is it the case that some objects together compose some additional object? The answer is the conjunction of two claims. The first claim, *compositional nihilism* says that, necessarily, there is never an instance of material composition, and therefore all material objects that do exist are simple, or without proper parts. The second claim, *existence monism*, says that there exists a material object, and that all other material objects are identical with this object. In other words, there is just one material object that extends throughout the entirety of the material world.

These claims are formalized as follows, where (N) represents *compositional nihilism* and (M) represents *existence monism*:

(N) [∀x: x ∈ M] ~∃y(Pxy ^ x ≠ y)
(M) [∃x: x ∈ M] ∀y[(y ∈ M) ⊃ (x = y)]

Other claims will be argued for. While I do believe these additional claims are true, I am not committed to them as strongly as I am to *compositional nihilism* and *existence monism*. These other claims serve mostly compliment the primary two claims.

The dialectic of the paper is essentially that of an argument to the best explanation. Alternatives to *compositional nihilism – universalism* and *compatibilism –* are eliminated on various grounds. Alternatives to *existence monism –* versions of *pluralist nihilism –* are also argued against. The idea is that the two views are the only strong candidates for an ontologically sound theory.

One last task of the paper is to disarm various objections to the two primary claims. This is done by demonstrating that what was previously seen as objectionable consequences of the views are, in fact, unproblematic. In at least one instance, a previously objectionable consequence is shown to be, in fact, a potential benefit of the views.

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I would also like to thank the philosophy department here at Syracuse University as a whole. Contrary to popular opinion, philosophy is a social activity. Without such a vibrant community to locate myself within, I would have been unable to write this paper.

Last, I would like to thank my friends and family, who suffered while I hid in a hole writing this paper. They never stopped asking if I wanted to crawl out of my writing hole for just a minute, even after my repeated and sometimes distant refusals. Perhaps now I can join them.

In Defense of Existence Monism

Following the seminal work of figures like David Lewis and Peter van Inwagen, there has been a marked increase of interest in material composition. Theories that would have previously been dismissed as patently absurd are now given more careful consideration. Much work has already been done in ontology, semantics, and logic to make sense of these views. In this paper I hope to present a relatively broad overview of the issues at play. I will then argue for a particular view, *existence monism*, in light of these considerations.

The first aim of this paper is to provide a critical survey of various answers to the following question: 'Under what circumstances does material composition occur?' A (perhaps artificial) dialectic will be established to assist in navigating the plethora of issues involved with establishing a coherent answer to this question. The second aim of this paper is a defense of a particular answer to this question. Two central claims will be defended.

The first claim, (N), is a response to van Inwagen's Special Composition Question. It says that, necessarily, there is never an instance of material composition, and therefore all material objects that do exist are simple, or without proper parts. Call this view *compositional nihilism*.

Note that *compositional nihilism* does not specify *how many* simple objects exist. There are three types of ontology that include (N). They differ in the number and nature of the simples in the world. The first type, call it *point nihilism*, says that the simples that exist are as small as is physically (or

metaphysically) possible.[1] Traditionally, it has been thought that this view implies that there are many point-sized simple material objects. The second position claims that there are simple material objects that are neither point-sized nor maximally extended. Call this *intermediate nihilism*. The last position, *existence monism*, says that there exists a material object, and that all other material objects are identical with this object. In other words, there is just one material object that extends throughout the entirety of the material world. I will at times call this view (M).[2] (M) will be the second claim argued for in this paper. So that there is no question as to what these claims amount to, I formalize them as follows, where M is the set of all material objects and P is the parthood relation:

(N) [∀x: x ∈ M] ~∃y(Pxy ^ x ≠ y)
(M) [∃x: x ∈ M] ∀y[(y ∈ M) ⊃ (x = y)]

Other claims will be argued for. While I do believe these additional claims are true, I am not committed to them as strongly as I am to (N) and (M). These other claims serve mostly to answer questions generated by (N) and (M). The conjunction of them will present a comprehensive (and hopefully correct!) world-view. Some semantic theses, in particular, will be important insofar as there is a strong need to alleviate the abrasion both (N) and (M) cause to intuitions about language. A developed *Error Theory*, for example, will be required to dispel some qualms about *compositional nihilism*.

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[1] I mean to include in this type those views that claim space, and therefore simples, are discrete.
[2] It may help the reader to contrast the first two from the third with the terms *pluralist nihilism* and *existence monism*, respectively. This distinction will become relevant later in the paper.

Section One

In everyday discourse, we apparently make reference to an abundance of objects. For example, when at the dinner table we often talk about things like the new guy at work with the funny tie, the cat meowing below us, and the steak dad cooked tonight. Many of these, like my cat Gizmo, are things we can (*prima facie*) directly experience. Some objects, though, are of an abstract nature. The number three is not an object that one would expect to bump into on his way to work. And running into the property *triangularity* at the laundromat would be quite peculiar.

This paper will focus on the first category, what we call material objects. A material object is one that is located in the material world. It has extension: length, width, height, and volume.[3] The property of extension will be a necessary property held by all material objects.[4] Furthermore, any object that is not material does not have extension. I hold the following formal claims as true. Where M is the set of all material objects, Pxy is the relation of x being a part of y and Ex is the property of extension:

(1) $[\forall x: x \in M]\ Ex$
(2) $[\forall x: Ex]\ x \in M$
(3) $[\forall x: x \in M]\ ([\exists y: Pyx] \supset Ey)$

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[3] I am open to the possibility that there are material objects that have as parts immaterial objects. Nevertheless, in discussing composition and parthood I will restrict myself to material objects whose parts are also material objects.

[4] This unfortunately implies that point-sized simples might not be considered material objects. But I take it as obvious that such objects, if they exist, should count as material objects. In this case all material objects either (i) have extension, and therefore volume, etc., or (ii) are point-sized.

That is, all material objects have extension; all extended objects are material objects; and all material objects have a part that is extended (and therefore material).

The primary goal of this paper will be to provide an answer to van Inwagen's Special Composition Question. That is, when is it the case that two or more material objects compose an additional object? In good faith to *Material Beings*, then, the objective of this paper is not to explain what composition is, but rather to simply determine the conditions under which it occurs. An answer to the former question, I believe, is an overly ambitious goal, and one I am unsure how to go about answering. Formally, we can represent the Special Composition Question as:

> SCQ: When is it true that ∃y the xs compose y?

Consider the food I've laid out on the kitchen counter. There are two pieces of bread, some ham, and a slice of cheese. The Special Composition Question amounts to this: under what conditions do the bread, the ham, and the cheese compose some further object? Note that SCQ does not say what this further object is, and does not establish anything meaningful about it beyond its existence and the parthood relations it bears. There are three broad types of answers that can be given to the Special Composition Question. They are differentiated by the number of potential composite objects:[5]

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[5] Note that the following formalization of (U) is significantly more liberal than what most philosophers who are inclined towards this view accept. Specifically, they would require that x is not identical to y, and might require an overlap constraint, such that there is no "double dipping" of parthood. I leave the formalization as follows because it more clearly demonstrates the fact that (N), (U), and (C) complete the "logical space" of answers to SCQ. My arguments against (U),

(N) [∀x: x ∈ M] ~∃y(Pxy ^ x ≠ y)
(U) [∀x: x ∈ M] [∀y: y ∈ M] ∃z(Pxz ^ Pyz) ^ z ≠ x ^ z ≠ y
(C) ~(U) ^ ~(N), or:
 [∃x: x ∈ M] ∃y(Pxy ^ x ≠ y) ^ [∃x: x ∈ M][∃y: y ∈ M] ~∃z(Pxz ^ Pyz) ^ z ≠ x ^ z ≠ y

(N), or *compositional nihilism*, claims that there are no instances of

composition. All material objects that exist have no proper parts. An object y is

proper part of x if and only if Pyx and x ≠ y. Thus, no matter how I arrange my

bread, ham, and cheese, they will never compose another object. All material

objects are simple – without proper parts.

(U), or *universalism*, claims that for any two distinct objects (x ≠ y), they

compose an additional object. Thus, the two slices of bread compose an object.

That object and the ham compose another object. And that object and the cheese

compose yet another object. There is, however, an additional restriction implied

by *universalism*. There are no two objects such that the first object has the second

object as a part, *in addition* to having another part that is a part of the second.

That is, all objects can be parts only once; there is no "double dipping" of

parthood.[6] Consider objects A, B, and 3. Object 3 is the composite of objects A

and B. It is impossible for there to be a fourth object that is composed of object 3

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however, will operate under the restricted understanding of (U). In fact, I informally introduce
these restrictions in the following paragraphs.

[6] While the semantic explanation and example provided are, I believe, accurate, I am unsure how
to formalize the "double dipping" constraint. There are two ways of caching out the claim, as
either a constraint on parthood or as a constraint on occupied regions. The parthood constraint
reads, where PPxy is the relation of x being a proper part of y:
 ~(∃x)(∀y)(∀z) PPyx ^ (PPzx ⊃ Pzy)
The occupation constraint reads, using terminology employed in Parsons' "Theories of
Location":
~(∃x)(∃y)(∃z)(∃r) (y@r ^ z@r) ^ y ≠ z
All of these might be entailed by a stronger thesis concerning identity conditions. But what
has been said already is more than sufficient for this paper.

and object B. This is because object B is a part of object 3. Such a fourth object would be "double dipping" with object B.

(C), *compatibilism*, claims that composition sometimes occurs, but not always. This answer is logically incompatible with either (N) or (U). *Nihilism* and *compatiblism* disagree on there being at least one composite object. *Universalism* and *compatiblism* disagree on there being an instance of failed composition. All three disagree on the number of possible composite material objects.

Section Two

In this section, I will first present a thought experiment. The design of the experiment is to introduce the notion of vagueness. I will then develop this notion and explain how it applies to theories of material composition. This will lead to some arguments against *compatibilist*-type answers to SCQ.

Meet Charles. Charles has graciously volunteered himself for a demonstration. Charles is a middle-aged man and, unfortunately, has started balding. He isn't quite bald yet: he still has a relatively well-groomed mane. But there is a bald spot that has been growing for the past few months. Let *n* be the number of individual hairs on Charles' head right now, at time t1. *N* is a pretty big number. Just to be safe, let us spell out explicitly what we are already committed to:

(1) Charles has *n* hairs.
(2) Someone with *n* hairs is not bald.
(3) *Therefore* Charles, with *n* hairs is not bald.

Now comes the experiment. We sit Charles down on a comfortable chair and give him a big, juicy rib eye steak for his troubles. We then take a pair of tweezers and pluck out one of Charles' hairs. It seems obvious that we did not do

much to make Charles bald. Sure, we may have put him one hair closer to complete baldness. But we did not make him bald by removing a single hair. At a later time t2:

> (4) Charles has *n-1* hairs.
> (5) Someone with *n-1* hairs is not bald.
> (6) *Therefore* Charles, with *n-1* hairs, is not bald.

What if we kept plucking out a single hair of Charles, one by one, and asking ourselves at each juncture if he were bald? Surely, at some point he must become bald. After all, a man with no hair on his head is most certainly bald. But where is that point? A man with only a single hair would still, presumably, be bald. So, too, would a man with two hairs (as evidenced by Homer Simpson). Furthermore, the following principle seems to hold:

> (7) If someone with *m* hairs is bald, then someone with *m+1* hairs is bald.

The truth of this is seen in the implausibility that a single hair makes the difference between baldness and non-baldness. Imagine two men standing next to each other, one bald and one not bald. Would you expect there to be only a single hair to separate the two? Is that even possible? Even more troublesome is that it appears we can also reason in the opposite direction.

> (8) If someone with *n* hairs is not bald, then someone with *n-1* is not bald.

This is justified in exactly the same manner as (7). Losing a single hair cannot move anyone into a state of baldness. Above, we were confident that the removal of a single hair from Charles' head did not make him bald. Thus, fully presented, the argument runs:

> (1) If someone with *n* hairs is not bald, then someone with *n-1* hairs is not bald.
> (2) Someone with 100,000 hairs is not bald.
> (3) Someone with 99,999 hairs is not bald. [From 1 and 2]

(4) Someone with 99,998 hairs is not bald. [From 1 and 3]
...
(100,002) Someone with 0 hairs is not bald. [From 1 and 100,001]
(100,003) Someone with 0 hairs is bald. [From common sense!]
(100,004) Contradiction!

As noted above, the argument could be run in reverse:

(1) If someone with *m* hairs is bald, then someone with *m+1* hairs is bald.
(2) Someone with 0 hairs is bald.
(3) Someone with 1 hair is bald. [From 1 and 2]
(4) Someone with 2 hairs is bald. [From 1 and 3]
...
(100,002) Someone with 100,000 hairs is bald. [From 1 and 100,001]
(100,003) Someone with 100,000 hairs is not bald. [From common sense!]
(100,004) Contradiction!

This type of argument is known as a sorites paradox. It is not restricted, of course, to baldness. Parallel arguments can be made for things like heaps of sand or garbage. There are a variety of replies to the paradox. The most common and successful is to admit that vagueness of some sort is at play. Importantly, however, there are at least two different ways to explain the vagueness: the linguistic theory of vagueness and the metaphysical theory of vagueness.

Linguistic vagueness is manifested in expressions that do not have well-defined application. While users of the expression 'bald' have a general idea of its application – one wouldn't call Fonzi bald – there are cases in which the appropriateness of the expression is unclear. The defining feature in linguistic vagueness, however, is that the vagueness is in our language. One can imagine that linguistic vagueness, in theory, is eliminable. For example, a world-wide conference could be called, at which we agreed to use 'bald' to refer to only those with exactly 75 or less hairs. The vagueness is a result of our indecision as a linguistic community.

Metaphysical vagueness, in contrast, insists that there is sometimes simply no fact of the matter. Vagueness is irresolvable. When an individual has a certain amount of hair, it becomes impossible to successfully refer to any fundamental and determinate property. This is just because there is no fundamental property referred to; there is no fact of the matter and, in such instances, standard logic fails to obtain.[7]

There are significant differences in the two approaches. The first, acceptance of linguistic vagueness, permits one to unproblematically resolve the paradox. The reason the paradox exists is because 'bald' has no well-defined application. We never agreed on an exact use of the word. The contradiction is avoidable because at least one of the premises, under this view, is false. Which premise is false? Well, that depends on where the linguistic vagueness enters. One option is to claim that we agree the boundary between baldness and non-baldness is vague; in this case we would deny premise (1) and therefore deny the principle that allows the argument to be run.

Metaphysical vagueness places actual vagueness in the world. This is troublesome because, as will be shown later, it violates standard logic. I admit that there is probably no formal argument that can be given to disprove metaphysical vagueness. Nevertheless, I believe it is unreasonable to accept it. One would presumably only be motivated to do so because one can then hold onto other intuitively true claims. But why should one discard the appeal of the Law of Excluded Middle for the appeal of, for example, everyday material objects? At the

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[7] Perhaps I should restrict myself here to a denial of the Principle of bivalence. I'm happy to do this.

very least, insofar as we hold deep intuitions about standard logic I see no reason to abandon it. Some truths in standard logic reflect the strongest of our intuitions. Further, I believe that the attempts of metaphysicians to explain away the respective intuitions are more successful in the case of radical ontologies. That is, one's intuitions can be more successfully assuaged in the case of ontology than in the case of logic. Indeed, there is even some intuitive appeal (evidenced by historical suppositions) to non-standard ontologies. Nevertheless, the abandonment of standard logic will be discussed later in Section Four and Section Five.

The sorites paradox often arises when the property in question appeals to some manner of degree. Above, it was suggested that properties that fall under the sorites paradox cannot be fundamental. This is because such a property, if it is to be coherent at all, is vague. And fundamental properties cannot be vague:

> If a property falls under the sorites paradox, then it is not a fundamental property.

In what follows, I will briefly present a couple arguments against various *compatibilist*-type answers to SCQ. The arguments here are unsophisticated, and much more can be said for and against them. The more sophisticated versions of these arguments are not my own. In *Material Beings*, van Inwagen presents a more fair and comprehensive argument against these views. Nevertheless, I present the quick and dirty arguments below to demonstrate that attempts to answer SCQ along these lines will lead to us down a dangerous rabbit hole.

Among *compatibilist*-type answers to SCQ are those that appeal to some manner of spatial relations between parts. *Prima facie*, this type of answer is

promising. Consider again our ham sandwich. Isn't it just when we take the ham

and cheese and place them between the bread that a ham sandwich is formed?

This, certainly, is a case in which the distance between the parts is relevant. There

is no sandwich when the parts are scattered across the kitchen counter. But what

about the parts getting closer allows for a sandwich to form?

How about a direct appeal to distance between parts? Our ham sandwich

does not come into existence until all the parts are some distance away from each

other. But recall the argument given against baldness. Where would one mark the

distinction between there being a ham sandwich and there being no ham

sandwich? When the parts are one meter apart? One centimeter? One micrometer?

Surely my sandwich is allowed some measure of shifting without falling out of

existence. When I eat my ham sandwich, the parts necessarily move.

Consequently, the spatial relations that hold between the parts change. This

doesn't mean the sandwich goes out of existence. In short:

(1) If two parts *n* units apart form an object, then two parts *n+1* units apart
form an object.

Unfortunately, this is sufficient to run a sorites paradox:

(1) If two parts *n* units apart form an object, then two parts *n+1* units apart form
an object.
(2) Two parts 0 units apart form an object. [If there is any distance that permits
composition, it is this]
(3) Two parts 1 unit apart form an object. [From 1 and 2]
(4) Two parts 2 units apart form an object. [From 1 and 3]
...
(100,002) Two parts 100,000 units apart form an object. [From 1 and 100,001]
(100,003) Two parts 100,000 units apart do not form an object.
(100,004) Contradiction!

Thus, any answer to SCQ that appeals only to the spatial relations that

hold between objects introduces vagueness. Recall that fundamental properties

cannot be vague. I assume that composition is a fundamental property. Composition seems to be one of the most metaphysically basic notions. Surely the relevant properties are fundamental – in what else could they be grounded? Because of this, the above argument demonstrates that an answer to SCQ cannot appeal only to the spatial relations that hold between objects.[8]

Then perhaps the objects need to be touching. But if that were the answer to SCQ, then every time two people shake hands, they form a new object. Surely this is not the case. Let us call this answer to SCQ *Contact:*

> To get the xs to compose something, one need only bring them into contact; if the xs are in contact, they compose something; and if they are not in contact, they do not compose anything. [9]

Contact being thus defined, we can use van Inwagen's argument against it:

> (1) If *Contact* is true, then every time two people shake hands, an object is formed.
> (2) It is not the case that every time two people shake hands, an object is formed.
> (3) *Contact* is not true.

Van Inwagen calls appeals to various strengths of connectedness between parts as fusion-type answers. A similar line of reasoning as that against *Contact* denies all answers that appeal to such connectedness between the parts. Furthermore, "in contact" and "touching" are terms that would require substantial elaboration if they were to supply an answer to SCQ. Sub-atomic particles do not touch in any ordinary understanding of the word. Let us therefore set aside these *compatibilist*-type answers to SCQ.

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[8] The argument can be run analogously to time, and I suspect to any other quantitative relation. I am less certain if the conjunction of these falls under the sorites paradox, but I will not address this in this paper.

[9] *Contact* and the following argument against it appear in pp. 33-37 of *Material Beings*

Section Three

It is an interesting observation that, frequently, a philosopher defends his favored theory of material composition by arguing that it is the least-bad of all the theories available. Many utilize a *reductio* strategy. For example, van Inwagen himself begins his defense by arguing against fusion-type answers to SCQ. Sider, likewise, defends *nihilism* by (at least in part) attacking *universalism*. In mereology, it seems, the best defense is a good offense.

Part of this reality is likely due to the fact that both *nihilism* and *universalism* commit one to claims that, *prima facie*, are completely absurd. *Of course* tables and chairs exist, and *of course* there is no object that is composed of the tip of my nose and the Eiffel Tower. Because of this, much of the work to be done by a proponent of one of these views is to alleviate the perceived crazy-ness of the view. Thus we see the introduction of van Inwagen's *Paraphrase Strategy*, Lewis's *supervaluationism*, and context-sensitive semantics.

Recall that the dialectic has been driven most centrally by our attempts to seek an answer to van Inwagen's Special Composition Question. Three answers, *nihilism*, *universalism*, and *compatibilism*, were offered. The answers are logically incompatible and, in fact, exhaust the logical possibilities.[10] This is most clearly seen by summarizing the three as answers to the following: when does composition occur? Never; always; sometimes.

Compatibilism is the juicy steak (or respective soy product) of material composition. It looks and tastes delicious – and is nine times out of ten what we

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[10] Technically, they do. But *universalism*, as I have formalized it, is not widely held. Rather, many proponents hold some restriction on composition such that parts of a composite object do not overlap. Thus, the "realistic" possibilities do not exhaust the logical possibilities.

most want to order on the menu. But it is by no means healthy for us. Substantial

philosophical exercise must be done in order to not keel over from the

cholesterol-ridden after-effects of *compatibilism*. First and foremost, one must

answer a follow-up question: Ok, composition only sometimes occurs, but under

what conditions?

In Section Two it was argued that composition is never based merely on

the spatial relations of the parts. Other *compatibilism*-type answers have been

given. In Section Four we will discuss van Inwagen's answer, that composition

occurs only when a life is involved. But Ned Markosian goes a different route.

When pressed to offer a complete answer to the SCQ, containing the conditions

under which composition does and does not occur, Markosian simply refuses to

answer. That is, he claims that there is no answer to the SCQ. More formally, he

holds that "there is no true, non-trivial, and finitely long answer to SCQ,"

(Markosian 214). Thus, facts about composition are brute; they do not obtain in

virtue of some other fact or facts. Call this view *Brutal Composition*.

There is, however, considerable virtue in giving a systematic and general

answer to SCQ. What metaphysicians hope to uncover are those principles that

most fundamentally govern the world. *Prima facie*, such principles are necessary

truths and obtain in all possible worlds. The correct answer to SCQ, insofar as an

answer reflects a metaphysically fundamental principle, should be necessarily

true. Any string, finite or otherwise, of brute facts about composition is

contingent. This is due to the contingent nature of some objects. My cat Gizmo is

not, sadly, a necessary object; in some world she could fail to exist. Thus, any

answer containing brute compositional facts about Gizmo is itself contingent. While a full ontological picture of the world will always include brute facts, the brute facts according to *Brutal Composition* are of a different kind, an unacceptable kind, than the brute facts according to the alternative answers to SCQ.[11]

There might be one more objection against *Brutal Composition.* As suggested above, there might be a problem explaining the modality of compositional facts. It is thus far an open question whether modal truths about composition are equally brute as non-modal truths. Are the non-modal truths grounded in the modal truths, or are the modal truths grounded in the non-modal truths? Which are brute? While these are hard questions, they are not questions that I think pose any special challenge to *Brutal Composition*. The grounding problems raised here are orthogonal to the veracity of *Brutal Composition* with respect to SCQ.

At any rate, let us set aside *Brutal Composition*. We are attempting to find a true answer to SCQ. Brutal Composition is not, in the intended sense, an answer to SCQ. It seems intuitive that composition, whatever it may be, is at the very least more than a series of brute facts. Perhaps for Markosian it is different. Indeed, he makes it clear that certain intuitions about vagueness and strange objects outweigh intuitions about giving a systematic answer to SCQ: "For the fact that *Brutal Composition* is the only response available that is consistent with my intuitions about compositional matters seems to me a good reason to prefer

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[11] To say a bit more: The amount of simples that exist in the actual world may be, according to *pluralist nihilism*, a brute fact. But this fact, unlike a *Brutal Composition* fact, is not an alternative to any plausible metaphysical principle.

Brutal Composition over the other responses," (Markosian 240). While I do hold many of the same intuitions Markosian holds, for me they do not outweigh the almost insurmountable intuition that there exists a necessary and systematic answer to SCQ.

Section Four

Thus far, we have established three broad categories under which an answer to SCQ may fall. It was then argued that *compatibilism* faces significant challenges. Insofar as a *compatibilism*-type answer must explain the conditions under which composition occurs, it was argued that such an answer cannot appeal to spatial or temporal relations. Some other notion must do the heavy lifting in an answer to SCQ. One such answer, already mentioned, is the one van Inwagen presents in *Material Beings*:

> *VIW*: (∃y the *x*s compose *y*) if and only if the activity of the *x*s constitutes a life (or there is only one of the *x*s),". [12]

What this means, is that a *life*, as an event, is the only relevant element in matters of composition – except, of course, the simples themselves. What life is, exactly, is critical to van Inwagen's answer. If the notion of a *life* does not work as it should, then his answer, like other *compatibilism*-type answers to SCQ, is eliminated on pain of incoherence or contradiction.

There are similarities between appeals to distance of parts for composition and van Inwagen's explication of what it means to constitute a life. *Prima facie,* both seem to be the correct answer. Simples are more or less "caught up" in the objects they compose. The ham sandwich became a sandwich when the various

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[12] From p. 82 of *Material Beings*

parts came sufficiently close together. Likewise, a particular simple constitutes my life just when it becomes sufficiently involved. I eat some chicken, my body digests it, and the protein of the chicken is incorporated into my muscles, which I later use to eat more chicken.

Just as the former is susceptible to a variation of the sorites paradox, so too is the latter. One might ask, at which point is the chicken "sufficiently involved" in my life? When the chicken is digested? When it is in my mouth? The problem is the same as that of Section Two. Van Inwagen is quite aware of this. In the final parts of *Material Beings*, he admits that the problem is inescapable and, if we are to salvage his answer to SCQ, we must admit of vagueness in the world. That is, it is not merely a linguistic matter that leaves us wondering at what exact point a simple partially constitutes a life. There is no fundamental, metaphysical answer to this question. There is no exact point at which a simple partially constitute a life; simples vaguely constitute a life. This vagueness is formalized as follows. For any life, there is a set of simples that collectively constitute it. Each member of this set is "caught up" in the life to some degree between 0 (exclusive) and 1 (inclusive). The degree to which a simple is caught up in the life of an organism is reflected in our intuitive picture. The chicken I eat is definitely part of me when it constitutes my muscle fibers. But when it is still being digested, maybe it isn't as caught up. We can reflect this uncertainty by saying that a given simple of the chicken, when entering my stomach, is caught up to degree 0.56; that same simple, when part of my muscle fiber, is caught up to degree 1.

One immediate objection to *VIW* is that it introduces vagueness into the world. In Section Two, the differences between linguistic vagueness and metaphysical vagueness were explicated. It was also stressed that, while linguistic vagueness is not exactly a good thing, metaphysical vagueness is a much more threatening beast.

In the balding Charles thought experiemtn, one might be – should be – willing to abandon *baldness*. There is something meaningful that 'bald' tracks, one could say, but nevertheless there is no metaphysically fundamental property of *baldness* that Charles acquires. One could go even further and present vagueness into the property *baldness*. When pressed why, he might reply, why not? Who's to say that *baldness* cannot be vague?

Well, that might work for *baldness*. But an answer to the SCQ, insofar as it makes existential claims, is in a tougher spot. What would it mean for an object to only vaguely exist? That is to say, what is the nature of an object, whose corresponding existential proposition is neither true nor false? Can properties affix to such an object? Is this object material? Immaterial? Both? In short, while some of metaphysics may permit the introduction of vagueness, the nature of existence is not so cordial. An object either exists or does not.

In *Material Beings*, van Inwagen is all too aware of this difficulty. In fact, he is so aware that he not only explicates the issues of vagueness that his answer to SCQ gives, but proves each step of the problem: *VIW* introduces vague composition, which introduces vague identity, which introduces vague

existence.[13] Nevertheless, van Inwagen argues that metaphysical vagueness is not all that bad. *VIW* and a related non-standard system of logic are fully coherent and potent in all the ways originally desired. This is a critical move, because it is not vagueness *per se* that is bad.[14] Rather, it is the violation of our system of logic, in particular our existential quantifiers. If it is vague – that is, there is no fact of the matter – whether there exists some objects x that is the sum of some simples P, then our quantification logic is not sound. We might try to formalize the vagueness of composition under standard logic with disastrous results:

(1) ~(∃x: x is the sum of P) [It is not true that P collectively compose an object]
(2) ~~(∃x: x is the sum of P) [It is not true that P does not collectively compose an object]
(3) ⊥ [1, 2]

This shows that standard logic lacks the tools to explain metaphysical vagueness. Van Inwagen solves this with the introduction of the *indef* operator. The operator is attached to propositions that are neither true nor false. Thus, the above logical representation of vague composition, under van Inwagen's logic, is inappropriate. Instead, we would say:

indef (∃x: x is the sum of P) [It is indefinite whether P collectively compose an object]

By introducing the *indef* operator, van Inwagen provides a non-standard logic to explain the truth-value of propositions about composition.[15]

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[13] More specifically, van Inwagen is committed to the claim that sometimes it is indefinite whether there exists an object y composed of the various xs. This is importantly different than the claim that there exists an object y such that it is indefinite whether it is composed of the various xs. The latter is significantly less feasible than the former.

[14] Although some certainly think it is.

[15] For simplicities sake I have omitted the full formalization of his logic. Missing is the introduction of monadic predicate-letters used to represent various properties. Also missing is the means with which we can evaluate his logic. Such details, while important, are irrelevant to the current discussion.

Much has been said about metaphysical vagueness, and the consequences it entails. The last third of *Material Beings* is, in effect, a defense of metaphysical vagueness. Likewise, many have said that metaphysical vagueness is simply impossible, and any theory that entails it is false. Terry Horgan and Matjaz Potrč do just this in *Austere Realism*, as does Mark Heller in "Against Metaphysical Vagueness". I consider metaphysical vagueness to be massively problematic. It is a serious commitment, and insofar as I am afraid of serious commitment, to be avoided. That being said, I will not argue in this paper that belief in metaphysical vagueness is completely indefensible. I confess to being somewhat persuaded of van Inwagen's response to arguments raised against his acceptance of vagueness. While his defense is not enough to accept that there *is* metaphysical vagueness, it is enough to accept that a somewhat plausible theory of material composition that includes metaphysical vagueness can be given. Van Inwagen has established an impasse; it just so happens that we are on opposite sides of it.

I would like to instead raise an objection that is more specific to *VIW*. Recall that *VIW* says that parthood is a matter of degree. Some simple x is caught up in some life, and therefore (partially) composes some object y, to some degree z, where z is a number between 0 and 1. If z is 0, then x is definitely not a part of y. If z is 1, then x is definitely part of y. If z is between these two numbers, then it is "sort of" part of y. That is, there is no fact of the matter, or, in van Inwagen's terminology, it is *indefinite* whether x is a part of y. The tracking of indeterminacy to a continuous number scale is critical because, otherwise, the view is subject to the same objections raised at the beginning of this paper. In short, if x either is, is

not, or is indeterminably (vaguely) part of y, it is arbitrary to demarcate the boundaries of these terms. Just like it is arbitrary in the original sorites paradox for there to be a distinct boundary between composition and noncomposition, it is arbitrary for there to be a distinct boundary between composition and indeterminate composition, and indeterminate composition and noncomposition.[16] Here, however, it is even less plausible to appeal to vagueness. What would it mean for there to be an indeterminate boundary between indeterminacy and determinacy?

While van Inwagen avoids this problem, his method of doing so creates a new one of its own. "We assume that (at any given moment) any given simple is a part of x to some precisely specifiable degree, a 'degree' being a real number greater than or equal to 0 and less than or equal to 1," (van Inwagen 223). Is it reasonable to make this assumption? In other words, why is it the case that parthood follows a continuous scale? What grounds the continuous nature of parthood?

Here, one might appeal to distance relations born between objects. The piece of chicken is only a part of me to degree 0.06 because it has only just entered my mouth.[17] That is, it is spatially close to my teeth, spatially distanced from my stomach and muscle fibers, and so forth. When it is in my stomach being digested, it is part of me to degree 0.56. That is, it is spatially close to my stomach, spatially distanced from my mouth, and so forth.

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[16] This is argued for in Heller's "Against Metaphysical Vagueness".

[17] That is, the simples arranged mouth-wise that are to varying degrees part of me. The following account obviously disregards the problem of composition as identity.

But surely these distance relations are not what grounds parthood. The interactions of the simples that are relevant to determining if there is life – and therefore a corresponding organism – are more intimate. The problem, however, is determining just what these relations are. Van Inwagen employs various analogies and metaphors (and quotes other philosophers giving analogies and metaphors) in an attempt to explain the relevant factors in something "being caught up in" a life.

In his most illuminating passage, van Inwagen tells us a story about a carbon atom undergoing various biological and chemical processes of a particular life until, at the end of the day, the atom is no longer caught up in the life:

> Alice drinks a cup of tea in which a lump of sugar has been dissolved. A certain carbon atom that is part of that lump of sugar is carried along with the rest of the sugar by Alice's digestive system to the intestine. It passes through the intestinal wall and into the bloodstream, whence it is carried to the biceps muscle of Alice's left arm. There it is oxidized in several stages (yielding in the process energy, which goes into the production of adenosine triphosphate, a substance that, when it breaks down, provides energy for muscular contraction) and is finally carried by Alice's circulatory system to her lungs and there breathed out as a part of the carbon dioxide molecule. The entire process – Alice began to do push-ups immediately after she had drunk her tea – occupied the span of only a few minutes. [18]

How van Inwagen intends to explain these scientific processes is unclear. Presumably, however, scientific processes are to be explained through causality. This is reflected on page 12 of *Material Beings* where he claims that "whether certain objects add up to or compose some larger object does not depend on anything besides the spatial and causal relations they bear to one another." Thus parthood is explained by the causal relations born between various objects. Thus

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[18] *Material Beings* pp.94-95

the continuous scale of parthood is explained by the causal relations born between various objects.

How the continuous scale is explained is a much more difficult question, one that I do not think has an answer. Whatever causal relations are, they are not easily (if at all) quantified. Furthermore, how are the various causal relations to be organized, such that when one combination of causal relations occurs the chicken is part of me to degree 0.06, and when another combination of causal relations occurs the chicken is part of me to degree 0.56? While I do not have a formal argument to present, I nonetheless have a worry that the coherent "causal space" that van Inwagen requires does not exist. At the very least, there is significant work to be done to answer this question and, as noted elsewhere, the burden of proof is on the proponent of (C) to provide a satisfactory answer.

One final point against *VIW* is that, once we accept metaphysical vagueness in some instances of material composition, we have little reason to deny it in others. Van Inwagen insists that composition only occurs when an object is associated with a life. But the purpose of Section Seven of *Material Beings* is to demonstrate the problems a theory of composition that posits everyday ordinary objects like chairs and tables generates. The introduction of metaphysical vagueness is one such problem.[19] Later, with his introduction of a non-standard logic, van Inwagen offers a defense of *VIW* that accepts metaphysical vagueness. But why not accept some more liberal view of composition, whereby even tables and chairs exist? It was argued earlier that

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[19] Indeed, this is where many philosophers jump ship. Others discussed in this paper, such as Lewis and Horgan, use this as a starting point for their own theories of material composition.

retaining our everyday commitment to ordinary objects is desirable. If we have the tools to do so, we should utilize them. Why does van Inwagen choose not to? He does not choose to because he does not believe that there is a satisfactory answer to SCQ that includes tables and chairs.

But this is too hasty a conclusion. His dismissal of theories like *Contact* was prior to his introduction of vagueness. Perhaps a move similar to the one van Inwagen makes could also be made by the champion of tables and chairs to avoid his arguments. A given simple, x, is part of a given table, y, to some degree z. Like before, z is any number between 0 and 1, with 0 representing definite non-parthood, and 1 definite parthood. One might ask what grounds the degree to which x is a part of y. The simple answer, the champion says, is that there are some causal relations held between various objects that ground the degree to which the various parts are part of the table or chair.

But what are these causal relations, and how do they interact? Well hold on, the champion says, you're not being fair. Why are you pushing me and not van Inwagen on this? Fair enough. Let us be fair and wait for both of them to provide an adequate answer to (C). Meanwhile, let us explore the alternatives.

Section Five

Let us again remind ourselves of the dialectic. Of the three types of answers to SCQ, this paper argues that *nihilism* is true. *Compatibilism*-type answers are as of yet either incomplete or unsuccessful. It is on the shoulders of a proponent of *compatibilism* to provide a coherent and complete answer to "under what conditions does composition occur?" *Universalism*, however, has all the

initial appeal that *nihilism* does. We must therefore demonstrate that (U) is false, or at least do our best to convince ourselves that it is less plausible than (N).

First, it must be noted that *universalism* commits us to very, very strange objects. To use the oft-cited example, consider the tip of my nose and the Eiffel tower. According to *universalism*, there exists an object composed of just those two parts. Now consider that object and the New York Giants. There is also an object composed of just those parts.

Universalism is just a theory of composition; it requires an input to produce an output. Like *compositional nihilism*, it does not posit simples. That is the responsibility of another theory. It does, however, strongly suggest a theory in which there is a plurality of simples. Assume, for demonstration, that (M) is true. The conjunction of (U) and (M) entails (N). That is, if a *universalism*-type theory stated there were one simple, and in particular one very large simple, then it would prove true a rival theory. This is pretty weird. Pending an argument in favor of *universalism* with large-scale simples, let us take *universalism* to claim that there is a plurality of very small simples.[20]

Consider another complication that a proponent of *universalism* must face. *Prima facie*, there are many things in the world – or at least some object or objects that occupy a lot of space and time. Any theory of composition must take this empirical fact into accord.[21] Consider, also, the pressure on a theory of composition to help explain our use of words like 'cat' and 'table'. In Section Six, some revisionary linguistic theories are presented to reconcile (N) with everyday

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[20] Another option is that the world is gunky, such that every object has proper parts. I believe what I say about (U) below can be modified to accommodate this option.
[21] We are dismissing empty ontologies as simply false.

discourse. What happens, though, when the opposite problem occurs, and we have not too few objects, but too many? How does reference operate with such an ontology?

Consider my cat Gizmo who is currently resting on the sofa in the living room. According to *universalism*, there are many objects present in the region of space around where Gizmo is. Specifically, there is an object that contains all the cells, tissues, organs, and every individual hair. There is also an object that contains all the cells, tissues, organs, and every individual hair but one. Call these objects cF and cF-1, respectively. Now, Gizmo is somewhat advanced in age, and has less hair than she used to. Let us say that there are currently 1000 hairs in this cat-shaped region. *Universalism* dictates that there is a material object just like cF-1, except with one less hair; call it cF-2. We can see that this results in there being at least 1001 material objects, all of which contain all the internal cells, tissues, organs, and also containing a decreasing amount of hairs: cF, cF-1, cF-2 … cF-1000.

This is a species of Peter Unger's Problem of the Many, and has received extensive treatment.[22] Most notably, in "Many, but Almost One" David Lewis admits that there are many objects;[23] nevertheless, for most semantic purposes, there is one cat. That is, when I utter 'There is exactly one cat in the living room', I utter something true. How can this be? We just said there were *at least* 1001 nearly identical objects that could equally qualify as a cat!

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[22] Some notable differences: I am granting that there are at least 1001 material objects in the area. I am focusing on, instead of ontological claims, the problem of reference generated by said claims. This is, of course, meant to lead into a discussion of *supervaluationism*.

[23] Whether they are cats, cat-like, or some other entity is not relevant here.

Here, the notion of *supervaluation* is essential. *Supervaluationism* is a theory designed to accommodate semantic indecision. Often times our words lack precise meanings. Nevertheless, we can determine the (super-)truth value of a particular utterance: "Call a sentence *super-true* if and only if it is true under all the ways of making the unmade semantic decisions; *super-false* if and only if it is false under all ways of making those decisions; and if it is true under some ways and false under others, then it suffers a super-truth-value gap," (Lewis 29). In our case, there are many objects to which 'cat' may refer. Consider each of these possible references in turn: 'cat' refers to cF, 'cat' refers to cF-1, etc. It is true that in each case the truth-value of an utterance would be true. Thus, according to *supervaluationism*, an utterance of 'There is one cat in the living room' – where the precise reference of 'cat' is semantically indeterminate – is true. Importantly, Lewis notes, super-truth of utterances in a language is more important than truth. When we communicate, we attempt to convey super-truth, not truth *simpliciter*.

There is something to the claim that super-truth is more important to language than truth. We are very sloppy when we talk. Our language is littered with homophones, homonyms, slang, and all manner of indeterminate words. (How many hairs, after all, does it take to be considered 'bald'?) It seems unlikely, then, that we have exactly one intended reference for every word we use.

All this ignores an interesting, and important, motivation for (U). One of Lewis' most prominent motivations for *universalism* is the Argument from Vagueness. A version of this argument has already been presented in Section Two. In short, if we admit of some restrictions in our composition (that is,

prescribe to *compatibilism*), then we must admit of vagueness in composition. On page 212 of *On the Plurality of Worlds*, Lewis details this argument:

> The trouble with restricted composition is as follows. It is a vague matter whether a given class satisfies our intuitive *desiderata* for composition. Each *desideratum* taken by itself is vague, and we get still more vagueness by trading them off against each other. To restrict composition, in accordance with our intuitions would require a vague restriction. It's not on to say that somewhere we get just enough contrast with the surroundings, just enough cohesion, … to cross a threshold and permit composition to take place, though if the candidate class had been just a little worse it would have remained sumless. But if composition obeys a vague restriction, then it must sometimes be a vague matter whether composition takes place or not. And that is impossible.

This is essentially the same motivation given by Horgan and Potrč in *Austere Realism*. But the latter utilize the Argument from Vagueness for a version of (N). This is because the argument, as constructed, merely rejects some versions of (C). It is silent on whether (N) or (U) is true. Now, it is a fact that most philosophers – Lewis and van Inwagen included – think that "I"[24] exist, and that "I" am a composite material object. These are independent theses, though, and require independent justification. They are also theses that create tension for both (N) and (U).[25] Let us therefore set them aside, as it applies equally to our two remaining theories.

Recall that so far we have also refused to accept vagueness in composition. Specifically, in Section Four it was argued that vague composition (and vague identity and existence) is metaphysically problematic and to be avoided. There is likewise no vagueness in composition with (N) – there is no composition! Thus, while Lewis' argument rejects (rightly so) *compatibilism*-type

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[24] Relative to the speaker. i.e. "I exist", when said by David Lewis, means David Lewis exists.
[25] For (N) because there are no composite material objects, for (U) because composite objects do not change parts.

answers to SCQ, *nihilism*-type answers are unscathed. The question remains, then, why we should accept (U) in favor of (N).

There are two general points in favor of *nihilism* over *universalism*. The first is the argument from ontological parsimony. If (N) and (U) accomplish the same explanatory work, then we should prefer (N) because it posits fewer objects. The second is the argument from weirdness. As has already been noted, *universalism* claims that all sorts of weird objects exist. For example, the object composed of the tip of my nose and the Eiffel Tower. It is impossible to comprehend the nature of these objects, and therefore any theory that entails them is false.

The argument from ontological parsimony has been given in a variety of formats. In *Austere Realism*, Horgan and Potrč provide a version that is most relevant to our discussion. The argument can be formalized as follows:[26]

(1) If one ontological theory is more parsimonious than another ontological theory, then, all things being equal, there is strong theoretic reason to prefer the more parsimonious theory.
(2) (N) is more parsimonious than (U).
(3) All things being equal, there is strong theoretic reason to prefer (N) over (U).
(4) All things *are* equal.
(5) There is strong theoretic reason to prefer (N) over (U).

It is important to note that the argument only provides a theoretic preference for (N). It does not prove that (U) is false. The argument acts very much like a standard Ockham's razor argument: it is more reasonable to assume simplicity in a system unless otherwise required.

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[26] The argument is extracted from p. 183 of *Austere Realism*. I have taken the liberty of roughly translating the terminology employed there to the terminology applied here. Some nuances have been lost in the name of clarity.

Of course, the strength of the argument turns on the strength of premise (4). Above, it was argued that *universalism* creates problems of reference and flies in the face of intuition. These are also problems faced by *nihilism*. Nevertheless, it has been argued that each problem has, at the least, the beginnings of a solution. The parallels between *nihilism* and *universalism* are quite striking. If these problems have solutions, then it seems the two theories are on equal footing. Thus, because (N) has less ontological commitments than (U), we should prefer the former.

There is a stronger argument against (U) that does not appeal to theoretic preference. This is the argument from weirdness. Formalized, it is:

(1) If (U) is true, then there exists an object composed of the tip of my nose and the Eiffel Tower
(2) There does not exist an object composed of the tip of my nose and the Eiffel Tower
(3) (U) is false

Why is there no object composed of the tip of my nose and the Eiffel Tower? Because such an object would be *weird*. How is one to understand such weird objects?

At the very least, such an object's nature is radically different than any object we regularly conceptualize. Its parts are vastly disjoint, some being over thousands of miles apart, and hold no meaningful non-mereological relations. Further, there seem to be no plausible causal relations that connect the various parts of my nose to the various bits of metal in the tower. There is also no way to categorize such an object. It is not an artifact. It is not biological. It is hard to see what sort of kind such an object would fall under. Such an object falls outside the scope of almost every conceptual tool we possess. This is not to say that such an

object is obviously metaphysically impossible. But without substantial justification, it is hard to accept weird objects.

The two arguments above fall short of being demonstrative proofs against (U). Some of the premises are controversial, and a proponent of *universalism* would have much to say against them. But that is just the point. Much needs to be said on behalf of *universalism* to justify rejecting these arguments. Such justification, I believe, is lacking. We should then turn to our last alternative, (N), and explore its plausibility.

Section Six

Once we accept (N), or any other species of austere ontology, we are in need of an explanation. Everyday discourse seemingly makes use of a variety of objects, mereologically simple or otherwise. According to *compositional nihilism*, though, these objects do not exist. What, then, is one really saying with an utterance of 'The sun moved behind the trees'? There is no such thing as a sun, and no such things as trees. What is the semantic story? Below, I will present various linguistic positions one can take in respect to an austere ontology. My presentation of the positions will not, however, assume any particular ontological theory.

We will consider three options. First, one can say that such utterances are false. After all, 'sun' and 'trees' fail to refer to any object existing in the world. According to this position, call it the Error Theory for Everyday Discourse – or simply *Error Theory*, much of what is said in everyday discourse is simply false.

One would like, however, to differentiate between sentences like 'The grass is green', in which something *prima facie* true is conveyed, and sentences like 'The grass is blue'. It would be a significant blow to *Error Theory* if utterances of the two above sentences always had identical semantic worth. A well-fleshed theory, then, will have to accommodate this with some "pseudo-truth" condition. This will be developed later in the present section.

Another semantic position is to claim that utterances made in everyday discourse, while true, do not contain the same propositional content that their face-value suggests. This is done through what I will call *Paraphrase Strategy*. An utterance like 'The sun moved behind the trees' is true, for example, because it is shorthand for a claim about a complex collection of astronomical facts.

The last option is the *Indirect Correspondence* theory of truth, presented by Horgan and Potrč. According to this theory, 'The sun moved behind the trees' is true at face value. Unlike *Paraphrase Strategy*, *Indirect Correspondence* claims that everyday discourse need not be ontologically serious. Unlike *Error Theory*, *Indirect Correspondence* claims that truth holds even though there is no object to which 'the sun' refers; furthermore, there is not always a systematic way to reduce such utterances to ones that are more ontologically serious.

The three theoretical positions sketched above each attempt to resolve the problem faced by an austere ontology. There is a certain sense in which an utterance of 'the table in front of me exists' reflects how the world is. Normally, one could explain this by appealing to a kind of object that is meant by use of the word 'table', a material object that is referenced by the definite description 'the

table in front of me', etc. But one who denies that many such objects exist, as a proponent of (N) does, cannot avail himself of these tools. One is therefore in need of an explanation.

The next several pages will contain considerations for each of the three views. *Indirect Correspondence*, however, will see substantially more discussion than *Paraphrase Strategy* or *Error Theory*. There are two reasons for this. The first is that *Indirect Correspondence* is enormously difficult to summarize in a few sentences. Elaboration on what the view even is, then, requires extensive digression. Secondly, *Indirect Correspondence* – or at least as presented by Horgan and Potrč – is a fairly recent view in contemporary metaphysics. I believe that the arguments presented below are therefore by necessity novel. Much has been written on *Paraphrase Strategy* and *Error Theory* already, and much of what I could say on the matter would merely be reference to philosophers x, y, and z. Therefore my discussions of the latter two views are restricted to merely convincing the reader of the falsity of one and the truth of the other. Substantially less exegesis is required.

Paraphrase Strategy works by converting everyday discourse into literal claims about the world. As noted above, an utterance of 'The sun moved behind the trees' is true because it can be unpacked into a complex series of claims about various astrological facts. According to van Inwagen, we might read the utterance as saying something like "Owing to a change in the relative positions and orientations of the earth and the sun, it came to pass that a straight line drawn

between the sun and this point (which is on the surface of the earth) would have passed through the trees," (van Inwagen 112-113).

Such an analysis is problematic because it creates a disconnect between the intentions of an utterance by the speaker and an utterance itself. Consider two separate utterances of 'The sun moved behind the trees'. Utterance A is made by a 10th-century English peasant on his 20th birthday. Utterance B is made by a 21st-century physics student on his 20th birthday. What the English peasant intended to say is that, quite literally, the yellow object in the sky moved until it was behind the trees. The physics student, however, did not literally mean the sun moved while the trees remained stationary; he utilized *Paraphrase Strategy* to cite a complex astronomical fact in six words. No such intention existed for the peasant. Indeed, if one were to ask him if he, in actuality, meant to say that the earth rotated until light emanating from the sun was obscured by trees he would say no.

This places *Paraphrase Strategy* before another dilemma. Utterance A is either true or false. If it is false, then an explanation is required. Under what conditions does a paraphrase succeed? Is it just in case the speaker is aware of the relevant facts and intends to use a particular utterance as a paraphrase for them? If this were the case, an enormous – perhaps insurmountable – epistemic burden is placed before any individual who hopes to say something true about the world. But if we maintain that what the peasant said is true, then there is reason to conclude that intention need not have any bearing on the truth of an utterance. After all, the peasant and the student intended to say very different things. If one

maintains – as I do – that speaker intentions play a vital role in a semantic theory in determining the proposition expressed by a speaker, one should seek an alternative to *Paraphrase Strategy*.[27]

The *Indirect Correspondence* theory of truth, presented by Horgan and Potrč, appeals to two different standards for truth evaluation. The first, Direct Correspondence, is a relatively rare semantic standard, only applicable when one is serious about his metaphysics, i.e. when discussing ontology. According to DC standards, a sentence is true if and only if the ontic claims made in the sentence reflect existing ontology.[28] For example, 'The sky is blue' is DC true if and only if the single object referred to by 'the sky' has the property referred to by 'blue'.

Usually, though, a speaker is not all that concerned with directly referring to actually existing objects. In these contexts one evaluates sentences under Indirect Correspondence standards. These standards are not systematic, however, and vary across contexts. As evidence of this, Horgan and Potrč cite the compelling presentation given by David Lewis on context-sensitive semantics. They then apply this idea to ontological claims.

According to Lewis, the truth-value of a claim is dependent upon the context in which it is made. In other words, there is not a direct correspondence to utterance uttered and proposition expressed. For example take an utterance of 'The pavement is flat'. When I am talking to my father about the new road paved downtown, this is true. The standards, so to speak, of 'flat' are not very high. So long as the road generally has a uniform height, the proposition expressed is true.

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[27] In *Objects and Persons*, Trenton Merricks denies *Paraphrase Strategy* on similar grounds. I will turn to his positive account later in this section.
[28] I take "ontic claims" to be those claims that an utterance makes if taken literally

But if I am talking to my physicist friend about the same road, and discussing the molecular distribution of the pavement in question, the proposition expressed is false because in this case the standards of 'flat' are higher. Thus, two different utterances of the same sentence may, in different contexts, express different propositions.

According to Horgan and Potrč, 'exists', like 'flat', is a context-sensitive word. An utterance of 'tables exist', when made by my father, expresses a true proposition. An utterance of 'tables exist', when made by my metaphysically-serious friend,[29] expresses a false proposition. Again, this is because context affects the semantics of existential claims. Thus, existential claims are not true or false *simpliciter*. Such a claim is DC-true (that is, true under Direct Correspondence standards) if and only if there is a corresponding object in the correct ontology. For example, 'tables exist' is true if and only if there exists some object that is denoted by use of the word 'table'. Existential claims are IC-true (that is, true under Indirect Correspondence standards) if and only if there is a corresponding object or objects in the correct ontology, when accounting for context-sensitive semantics. 'Tables exist' is true when uttered in a context that is less ontologically strict. This ends up being most contexts, with exception to discussions taking place "in the Ontology Room."

To repeat. Claims made in a Direct Correspondence context are true when the ontic claims match the ontology of the world. Indirect Correspondence claims are true in virtue of the way the world is, but are not made true in any thoroughly

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[29] Here, the reader may note the absence of plurality.

systematic way. That is, there are no exceptionless rules to evaluate whether or not a sentence is true.

Horgan and Potrč's *Indirect Correspondence* theory is, importantly, different than both *Paraphrase Strategy* and *Error Theory*. They claim that sentences are IC-true in virtue of the world and that such sentences might not be paraphrase-able to sentences following DC standards. The problem now is that we're left with a non-systematic way of evaluating sentences. Our semantics cannot be given in "rule" form, and that's weird.

They defend this oddity by arguing that the human mind also does not operate under systematic, exceptionless rules. That is, (if I am correctly using the terminology) they deny computational cognitive science. The reasoning is, frankly, beyond me. I will therefore grant them their arguments from cognitive science on the basis of ignorance.

Instead, I will present two serious concerns to this view that are independent of arguments in cognitive science. The first is that, presumably, other organisms do operate under some form of computational, "rule governed" cognition.[30] Worms, or a similarly neurologically simple organism, might be an example. Given that humans evolved from some version of such a simple organism, how did it come about that some species switched from computational cognition to non-computational cognition? That is, there are some organisms that

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[30] Further discussion of this issue has seemed to suggest that it might actually be the case that all nervous systems are noncomputational in nature. To this reply I would suggest that there are some organisms, those without nervous systems, that operate computationally, and an analogous argument can be constructed from that fact.

are simply too primitive to be capable of the complexities required of a non-systematic cognition; these organisms share an ancestor with humans.

Because of this, if Horgan and Potrč are going to hold themselves to the claim that human cognition really is noncomputational, then it must be evolutionarily so. That is, humans (or an ancestor of humans) evolved into such a cognitive state. This means that noncomputational cognition is either evolutionarily neutral, or evolutionarily beneficial.[31]

If it is evolutionarily neutral, then noncomputational cognition developed through some sort of genetic drift. This would imply that there should be the possibility of computationally-thinking humans. This is problematic for the following reason. Horgan and Potrč justify their theory of semantics with their theory of cognition. But if noncomputational cognition were evolutionarily neutral, the following argument could be run:

> (1) If the semantics of a species always follows systematic, exceptionless rules, then *Indirect Correspondence* is false.
> (2) If a noncomputational cognition is evolutionarily neutral, then there are some species that do not have a noncomputational cognition.
> (3) If a species does not have a noncomputational cognition, then its semantics always follows systematic, exceptionless rules.
> (4) A noncomputational cognition is evolutionarily neutral .
> (5) (Therefore) The semantics of some species always follows systematic, exceptionless rules.
> (6) (Therefore) *Indirect Correspondence* is false.

Premise (1) follows from the following consideration. Horgan and Potrč present their nonstandard semantics in an effort to reconcile their ontology with their commitment to the truth of everyday claims. To do this, IC semantic standards need only some existing object that is connected to the claim in some

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[31] The actual evolutionary picture is more complicated, but this simplified version should get the point across.

way. How this works exactly, as we have said, is unclear. But it is unclear precisely because there is no way to present systematic, exceptionless rules for it. Consider the following scenario. There is a species that has a robust language. If this species had a systematic, exceptionless rule-governed semantics, then Horgan and Potrč's defense of *Indirect Correspondence* fails. There would be no way to reconcile the species' true ontic claims with true ontological claims because this species is incapable of making IC-true claims.[32]

Premise (2) reflects the nature of genetic drift. Evolutionarily neutral traits are only fixed through randomness. Because there are plenty of populations and species on Earth, one would expect populations with noncomputational cognition and populations with computational cognition. The exact population genetics behind the premise are obviously more complex, but the details, along with some reasonable auxiliary claims, make (2) plausible.

As noted above, Horgan and Potrč's defense of semantics without systematic, exception-less rules amounts to an appeal to noncomputational cognition. The absence of such a cognition is therefore an absence of such a semantics. Hence, premise (3).

Premises (4)-(6) are simply *ex hypothesis* and logical consequences. If (1)-(3) are true, then the conclusion, that *Indirect Correspondence* is false, follows.

It seems, then, that Horgan and Potrč are forced to accept that noncomputational cognition is evolutionarily beneficial. Why is it evolutionarily beneficial, and why is it (presumably) not beneficial for other organisms? At the

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[32] Either the species systematically makes false claims, or they are incapable of uttering 'chairs exist' with the same intention that humans do. The former is just a version of *Error Theory*, and the latter is implausible.

very least, Horgan and Potrč need to provide some significant empirical answers. This seems strange to me. Based on ontological and semantic commitments, they are required – if my argument is sound – to conclude certain biological facts. This rubs against intuitions for Humean recombination principles which suggest that the various ontological, semantic, and biological facts should be interchangeable. More specifically, Horgan and Potrč are committed to a necessary connection between *existence monism*, *Indirect Correspondence*, and noncomputational cognition.

Through philosophical inquiry, we sometimes discover necessary truths. Perhaps it is the case that space and time by have certain features by necessity. Certainly, it is philosophy and not science that will determine if Cartesian dualism is true or false. But *Indirect Correspondence* is not an instance of such righteous philosophical impositions. It is, in effect, too empirical, and risks stepping on the toes of scientists. We should, as a general rule, at least try to prevent our ontologies from making controversial and verifiable biological claims. If an alternate semantic theory can be developed without such impositions, all the more reason to suspect the original. Let us then see if *Error Theory* is up to the task.

In *Objects and Persons*, Trenton Merricks defends an ontology similar to that of van Inwagen. He claims that, while persons do exist, tables, chairs, and other ordinary objects do not exist. Instead, there are simples arranged table-wise, chair-wise, etc. Merricks disagrees with van Inwagen, however, in how we should understand everyday discourse about these objects. Recall that van Inwagen accepts a type of *Paraphrase Strategy*, whereby everyday discourse is often

shorthand for more ontologically precise claims. Merricks claims that such

discourse is simply false – the main claim of *Error Theory*.

As already mentioned, *Error Theory* requires an alternative account of

sentence evaluation that differentiates claims like 'The grass is green' from claims

like 'The grass is blue'. The former are in some sense better than the latter.

Merricks says that the former are "nearly as good as true". Thus:

> Any folk-ontological claim of the form 'F exists' is *nearly as good as true* if and
> only if (i) 'F exists' is false and (ii) there are things arranged F-wise. So, for
> example, 'the statue *David* exists' is nearly as good as true because (it is false
> and) there are some things arranged Davidwise." [33]

According to Merricks, 'The grass is green' is nearly as good as true and 'The

grass is blue' is simply false. This is what grounds the difference between the two.

There is, however, one small modification that will be required. Merricks

provides an account of *Error Theory* with respect to *pluralist nihilism*. While both

it and *existence monism* are versions of *compositional nihilism,* Section Seven and

Section Eight will argue that *existence monism* is preferable. It is therefore

required that we modify the above account to accommodate *existence monism*:

> Any folk-ontological claim of the form 'F exists' is *nearly as good as true* if and
> only if (i) 'F exists' is false and (ii) the world is arranged F-ly. So, for example,
> 'the statue *David* exists' is nearly as good as true because (it is false and) the
> world is arranged David-ly."

Extrapolating somewhat to include property fixation, 'The grass is green' is

nearly as good as true because (i) it is false and (ii) the world is arranged green-ly

where it is arranged grass-ly.

Having presented a detailed account of *Error Theory*, one might object in

the following manner. Surely the theory cannot be right. While it is true we often

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[33] From page 171 of *Objects and Persons*

talk loosely, we still usually say true things. But according to *Error Theory* almost everything we say is false. This is impossible.

Is it? I admit that it is radical to claim that much of what we say is false. But it is radical just because the ontology included is so radical. We make reference to all sorts of objects that, according to *compositional nihilism*, do not exist. Of course the things we say are false. In light of our ontology, that just makes sense. What would be strange would be if we still managed to say true things even when referring to non-existing objects. Imagine, as Merricks does, the following conversation:

> A. There are chairs over there.
> B. Do you mean to say that there are some things over there such that they are chairs? Do you affirm 'chairs exist' in the most literal and straightforward fashion possible?
> A. Of course I do. You ask funny questions. [34]

But if Speaker A really does mean to affirm the literal meaning of 'chairs exist', then he must be saying something false. There are no chairs!

According to *Paraphrase Strategy*, Speaker A still says something true. It just so happens that, clarification notwithstanding, he does not affirm 'chairs exist' in the most literal and straightforward fashion possible. This seems to be an even less plausible and charitable interpretation of everyday discourse. It is often the case that someone mistakes one thing for another and talks falsely about it. It is much less often that someone misunderstands what he himself is saying.

Now, is it possible for someone to talk about tables and chairs and not say something false? Yes, so long as they are aware of what they are saying. Where physics students can now say false things and still communicate something true,

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[34] From page 166 of *Objects and Persons*

metaphysicians who accept *compositional nihilism* (and *existence monism*) can say false things and still communicate something true. Their talk of tables and chairs are shorthand for more ontologically precise claims. Thus, *Error Theory* for everyday discourse holds, but more ontologically serious people can utilize a restricted version of *Paraphrase Strategy*.

Section Seven

Thus far, we have argued for (N), in large part by pushing hard on (U) and (C). The goal of the paper, however, is to argue for both (N) and (M). (M) is metaphysically dependent on (N). Above, it was said that a true theory of composition should be necessarily true. According to (N), then, all worlds have only simple objects. If there were a possible world with a composite object then (M) would be false.[35] I hold (M) to be necessarily true. Therefore, proving (M) requires first proving (N).

Still, there are other theories of composition that do not entail (M). Most proponents of *compositional nihilism*, in fact, would deny (M).[36] Even some of those who offer arguments in favor of (M), like Schaffer, ultimately subscribe to some other position. For most, *pluralist nihilism* is the preferred alternative. According to *pluralist nihilism*, the simples that exist in a world are relatively small. These simples gather and appear, to us, to form objects. For example, what one might call a chair is, in fact, a collection of very small simples arranged chair-wise.

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[35] Given that an instance of composition requires a composite object that is not identical to one of its parts. I assume this is a fairly safe assumption.

[36] For examples, see Sider, Dorr, and Heller – although Heller is a special case.

One point in favor of *existence monism* is ontological simplicity. One of the original motivations for *compositional nihilism* was the desire for a simple ontology – why posit objects that do not serve some sort of purpose or provide an explanation, and are just unnecessary metaphysical baggage? The same methodological principle applies to most areas; as a species of Ockham's razor, it tips the scales in favor of numerical simplicity. If *existence monism* is able to explain the world just as well as *pluralist nihilism*, then we should methodologically prefer it. Lacking a satisfactory argument for a plurality of simples, we should be inclined to favor an ontology that posits only one object, one simple, namely the world. But this is relevant only if the two views are explanatory equals. Most proponents of *pluralist nihilism* will deny this.

Such a denial gains much of its plausibility by a simple line of reasoning. If we are going to admit that there are no large objects, then our simples, likewise, should not be large. Consider our chair. We would originally have said that this chair is composed of its legs and its top. Those parts, likewise, are composed of wood chunks. And the wood chunks are composed of smaller wood pieces, and so on down the line until we reach electrons and quarks. But once we accept (N), said table, legs, and wood chunks do not exist. The only things that exist, then, are those smallest of objects, electrons and quarks – or whatever physics tells us is below them.

This reasoning is misguided, however. Yes, our original approach to composition held that larger composite objects were composed of smaller objects. This certainly would be true if composition ever occurred. But it doesn't. Why,

then, should we subject ourselves to such a restriction? There is even precedence for supposing otherwise.

The parts need not be prior to the whole. Consider a circle. We can split the circle into two semicircles, but would we want to say that the *circularity* of the circle depends upon the semicircles? Certainly not – they're called semicircles for a reason! Mathematically, a circle is an infinite number of points R distance from some fixed point. Maybe, then, the *circularity* of the circle is dependent upon these points and some spatial relations. Fine. But even if we take this as our picture, then the semicircles are not prior to the circle. Instead, the circle is prior to the semicircles via the points of which said circle is composed. Even if we accept this metaphorical "point nihilism", we see that the chain of priority assumed in physics-like reasoning – one thing being composed by smaller, more fundamental, parts, which are in turn composed of smaller, more fundamental parts – is broken. Establishing priority is more complex than simply stating, "smaller, therefore prior."

In his paper, "Monism: The Priority of the Whole", Schaffer argues that mereological wholes are prior to their parts. He takes this thesis to its extreme, and concludes that in actuality "the cosmos is fundamental," (Schaffer 31). Schaffer believes in *priority monism*. Unlike *existence monism*, this view is committed to the existence of composite objects. The two views agree that fundamental metaphysics ends at the world level. *Priority monism* does so by claiming that the various parts of the world are ultimately grounded in the world itself. *Existence monism* does so by claiming that there just is the world itself. For

the sake of exposition, in what follows I will sometimes blur the distinction between the two views. But because both deny the necessity of "micro-oriented" grounding, this is unproblematic.

According to Leibniz, "a composite is nothing else than a collection or *aggregatum* of simple substances" (1968, 251). Thus, we would say the building truly gets its shape from the bricks. But, Schaffer argues, it is a mistake to say that all composites are *mere aggregates*. As the circle example above shows, there are at least two different types of composites: "*mere aggregates* and *integrated wholes*," a pile of sand being an example of the former and a circle and an organism being examples of the latter (Schaffer 47).

As far as common sense goes, Schaffer suggests that priority bifurcates in these two instances. When the whole exhibits unity, as an organism does, we say that it is prior to its parts. As Aristotle tells us**, "**it's not a hand in just any and every old way that's a part of a man, but one that is capable of fulfilling is work, *ergo*, one that is 'ensouled'; but not ensouled, not a part," (1985, 28). The functions of the human hand are defined by their integration in the whole organism. Thus, facts about the human's parts are grounded in facts about the whole human. This is an example of "macro-oriented" grounding, and therefore acts as a counterexample to the necessity of "micro-oriented" grounding.

Once we allow for instances of "macro-oriented" grounding, it becomes an open question what the appropriate direction of grounding is. Is the composite a *mere aggregate* or is it an *integrated whole*? Returning to our comparison between *pluralist nihilism* and *existence monism* we can ask the following

question: does the world exhibit a level of unity like that of a *mere aggregate* or like that of an *integrated whole*? If the former, then there is reason to suppose that *pluralist nihilism* is true. If the latter, then there is reason to suppose that *existence monism* is true.

Why might one think that the world as a whole is an *integrated whole*? Perhaps I am being overly optimistic, but it seems to me as if the world is much more like a cat than a pile of sand. Still, it is not completely unreasonable for some, in a more pessimistic mood, to see the world as a giant, messy collection of more-or-less independent events. The above arguments for ontological simplicity and "macro-oriented" grounding are meant merely to support the plausibility of *existence monism*. More aggressive arguments against *pluralist nihilism* will follow in the next section.

Section Eight

In this section I will address a problem that, as I see it, sharply differentiates *existence monism* from *pluralist nihilism*. How does a proponent of *existence monism* explain variation across space-time? That is, given that the world is not uniformly green or red, circular or square, cold or hot, and instead exhibits an enormous amount of complexity and variation, *existence monism* needs to provide some explanation of said phenomena. In the first part of this section, I will explicate the problem further, and explain how it vividly differentiates *existence monism* and *pluralist nihilism*. In the second part, I will attempt to present what has thus far been said on the matter. Schaffer, Horgan, et al., in developing their ontologies, have said that only the world as a whole has

fundamental properties. In response to the initial answer of world-level property attribution by these philosophers, Sider has gone through an interesting progression of thought. It is worthwhile to observe how he has assuaged (some of) his own qualms about *existence monism*. Last, I argue that spatiotemporal variation is absolutely no problem at all for *existence monism* and may, in fact, actually be a problem for *pluralist nihilism*.

In this section, only *existence monism* and *pluralist nihilism* will be given serious consideration. I assume (at least for the sake of expediency) that we have narrowed down the set of possible ontologies to these two.

Recall that there are at least three semantic theories one could have to reconcile one's austere ontology with everyday discourse. All three, however, will have to be adapted to the specific ontology. Thus, whether one proscribes to *Error Theory* or *Paraphrase Strategy* or *Indirect Correspondence Theory*, the manner in which semantics interacts with ontology is different. Consider *Paraphrase Strategy*. As presented by van Inwagen, *Paraphrase Strategy* says that everyday claims like 'The sun moved behind the trees' are shorthand for claims about a more complex series of facts. But the facts according to *existence monism* are different than those according to *pluralist nihilism*.

The two theories differ in the number of simples posited, and the spatio-temporal extension of the simples. Loosely speaking, *existence monism* takes there to be one very large simple, and *pluralist nihilism* takes there to be many very small simples. This affects the way in which semantics identifies true claims

because, at least *prima facie*, truth should be grounded in the fundamental reality of the world. What that fundamental reality is, therefore, is important.

Take an utterance of 'There exists a chair'. Assume *Paraphrase Strategy*. According to *pluralist nihilism*, such a sentence, if it is true, is not true in virtue of there being an object denoted by 'chair' and said object existing in the sense intended. Instead, the utterance is made true by the simples involved in such a claim. Here, we have a set of simples arranged "table-wise" and these simples, by being in such a configuration, make the claim true. It is as if the simples really did compose a new object. In reality, of course, no such object exists. Nonetheless the utterance is true.

The story told by *existence monism* is similar. While there is no object or class of objects denoted by 'chair', nonetheless such a claim is true because of how the simple is configured. Using Schaffer's terminology, we can say that the world is "table-y" in the relevant location. The world is such that there appears to be a unique object that exists. In reality, of course, no such object exists. Nonetheless the utterance is true.[37]

Now, while a very rough sketch was made of the analogous replies *existence monism* and *pluralist nihilism* can give, more must presently be said. The answer given by the latter view is, I will grant, a more intuitive answer. This is because *pluralist nihilism* seems to be reinforced by the advancement of science. When science explains phenomena, it does so by positing various entities, relations, and properties. For example, one's perception of an apple

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[37] For the sake of expediency, I will speak as if the theory preserves truth conditions. Recall that in Section Six I argued that many sentences will be nearly as good as true. I assume that the translation between the two will be unproblematic.

falling to the ground is caused in part by there being two objects, an apple and a planet, and a force of attraction – gravity – between the two. Similarly, children of blue-eyed parents also have blue eyes because each parent transfers an allele that codes for blue eyes.

Of course, *pluralist nihilism* does not want to posit the existence of things like apples, planets, and alleles. Still, there is a trend in science – particularly when physics is involved – where the features of one object are explained via the features of smaller objects. Thus, a glass of water behaves the way it does because of the hydrogen bonds present between H_2O molecules. Hydrogen bonding among H_2O molecules is explained by the interaction of electrons. And if the evidence were such, science would explain the interaction of electrons through some other entity, so on down the line. One version of *pluralist nihilism* says to take the most fundamental of our scientific posits as being the only existing material things.[38] These posits, whatever they may be, are the only material objects that exist.

Thus *existence monism*'s method of explanation appears to go in the counterintuitive direction. Why would the behavior of the glass of water be explained by the structure of the whole world when science seems to tell us that, first, the behavior is explained by interaction between molecules and, second, the "direction" of explanation is towards smaller entities? Because the material world is just the one with which science is concerned, one would expect a philosophical

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[38] What these are, of course, have changed over time. Nonetheless Sider's *pluralist nihilism* would say that it is the actually fundamental posits he means, and not the ones supposed at the time to be fundamental. We're only human.

theory about the material world to be backed by scientific knowledge. Yet there seems to be no such support for *existence monism*.[39]

Prima facie, such an explanation is trivial for *pluralist nihilism* (and even more ordinary ontologies) in that variation of instantiated properties is explained just by variation of relevant scientific objects, properties, etc. There appears to be a chair in this region of space-time because there are some simples arranged chair-wise. Some collection of fundamental features exhibit what we perceive as solidity, and where these features are not present, the perceived solidity is also not present.

Pluralist nihilism can say, roughly, that there is some property P, and said property is affixed to a particular simple, x, such that Px. Similarly, a relation R holds between two simples, x and y, such that Rxy. A few strongly intuitive theories about the interaction of objects with space-time would finish the picture. For instance, if a region of space-time contains an object x that has property P, property P will (usually) be exhibited, present, or observable in that region. If such a property is perceivable, then we perceive it in this region just because the relevant object occupies said region.

The picture for *existence monism* is somewhat more complicated. As noted above, fundamental features of the world are properties of the world *simpliciter*. There are no further material objects for properties to adhere to. Thus, there needs to be some way to account for variation across space-time. If we said that there is some property P, and said property is affixed to a particular simple, x,

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[39] This might be too hasty. I later provide some small arguments against this claim. Also see Schaffer's "Monism: The Priority of the Whole", in which he argues that quantum entanglement systems add credence to monism.

such that Px, we would be in trouble. There is only one simple: the world. *Prima facie,* many properties do not apply to the world *simpliciter. Brownness* is not a property of the world as a whole. Instead, we would want to say that *brownness* is a property exhibited in only some space-time regions that the world occupies. Further, we do not want to say that, instead of *brownness,* the world has the property of *brownness-at-such-and-such-a-region.* Such properties at least appear to be gerrymandered, and are therefore to be avoided. *Existence monism* should at least try to provide a better answer that is not committed to such properties. This immediately complicates the picture because some additional notion is required to make sense of variation across space-time. Property affixation is no longer representable by something as simple as Px.

But there is reason to think that an alternative picture could be given. In his paper, "Extended Simples", Kris McDaniel presents the *Principle of Qualitative Variation*:

> (PQV): For any object x, regions R+, R1, and R2, and intrinsic properties F1 and F2, if (i) x occupies R+, (ii) R1 and R2 are non-overlapping proper subregions of R+, (iii) F1 is not identical to F2, (iv) x instantiates F1 at R1 but does not instantiate F2 at R1, and (v) x instantiates F2 at R2 but does not instantiate F1 at R2, then there are two objects x1 and x2 such that (a) x1 is not identical to x2, (b) x1 and x2 are non-overlapping proper parts of x, and (c) x1 instantiates F1 and x2 instantiates F2.

This principle, I think, gets at the above problem *existence monism* faces in regards to spatio-temporal variation. If the world instantiates a property in one region but not another – and surely it does – then according to (PQV) the world has proper parts. This, of course, contradicts *existence monism*, for according to it there are no proper parts of any material object.

Pluralist nihilism is not pressured by (PQV) because it need not account for variation in its posited simples. That is, it is not obvious that a simple posited by *pluralist nihilism* instantiates different properties in different regions the simple occupies.[40] If it could be demonstrated that *pluralist nihilism*'s simples still contain spatio-temporal variation, then the two theories would be equal on this front. But a demonstration of this kind is beyond both the capability and scope of this paper; I only later raise some worries against assuming otherwise.

McDaniel's paper focuses on problems of extension, but the dialectic can be generalized to any intrinsic property. (PQV), along with the intrinsicality of shape, implies the impossibility of extended simples, and therefore the denial of *existence monism*.[41] At this juncture we could deny either (PQV) or the intrinsicality of shape. Ideally, a proponent of *existence monism* will deny (PQV); otherwise, one merely dodges the extension-problem to be mowed down by the salvo of almost-any-other-property-problems.[42] McDaniel suggests two ways to reject (PQV). One option, developed by Markosian, involves an appeal to stuff or matter as substances themselves, along with material objects, space-time, and whatever else one may be committed to. I would like to avoid such a move if possible, on account of ontological parsimony. The other option is to index intrinsic properties to regions of space-time.

Recall that according to *perdurantism* objects extend over both space and time. For example, a chair does not wholly occupy some region of space. Rather,

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[40] In fact, according to Sider's construction of *pluralist nihilism* it is impossible.

[41] The exact argument turns on the Doctrine of Arbitrary Undetatched Parts (DAUP), first presented by van Inwagen in "The Doctrine of Arbitrary Undetatched Parts".

[42] I am also, for the record, moved by McDaniel's arguments for the extrinsic nature of shape.

the chair has a part at some time, t1, that occupies some region of space, r1. At some other time, t2, the chair has a part that occupies some region of space, r2 (that may or may not be identical to r1). In this way, objects are "worm-like" entities that *perdure* through time. *Perdurantism* makes use of temporal parts. But is there a way to recreate the flexibility *perdurantism* offers in talking about the properties of something varying across time without committing oneself to temporal parts?

Suppose properties were not held by objects *simpliciter*, but rather were indexed to a particular time. Thus, property affixation can be thought of as a three part relation holding between object, property, and instant or interval of time. Additionally, we take a *perdurantism*-like conception of objects. Objects extend through time, and the image remains that of a "worm-like" object with spatio-temporal extension. This is a new view, so let us call it *extended simple persistence*. I define *ESP* as the denial of the following two claims: (1) Objects are wholly present at every time during which they persist, and (2) Objects have temporal proper parts. While it shares elements with both *endurantism* and *perdurantism*, it is not a version of either. Like *perdurantism*, objects are extended through space-time; like *endurantism*, objects lack proper parts - an arbitrary temporal slice, or any slice for that matter, is not a proper part of the object.[43] The object is temporally simple. This view agrees with *endurantism* in

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[43] I believe this is a denial of an analogous principle to van Inwagen's Doctrine of Arbitrary Undetached Parts (DAUP): "(DAUP): Necessarily, for every material object M, if R is the region of space occupied by M, and if sub-R is any occupiable sub-region of R whatever, there exists a material object that occupies the region sub-R and which is a part of M." Replace a region of space with a region of time and we get: Doctrine of Arbitrary Undetached Temporal Parts (DAUTP): Necessarily, for every material object M, if T is the region of time occupied by M, and if

that it denies the existence of temporal parts. For those who are inclined towards *perdurantism* but are worried about temporal parts – as I am – this is an attractive view.[44]

Acceptance of e*xtended simple persistence* is analogous to acceptance of (spatially) extended simples. Likewise, acceptance of *maximally simple persistence* is analogous to acceptance of (maximally) extended simples. That is to say, *MSP* is the temporal equivalent of the claim that there is only one spatially extended object. It is *MSP*, and not the weaker *ESP*, that is required for the spatio-temporally extended version of *existence monism*.

The strategy of temporal indexing can be adapted for spatial variation. By denying (PQV), we claim that intrinsic properties need not be "wholly" instantiated by objects. That is, as with temporal indexing, we index properties to a spatial region. Thus, property affixation can be thought of as a three part relation holding between object, property, and point or region of space.[45] This has the additional benefit of allowing one to collapse the two notions of temporal indexing and spatial indexing into one notion of spatio-temporal indexing. After all, if we are committed to the view that time acts very much like an additional spatial dimension, then why not suppose that spatial property indexing functions the same as temporal property indexing? And if they function identically, why not

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sub-T is any occupiable sub-region of T whatever, there exists a material object that occupies the region sub-T and which is a part of M.

[44] I am not 100% convinced that a spatio-temporally extended world-view is better than a merely spatially extended world-view. But because I assume that if I can successfully defend the former then I can successfully defend the latter, I will continue arguing for *MSP.*

[45] Sider explicitly denies this position in "Monism and Statespace Structure", footnote 8.

further suppose that they are actually two sides of the same spatio-temporal indexing coin?

Of course, this has the unfortunate implication that intrinsic properties are not intrinsic in the same sense traditionally assumed; intrinsic properties rely just as much on space-time as on the object itself. Is this so problematic, though? The thought-experiment to test intrinsicality is to imagine perfect duplicates of the object, and see if every duplicate has the property in question. Recall that the ontology being defended by *existence monism* is one in which there is one single object extended through space and time. The only duplicate is one which is itself the single object of the world – the world itself. There are no other material objects with which the world can interact. Thus, all properties that are traditionally assumed to be extrinsic are, by definition, intrinsic.

But surely we want to say that the property *redness* is different in some way than the property *being a father*. Spatio-temporal property indexing affords just such a difference. To give a very quick and dirty picture we need to introduce some terminology. A *duplicate region* of r is a possible region of space-time that is trans-world identical to an actual region of space-time r.[46] A *maximal duplicate set* of r is the set of all possible worlds that contain a *duplicate region* of r. A property is a faux-intrinsic property of r if and only if it is exhibited in r in the actual world and in a *duplicate region* of r in every member of r's *maximal duplicate set*. A property is a faux-extrinsic property of r if and only if it is exhibited in r in the actual world and not in a *duplicate region* of r in at least one member of r's *maximal duplicate set*. Recall the above properties of *redness* and

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[46] I am unsure if this definition can be changed to accommodate counterpart theory.

being a father. According to our rough picture, *redness* is faux-intrinsic because, for every actual region, if that region exhibits *redness* then in all members of that region's *maximal duplicate set* there is a *duplicate region* that exhibits *redness*. *Being a father* is faux-extrinsic because, for every actual region, if that region exhibits *being a father* then in at least one member of that region's *maximal duplicate set* there is a *duplicate region* that does not exhibit *being a father.* This has the disadvantage of somewhat conflating the necessary/contingent distinction with the intrinsic/extrinsic distinction. But I am unsure how any interesting properties could be necessarily indexed to a particular region. Let us then take this as, at the very least, the beginning of a more exact distinction.

Despite being restricted to a monistic ontology, we have established a robust metaphysics that maintains many of the distinctions commonly acknowledged in the field. But the problem of spatio-temporal variation is not just a metaphysical one. How to interpret 'The world is red here and not red here', as a scientific claim, is not immediately obvious. It remains, therefore, to reconcile *existence monism* with science. Sider constructs a well-structured theory with which many of the semantic problems science poses to *existence monism* can be answered. We have already presented the general problem facing *compositional nihilism*. If we accept that there is something about the world that an utterance of 'There exists a chair' gets right, then we must explain why this is so, even though we deny that there are any such objects as chairs. Sider defines this as the *material adequacy* constraint. A theory is *materially adequate* if it can reconstruct ordinary sentences into metaphysically-consistent sentences. Thus a *materially*

adequate view is one that offers answers that reconcile everyday experience and science with the underlying metaphysics. The answers given, however, will be particular to the theory because the ontology of each is different.

Sider acknowledges this difference, and uses it as a primary motivation against *existence monism*.[47] In "Monism and Statespace Structure", he says "[T]he monist faces a special challenge. For by "piggybacking" on scientific explanations, pluralists (i.e. monism's opponents) can give a detailed grounding story in a way that monists cannot," (Sider, 4).

There are some implicit steps, however, required to successfully arrive at this challenge to *monism*. First, it must be that "scientifically ultimate facts" do in fact explain to some extent how the world is. Let us assume this is true; it would be a knock against the view if *existence monism*, rather than *pluralist nihilism*, invalidated all of science.

But is it the case that *pluralist nihilism* can, or even should, "piggyback on science" in a way that *existence monism* cannot? Sider says that any reconciliation of everyday experience (represented by 'There exists a chair' and 'I observe an inflating balloon') follows two steps. The first step is to consult one's scientific base, with respect to the perception of objects, until one has arrived at what Sider calls "scientifically ultimate facts". Such facts, he says, are those for which no further (scientific) explanations are given.

Because our goal is to demonstrate that everyday experiences reflect in some way how the world is, we want to ground such experiences in what is fundamental. This requires grounding the results of step one in the fundamental

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[47] He actually argues, explicitly, against both *priority monism* and *existence monism*.

reality of the world. That is, we need to now explain scientific facts in terms of metaphysical facts. This is where the two views deviate. *Pluralist nihilism* can say that "the 'scientifically ultimate features' are in fact natural features," (Sider 4). Here, then, fundamental scientific fact is identical to fundamental metaphysical reality, and the two-step explanation is instead one; there is no further work for *pluralist nihilism.*

Further, Sider claims that such a move is not available to *existence monism.* This is because those ultimate features of science are not features of the whole world. Because the only object that exists, according to *existence monism,* is the world as a whole, fundamental features must be fundamental features of the world. Thus, ultimate features of science – which tend to describe features of smallish objects and regions of space-time – need to be "translated" into features of the world.

Sider accomplishes this by appeal to the members and structure of the statespace. Take *M* to be the set of world-features that the world has or might have had. There is a certain way to arrange these, or at least sub-sets of these, in a special, appropriate manner. Thus, mass properties can be lined up in a continuum starting with *having zero mass* and continuing with *having one gram of mass, having two grams of mass,* and so on infinitely. "Anyone who doesn't know that that's the right way to line up the mass properties is missing some information about mass," (Sider 8). Further, the properties of spatial location can also be arranged in a grid-like structure.[48] Take all properties that might be instantiated by

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[48] Presumably this could also be expanded to accommodate 4-dimensionalism with spatio-temporal location.

the world. These properties, when combined with other properties (including space-time), provide an ordered structure of the world. This structure is statespace structure.

This additional notion of statespace structure allows one to construct a notion of truth that preserves *material adequacy*. Suppose that fundamental scientific posits existed. These scientific posits also provide a structure to the world. But according to *existence monism*, tables, chairs, and fundamental scientific posits do not exist. Still, the world also has a certain structure, *M*. Roughly speaking, these structures can be compared for identity:

> In slightly more detail: "microfictions" will be defined as fictional accounts of a world of subworld things and their natural features. The monist can use the structure of M to pick out one microfiction as being "apt". The apt microfiction is, roughly, the one that would give rise to a statespace whose structure matches the structure that M actually has, if statespace structure were generated combinatorially from the number and nature of natural subworld features. And finally, the monist can say that the world is *as if* the apt microfiction is true.

One then can say that scientific discovery picks out a particular microfiction, completing the first step of reconciliation required for *material adequacy*. Then, *existence monism* can say that this is the apt microfiction, the structure of which corresponds with the structure *M* of the world. Finally, we say that the apt microfiction is the one grounded in metaphysical world-features.

Microfictionalism is, according to Sider, the most viable option for *existence monism*. It is a way to account for spatio-temporal variation, which, as noted, is one of the biggest problems facing the view. To that extent, Sider's construction is nothing but beneficial for *existence monism*. Nevertheless there are some assumptions made in the paper itself that I would contest.

Sider's presentation of *microfictionalism* provides *existence monism* with a tool to move from fundamental science to fundamental metaphysics. This is only a problem, however, if the scientifically ultimate facts are not already features of the world. It is true that it is the standard of most sciences, physics in particular, to posit smaller entities to explain larger, more complex entities. Thus, the properties of a chair are explained by the properties of the relevant molecules, which are in turn explained by the properties of the relevant subatomic particles. As it stands, fields or strings or particles or whatever, according to physics, might explain interactions between all sorts of objects.

But such a methodology – the explanation of wider-scope features through smaller-scope features – is not uniformly followed. Take, for example, the field of Biology. Here, the central focus is on the scientific posits of life, of organisms that have life, and the features of things with life. One might claim that life could be reduced to more fundamental features of chemistry, which in turn could be reduced to more fundamental features of physics. I contest that this is too hasty. For reasons outlined elsewhere, I insist that supervenience of one set of properties upon another does not warrant the establishment of an *explains* relation, and is therefore not sufficient for reduction.[49] Having established this, I question how Sider can be confident that science will establish any meaningful "fundamental" features. According to Sider, scientific fundamentality holds just in case no further explanation is given. But perhaps we should be more careful when we talk of "explanation".

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[49] The notion stems from a paper written on the causal efficacy of value properties in response to Oddie (2005) and Harman's challenge.

Consider the sub-discipline of Ecology. Here, ecologists posit fairly large and complex entities with their own features, like populations and ecosystems. These entities are used to explain smaller entities, also with their own features: individual organisms and sets of organisms across space and time, etc. Is the former explained by the latter or is the latter explained by the former? Further complicating the picture is that, once we avail ourselves of such notions, we may use them to replace use of others. For example, the introduction and removal of various species from a location across time can be expressed using ecological succession. Shrubs did not enter a previously barren region; there is an ecological community in pioneering stage. Further, ecology attempts to explain population flux as a function of ecosystem dynamics. A food web is a form of explanation. If one were to attempt to explain a food web in some other terms, such as the interaction between predator and prey, I suspect an ecologist might note that he was getting it backward. The food web explains the interaction, not *vice versa*.

In fact, *pluralist nihilism* needs something stronger than the claim that there are scientifically fundamental features. The scientifically ultimate features must also be the scientifically smallest features. Suppose that this were not the case. For example, suppose that the world consisted of spherical objects and that the property of *being a sphere* were a scientifically ultimate fact. Further, suppose that science also told us that there existed hemispheres that were parts of these spheres. The property of *being a hemisphere* might, then, be explained by the composite objects' features. *Pluralist nihilism* would then run into trouble. Extrapolating from Sider's method, the fundamental features of the world would

include *being a sphere*. Further, *pluralist nihilism* denies the existence of hemisphere objects, because they are not unexplained. This places the theory in the same boat as *existence monism* because now both are left with simples that exhibit spatiotemporal variation. Once we accept that science might posits objects that are "too small", we can break the link between fundamentality and spatial minimalism.

I suspect this rather hokey example gets at a more general worry about Sider's reconciliation strategy. Consider his presentation of the first step of establishing *material adequacy*: "At the end of stage one, you will have explained the size of the balloon in terms of certain 'scientifically ultimate facts': whatever scientific facts you cited and did not further explain," (Sider 4). The worry is that Sider seems to assume that the *explains* relation,[50] as used by science, is transitive and asymmetric. But is this really the case?

It seems entirely possible for the *explains* relation to follow any number of odd paths. Suppose in some world science explained the features of anything significantly large, like oceans, planets, and galaxies, in terms of features with smaller scope, and explained the features of anything significantly small, like electrons, molecules, and microscopic organisms, in terms of features with wider scope. In this world, the fundamental objects or features – if there are any – are neither particularly large nor particularly small. The *explains* relation then ends somewhere in the middle of the continuum of size. Also consider a world in which the chain of explanation is circular; the smallest posits are explained by the

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[50] Or whatever notion Sider means, exactly. I do not think the exact ontology of whatever is meant by 'explains' is relevant to the worry.

largest posits. Asymmetry fails to hold in such a world, which results in there being *no* unexplained entities. Perhaps it is also possible for there to be unexplained posits of varying size. Thus, in one world electron-sized objects are unexplained, as are chair-sized objects. Transitivity might also fail to hold; we have already considered a world in which things are explained almost haphazardly in either direction – the actual world. In all the above cases the fundamental objects of the world will exhibit spatio-temporal diversity. Subscribing to *pluralist nihilism* here does not confer any advantage over *existence monism*.

It is important to clarify the strength of the above notion of possibility. The above worlds are all at least conceptually possible. One might, though, insist that the above worlds are not nomologically possible, and therefore they are irrelevant to Sider's account of fundamental scientific posits. To this I reply: what law of science is there that denies the possibility of these worlds? It is hard to imagine any scientific law that introduces the notions "explains" and "explanation". Some scientific laws deal with notions of "causality". Others simply predict statespace structures based upon initial conditions. None, that I know of, provide an account of "explanation".[51]

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[51] Objection (Kris McDaniel): "But they might still posit explanations that rule out worlds in which the properties of medium sized things are fundamental. Isn't that what is really at issue?" Reply: No. Sider defines "fundamental" as those that are unexplained. Science doesn't tell us what it means to be unexplained. There's nothing about science, independent of philosophy of science or metaphysics, that tells us what explanations are. Above, I argued that ecologists explain biological facts with ecological facts, and suggested that nothing in physics prevents us from talking about only atoms as opposed to quarks. In short, while science is in the business of providing explanations, it does not have a well-defined use of explanations, or at least not one that rules out the above counterexamples. They *might* rule out such worlds, but it is not obvious that they *do*.

The introduction of "explanation" might involve some meta-scientific theory. But I suspect such a theory would be properly classified as a metaphysical constraint.[52] Thus I conclude that the above worlds are nomologically possible – or at least their nomological possibility is epistemically possible. Because they are nomologically possible, they pose as counterexamples to the assumption that the fundamental scientific posits must be small and not exhibit spatio-temporal variation.

Let us now move from the negative account to the positive account. I wish to now present a somewhat independent theory of spatio-temporal variation. It is presented, certainly, with full awareness of the challenges already raised. Nevertheless I believe the line of reasoning approaches the problem from a slightly different direction. In particular, I will talk primarily in terms of objects, instead of features. I also depart from Schaffer, Sider, et al. in some significantly fundamental supplementary theories. For example, I explicitly deny super-substantivalism. (In short, super-substantivalism is the claim that material objects just are regions of space or space-time. The two are identical.) Such commitments lead to a somewhat shifted discussion of spatio-temporal variation.

What an electron is, science can tell us. What an object is, metaphysics can tell us. Thus, there is a disconnect between nomological possibility and metaphysical possibility. Surely, it is metaphysically possible for electrons not to

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[52] It is important to distinguish "explanation" from "grounding". Theories about the latter might be empirical, and therefore reflect nomological possibility. But Sider cannot mean that explanation is simply grounding. For one, he would have used the word 'grounding'.

exist, or for light to be either a particle or a wave.[53] But the nomologically possible worlds are restricted by whatever the correct scientific laws are. It is a mistake, therefore, to assume that science is engaging in any meaningful metaphysics, or making any meaningful ontological claims.

I take ontology seriously, and I also take van Inwagen's Special Composition Question seriously. As a metaphysical principle, both *existence monism* and *pluralist nihilism* subscribe to (N). The difference between the two views, at the level of ontology, comes with the number and nature of these simples. This is reflected in *existence monism*'s commitment to (M).

I do not attempt to formulate *pluralist nihilism*, in part because I suspect there is no one formulation possible. *Pluralist nihilism*, like *compositional nihilism*, seems capable of holding distinct options within it. Sider implies just as much in his paper. If fundamental features are just the scientifically unexplained features, there is no reason to suppose that these features are fixed across possible worlds. Further, two proponents of *nihilism* could disagree on whether or not a theory with point-sized simples is preferable to one with extended simples.

What this shows us, however, is that the number of objects, according to *existence monism*, is fixed. All worlds contain the same number of objects: 1. What differs substantially, however, is the nature of this object. *Pluralist nihilism*, however, need not (and likely should not) fix the number of simples. This has the odd consequence that, without auxiliary theses, the set of possible worlds

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[53] Of course, Kripke would disagree: "…characteristic theoretical identifications…are not contingent but necessary truths," (p. 99). I take it that the identification of light with either a particle or a wave is such a theoretical identification. Perhaps what I mean to say above is that the thing that does what light - in our world - does might have been different in some other worlds.

according to *existence monism* overlaps with the set of possible worlds according to *pluralist nihilism*. To show why this is true, suppose Sider's account is right and the unexplained features of science are the fundamental features of metaphysics. If in some world, w1, the unexplained features of science were of the world, then the two views would be undifferentiable relative to w1. In other terms, the ontological simples in w1 according to *existence monism* correspond perfectly with the fundamental scientific posits – and therefore the ontological simples – in w1 according to *pluralist nihilism.* What does that entail, exactly? It entails that it is at least conceptually possible for science to posit an extended simple with spatiotemporal variation. That is, it is possible for some worlds according to *pluralist nihilism* to be identical to some worlds according to *existence monism*.

Now, if this possible, then Sider's arguments are in big trouble. As I see it, they are either diffused because the facts no longer stand in need of an explanation, or they will be equally employable against this particular world, w1. But if even a single world were like this, the whole of the advantage a proponent of *pluralist nihilism* seeks to gain is eliminated.

Trouble explaining spatio-temporal variation in one world is no less problematic than trouble explaining spatio-temporal variation in all worlds, at least insofar as an argument relying on metaphysical principles is concerned. Assume that quantum entanglements demonstrate that the fundamental features of the actual world are world-level. The actual world also exhibits spatio-temporal

variation. Thus, any argument Sider could employ against *existence monism* is equally applicable to his *pluralist nihilism*.

Sider can block this move by claiming that his theory is empirical. That is, his arguments can be taken to apply only if certain assumptions are met – namely, that the fundamental scientific features are small in scope. But then he is playing a dangerous game. With what strength is his theory to be taken? Certainly it would not be a metaphysically necessary theory. But, as I argued in Section Three, a proper answer to SCQ must be systematic and necessary. Sider's *pluralist nihilism*, insofar as it merely takes the fundamental scientific entities to be fundamental metaphysical entities, is a proper answer. Once contingent claims about the world are introduced, however, the strength of his answer diminishes.

It might very well be the case that this "piggybacking" on science that *pluralist nihilism* is so apt to do will, in fact, be reason to opt for an alternative. This is because – as has been hinted throughout this paper – it is not at all clear that science will give us completely formulized, non-vague answers. Science is pretty sloppy. I recall a conversation I once had with my Biology professor about the nature of life. Given that life is the central concept of the field, there is naturally much debate on what the term means, exactly. In discussing some of the main competing views, I asked which he thought was most accurate. He replied that it was likely that none of them were quite right. Fair enough, I thought. But he went on to say that likely no view would be able to correctly define life. That is, he saw life as a necessarily vague notion. I was absolutely floored. And then I read van Inwagen's *Material Beings*.

Nevertheless, the point stands that there is some reason to avoid metaphysical vagueness. Sider will likely agree that metaphysical vagueness is to be avoided, and that any scientific posit that introduces vagueness is unacceptable. But this is to place a bet on what the end result of science will be – a bet that *existence monism* does not need to make. The fact that monistic statespace structure might introduce indeterminacy then becomes an advantage for *existence monism*. Suppose there is a vague scientific posit – perhaps life. Introduction of vague terms is problematic and, at the least, one needs to explain how they function in relation to fundamental metaphysics. In *Material Beings*, for example, van Inwagen takes great pains to assuage the mess that vague truth and existence, as a result of vague life, cause. But according to Sider's *microfictionalism*, it is possible for there to be some sort of a disconnect between the fundamental metaphysical structure of the world and the microfictions that science's subworld entities create. Recall that *microfictionalism* works by matching the state-space structure provided by the world, *M,* to the state-space structure provided by fictional subworld entities and their features. But as Sider notes, "utterly different microfeature fictions F_1 and F_2 might give rise to microstatespace fictions M_{F1} and M_{F2}, each of which accurately describes *M*'s structure … If the structure of *M* does not single out a single way of talking about subworld entities and their natural features, then there would simply be no single correct way to talk in those terms," (Sider 14).

This is advantageous just because it allows for a notion of vagueness in truth. There is no unique actual microworld fiction, and for any life there are a

variety of microfeature fictions that accurately describe the actual structure of the world. So, returning to the example of vague life, there is sometimes no simple fact of the matter if some object is part of a life or not. That is, there is no well-defined demarcation of life in terms of subworld entities because no such demarcation exists. In Sider's terminology, all microstatespace fictions fail to match the fundamental statespace structure of the world, *M*. Thus, it is *as if* such an important concept as life is vague. The failure to eliminate vagueness comes from unwarranted (though perhaps unavoidable) attention to subworld features. *Existence monism*, it seems, entitles one to both deny metaphysical vagueness and affirm the robustness of intuitive concepts like life. Life, as a metaphysically real thing, is not a cluster of sub-world properties, nor is it a vague property. Life is just impossible to represent when we only avail ourselves of microfeature fictions.

The upshot of this is that there is room in *existence monism* for a metaphysical notion of life. Sider's *pluralist nihilism* cannot accommodate life because the only scientific entities that get "preserved" are the fundamental ones. Sider thinks that physics will provide the fundamental scientific entities. Physics does not even contain notions of life. So if not from physics, from whence comes the notion of life? *Existence monism*, in contrast, can provide an alternative, metaphysical, account of life. It does not suffer from the physics-lust that Sider's theory does.

We can now see that *pluralist nihilism*, or at least as constructed by Sider, has a built-in problem. For if the theory "piggybacks" onto whatever science posits, then it is also forced to accept whatever vague, contradictory, or otherwise

unattractive claims science make, so long as said claims are unexplained. Like a lemming, proponents of Sider's *pluralist nihilism* risk following scientists into the metaphorical water. Granted, life is something that science will likely say is explained in terms of something else. But there is still the risk of some other scientific posit being both unexplained and vague. *Existence monism*, or at least as constructed by Sider, allows one to in some sense distance – but not discredit – these unattractive claims from one's fundamental metaphysics. We can have our cake and eat it too.

There are other reasons to view non-monistic versions of *compositional nihilism* with trepidation. As noted by Sosa, Schaffer, and others, *compositional nihilism* is incompatible with the possibility of a gunky world. 'Gunk' is a term used to describe the nature of material objects. In a gunky world, all material objects are composite objects; for every material object there is some other material object that is its proper part. Like a chunk of amorphous gunk, we can carve any part of it at any point and still be able to carve it up further.

It is, I think, fairly clear how *compositional nihilism* is incompatible with the possibility of gunk. Such a theory assumes that there is a smallest material object – that at some point along the line matter simply cannot be further divided.[54] Given that we have thus far insisted that a theory of composition be necessarily true, it is even easier to run an argument against *compositional nihilism*:[55]

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[54] This is not to say, though, that space itself is discrete. It is important here to keep in mind the distinction between space and the material objects that occupy it.

[55] I use the property of *extension*, Ex, simply to fill out the restricted quantifier. Given that □ [∀x: x ∈ M] Ex, the process simply is shortened.

(1) □ ([∃x: x ∈ M] Ex ⊃ ~[∃y: y ∈ M] (Pyx ^ x ≠ y)) [follows from (N)]
(2) ~◊ ~([∃x: x ∈ M] Ex ⊃ ~[∃y: y ∈ M] (Pyx ^ x ≠ y)) [from (1)]
(3) ~◊ ([∃x: x ∈ M] Ex ^ [∃y: y ∈ M] (Pyx ^ x ≠ y) [from (2)]
(4) ~◊ ([∃x: x ∈ M] Ex ⊃ [∃y: y ∈ M] (Pyx ^ x ≠ y)[from (3)]
(5) ◊ ([∃x: x ∈ M] Ex ⊃ [∃y: y ∈ M] (Pyx ^ x ≠ y)) [possibility of *gunk theory*]
(6) (4) ^ (5) [conjunction]
(7) ⊥ [from (6)]

Of course, one could simply say that the argument is not sound because

(5) is false; gunk is simply metaphysically impossible. Admittedly, gunk seems

conceptually possible. We can imagine in our minds a world that just keeps

dividing: $1cm^3$ becomes $½ cm^3$ becomes $¼ cm^3$, etc. What is important here,

however, is metaphysical possibility, and there seems to be no immediate reason

to assume *gunk theory* is such. In fact, there may even be reason to suppose it is

not. First, how matter is divided into material objects is a metaphysical question.

True, electrons, protons, and quarks are the realm of physics. But what physics

tells us can be, as many philosophers say, modified to fit the correct metaphysics.

That is, even if physics posits such objects, this does not mean such objects

actually exist. Theories that utilize such posits can be cashed out in a sounder

world-view. Indeed, *pluralist nihilism*, and *compositional nihilism* in general, can

take a page out of the *existence monism* book.

In order to reconcile the complexity and variety in the world, *existence

monism* adopts some system of local variation. That is, within the extension of a

single object, properties are instantiated in some regions of space-time and not in

others. Properties of objects are thus indexed to space and time. Similarly,

suppose that physics continues to posit additional smaller objects, and somehow

establishes that there is no smallest one. *Pluralist nihilism* can accommodate this

by stating that physics is actually discovering facts about the local variation of

simples. This is possible because of the disconnect between discrete material objects and discrete space. Admittedly, this commits one to theses that he might not want, and indeed has reason to deny. But if the advancement of physics does not end up at some smallest object, *pluralist nihilism* is in trouble. All the more reason to favor *existence monism*.

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Capstone Summary

Here's a thought experiment. I have before me two slices of bread, a piece of ham, and a slice of cheese. They are set next to each other, not touching. What has to happen to make these scattered pieces of food become a sandwich? Do I need to put them together, ham and cheese inside the bread? Is that good enough to make a sandwich?

I want to make clear that I am not talking about when we think there is a sandwich. Most people think that when I put the various items together I form a sandwich. But someone thinking there is a sandwich is neither sufficient nor necessary for there being a sandwich. What if the bread, ham, and cheese were on Mars? Does that mean, because there is no one there to think there is a sandwich, that there is no sandwich? No. What if there were Martians that looked at the bread and the ham and the cheese but had no idea what sandwiches were? Does that mean, because the Martians do not think there is a sandwich there, that there is no sandwich? No. There is an objective reality of whether or not something exists. That is what I care about.

There is an ongoing debate in philosophy about the kinds of objects that exist. In particular, there is wide disagreement on the nature of composition. One way of framing the question of composition is, "under what circumstances do these things compose some additional thing?" For example, consider a regular, everyday table. It has various parts – legs, a top, and nuts and bolts. What is it that makes all these various parts a table? What "rules" are there that determine when the parts make a whole, when the wooden legs and metal bolts make a table?

The various answers to this kind of question can be structured in three main groups. I call these three groups *universalism*, *nihilism*, and *compatibilism*. *Universalism* claims that no matter what two things you consider, there is *always* some other thing that is composed. So, there is some thing whose parts are the tip of my nose and the Eiffel Tower. *Nihilism* claims that no matter what two things you consider, there is *never* some other thing that is composed. So, no matter what you do, the wooden legs and metal bolts will never compose a table. *Compatibilism* claims that only *sometimes* do two things compose an additional thing. Sometimes the various things in question will compose another object, and other times they won't; it depends on the circumstances

To help visualize the differences between the three views, let's return to our ham sandwich. To be very specific, let's name the things already here. There are two slices of bread. Call them bread1 and bread2. There is also a slice of ham. Call it ham1. There is also a slice of cheese. Call it cheese1. When is it such that these various things compose an additional object?

The most obvious answer is that it's just when you put the ham and the cheese between the bread that you make an additional object: a ham sandwich. This is a *compatibilism*-type answer because there are some rules that govern when there is an instance of composition, namely when ham1 and cheese1 are placed between bread1 and bread2. I'll return to this kind of answer and explain why it's problematic. But first let me explain the other answers.

A *universalism*-type answer would say that, for each of these things there is another thing. Thus, there is an object whose parts are bread1 and bread2,

another object whose parts are ham1 and cheese1, and another object whose parts are bread1, bread2, ham1, and cheese1. What are all these various objects? Who knows. Furthermore, it doesn't matter how far apart these things are from one another; they will always compose an object. So if I take the ham out of the bread, there is still an object. If I throw the ham on the floor, that same object exists. Even if I packed the cheese into a box and sent it on the next shuttle to outer space, that object would still exist. This thing, composed of bread1, bread2, ham1, and cheese1, always exists no matter how far apart the various parts are scattered across the world.

A *nihilism*-type answer would say that, no matter what happens, there will never be another thing. No matter how you arrange bread1, bread2, ham1, and cheese1, you will never have a ham sandwich. *Nihilism* therefore denies that ham sandwiches exist. In fact, it denies that anything that has parts exists. Therefore tables and chairs (and perhaps even people) do not exist.

One who is unfamiliar with the various arguments for and against these views may be puzzled as to why there is even a debate about this. Isn't it obvious, one might say, that *compatibilism* is true? Surely, there are rules that govern these sorts of interactions. Even more surely, we can do something to make a ham sandwich. But while it is true that this seems obvious, when one starts to think hard on the issue one realizes that there is a plethora of complications that quickly dilute the initial obviousness.

Recall what we said about the ham sandwich. It was just when we put the piece of ham and the piece of cheese inside the two pieces of bread that we made

a ham sandwich. But there is still a lot left unclear. The ham and the cheese need to be between the bread, but presumably we mean something stricter. If I have one piece of bread resting on top of the table, and the other underneath the table, it doesn't matter that the ham and the cheese are between the two slices of bread. There is no ham sandwich because the bread is too far apart.

Then how close do the two pieces of bread have to be to each other to make a ham sandwich? Perhaps the slices of bread need to be at most one inch apart. But that is an arbitrary answer. It seems ridiculous to say that there isn't a ham sandwich because the two pieces of bread are just over one inch apart, and that when we cross that distance of five millimeters all of a sudden there is a ham sandwich.

We want to say that the various parts have to be a certain distance from each other in order to make a ham sandwich. But we also want to say that there is no exact distance that marks the cutoff of ham sandwich and no ham sandwich. We're stuck. This is a version of what's known as the sorites paradox. In my paper, I use a more formal version of the sorites paradox to argue against *compatibilist*-type answers.

Let's give one more attempt for a *compatibilist*-type answer. What if the ham, cheese, and bread do not make a sandwich when they are scattered across the table because all the parts are not in contact? Further, when we bring the ham and the bread and the cheese close together, we make a sandwich not because the parts are a certain distance from one another, but because the parts are in contact. That seems a plausible answer. But here's a problem. Shake someone's hand. Did

you just create an object whose parts are you and the person whose hand you shook? Obviously not! But if being in contact with someone and creating an object is impossible, then so too is bread being in contact and creating a sandwich. What we say about the first case we must say about the second. Unless we accept the possibility that all sorts of things come into and out of existence at business meetings, then we are forced to abandon the "in contact" answer.

I argue for a particular type of *nihilism*. I do this in two ways. First, I argue for *nihilism* by demonstrating that *compatibilism* and *universalism* are false. Because *nihilism* is the only other alternative, *nihilism* has to be true. It's the last man standing. Second, I argue for *nihilism* by providing a positive account of the theory that eases the problems that come with the view.

Material composition (as it is called in the field) is an issue with far-reaching ramifications. The answers to the sorts of questions raised tell us what really exists. If the conclusions of my paper are right, then there really are no such things as tables, chairs, and ham sandwiches. That's a pretty far-reaching effect.

The practical implications are harder to see. We're not going to stop making ham sandwiches and eating them on tables while sitting in chairs. But we can compare my thesis to the Copernican Revolution. Both have massive ramifications on our beliefs about the way the world is. Both also have massive ramifications in the relevant disciplines. But both have little to no effect on day-to-day life. We still say things like "The sun moved behind the trees" even though we know they're not true. Likewise, we still say things like "I'm making a ham sandwich" even though we know they're not true.