8 | *Against Analytic Existence Entailments*

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My purpose in this essay is to present arguments for the falsity of a central premise of Amie Thomasson's meta-ontology: that there are such things as analytic existence entailments.[*]

My task is made difficult by the fact that I can find in Thomasson's work no examples of analytic existence entailments that strike me as actually having the features that such statements would have to have to do the work she wants them to do. Here is a sentence from *Ordinary Objects*[1] that is supposed to be an example of an analytic existence entailment ('analytic entailment' means no more than that the conditional so described is an analytic proposition[2]; the "entailment" is from antecedent to consequent):

If there are particles arranged chairwise, then there is a chair. (2007: 156)[3]

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[*] I am grateful to Amie Thomasson for valuable and stimulating conversation and correspondence about the topics discussed in this essay.

[1] Thomasson 2007: 156–7. In this essay, I discuss only the arguments of *Ordinary Objects*. Elsewhere (2016), I have examined (in the context of a wider examination of Thomasson's meta-ontology) the similar arguments of her recent book *Ontology Made Easy* (2015).

[2] Let us say that a sentence is analytic if a logically omniscient being who understood it perfectly would see, and would require no further resources to see, that it *had* to express a true proposition. Let us say that a *proposition* is analytic if it could be expressed by an analytic sentence. Thomasson devotes a significant proportion of *Ordinary Objects* to a defense of the thesis that (as I would phrase the thesis) there are analytic propositions. In my case, at least, no such defense was required: I am happy to say that there are analytic propositions.

[3] I have simplified the actual example by leaving parts of the antecedent out. The parts I have left out are redundant, given a sufficiently rich reading of 'arranged chairwise'. I will suppose that the sense of 'arranged chairwise' is indeed sufficiently rich to "get in" all the clauses in the antecedent of the sentence that is Thomasson's actual example.

And in his detailed and thoughtful review of *Ordinary Objects*, Jonathan Schaffer gives this example:

If there are particles arranged cupwise, then there is a cup. (2009: 142)[4]

But these will not do as examples of analytical existence entailments. Suppose, for example that someone said any of the following things:

Yes, I regard those two conditionals as analytically true. But that's not the end of the matter, for it's also analytically true that if there are particles arranged tablewise/cupwise, there are *six* tables/cups, each one at least one kilometer from the others.

Yes, I regard those conditionals as analytically true. And it's also analytically true that the table whose existence is necessitated by the fact that certain particles are arranged tablewise does not spatially overlap any of those particles, and it's also analytically true that the cup whose existence is necessitated by the fact that certain particles are arranged cupwise does not spatially overlap any of those particles.

Yes, I regard those conditionals as analytically true. It's an interesting fact, however, that in certain cases some of the particles that are arranged tablewise are not parts of the table whose existence that tablewise arrangement of particles necessitates and that in certain cases some of the particles that are arranged cupwise are not parts of the cup whose existence that cupwise arrangement of particles necessitates.

These three statements are logically consistent with "If there are particles arranged tablewise, then there is a table" and "If there are particles arranged cupwise, then there is a cup". But the intended sense of "analytic existence entailment" must (surely?) be such that an "analytic existence entailment" that relates the existence of particles arranged tablewise/cupwise to the existence of tables/cups is *not* logically

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[4] In general, Thomasson maintains, such statements will be true only if the count noun they turn on ('chair', 'cup') is a sortal term of the language in which they are made. So, for example, if four particles are "arranged squarely" (i.e., lie at the vertices of an imaginary square); but it would be possible to define 'arranged squarely' entirely in terms of the distances of four particles from one another (i.e., without using the crutch of an 'imaginary square'). Thomasson's position does not entail that 'If four particles are arranged squarely, then there is a square' is analytically true (or true at all), since 'square' is not a sortal term of English.

consistent with any of these statements. The intended sense of "analytic existence entailment" must be such that an "analytic existence entailment" that relates the existence of particles arranged tablewise/cupwise to the existence of tables/cups implies that particles arranged tablewise/cupwise bear a much more intimate relation to the table/cup whose existence their arrangement necessitates than the bare relation "necessitation of existence".

And what would that relation be? I suggest that a fully explicit "analytic existence entailment" would be of the following sort:

If there are particles arranged chairwise, then there is a (unique) chair such that (i) those particles are all parts of that chair and (ii) every part of that chair overlaps (shares at least one part with) at least one of those particles.[5]

Or, since the antecedent of this conditional speaks only of *particles* (which I take to be parts of material things that themselves have no proper parts) arranged chairwise and not of things-in-general arranged chairwise ("*x*s arranged chairwise"), we can simplify its consequent:

... then there is a (unique) chair such that a particle is a part of that chair if and only if it is one of those particles.

There are other, less precise words and phrases that might be used to formulate (more or less) the consequent of this conditional, words and phrases to which I have no real objection:

If there are particles arranged chairwise, then
– there is a (unique) chair such that those particles *constitute* that chair
– there is a (unique) chair such that those particles *make up* that chair
– there is a (unique) chair such that those particles *compose* that chair
– there is a (unique) chair such that those particles *form* that chair
– there is a (unique) chair such that those particles *are the ultimate parts of* that chair.

But let us settle on 'there is a (unique) chair such that a particle is a part of that chair if and only if it is one of those particles'. If there is any doubt about whether this is the proper way to frame an analytic existence entailment, consider the following candidate for such a statement

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[5] Or: ... such that something overlaps that chair if and only if it overlaps some of those particles.

(I thought of this because Thomasson makes frequent use of Ryle's famous "pair of gloves" example):

If there are a left-hand glove and a right-hand glove (pretty much indistinguishable apart from their chirality or "handedness"), and if they were manufactured together, and were intended to be worn at the same time by one person, then there is a pair of gloves.

(Let us abbreviate the antecedent of this conditional as 'there are a right-hand glove and a left-hand glove that are pairwise-related'. Its consequent is to be understood as asserting the existence of a single object, and not the existence of two objects, however intimately related.[6] That is, 'pair of gloves' is so to be so understood that the definite description "the pair of gloves on the table" is a singular term, as opposed to a definite *plural* description like "the two pairwise-related gloves on the table").

Anyone who accepts that statement (surely?) will accept *this* statement:

If there are a right-hand glove and a left-hand glove that are pairwise-related, then there is a pair of gloves such that a glove is a part of that pair if and only if it is either that right-hand glove or that left-hand glove.

We should not normally say that a right-hand glove was *a part of* a pair of gloves; we should normally say that it was *one of* a pair of gloves. I think that this is probably because we do not normally regard phrases like 'the pair of gloves on the hall table' as unequivocally singular terms. True, we say 'this pair of gloves *is*' and not 'this pair of gloves *are*', but we do seem not to be entirely certain about whether a pair of gloves is one object (with, to be sure, two maximally connected parts each of which is a glove) or two objects, two gloves. But if 'the pair of gloves on the table' is a singular term and if there *is* a pair of gloves on the table, and if Dexter

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[6] Thomasson finds the very general use of 'object' (or 'thing', 'entity', …) illustrated by this sentence problematical. (See the long index entry 'thing' in Thomasson 2007: 240.) In my view, however, it is unobjectionable and easily explained. As I use "object" (similar remarks apply to "thing"), it is simply the most general count noun: everything, everything whatever, is an "object". Anyone who contends that this use of 'object' is in any way problematical should find the quantifiers and variables and identity-sign of formal logic problematical in the same way, since 'object' may be formally defined as follows: x is an object $= df \exists y \, y = x$. See also n. 20.

is one of that pair, it seems to me undeniable that the sentence 'Dexter is a part of the pair of gloves on the table' expresses a truth.

Thomasson's meta-ontology, I therefore maintain, is committed to the truth of the following:

It is analytically true that if there are particles arranged chairwise, then there is a (unique) chair such that a particle is a part of that chair if and only if it is one of those particles.[7]

This statement is of course only an illustration, an instance of a general thesis. I am more pedantic about use and mention than Thomasson is, and, in consequence, a statement of the general thesis that satisfies my logical scruples will require a preliminary definition.

Let us suppose that we understand 'sortal term' ('sortal' for short). Let us consider only "physical sortals", sortals that refer, or purport to refer, to physical objects. ('Unicorn' and 'time machine' *purport* to refer to physical objects.) In the sequel, 'sortal' is to be understood as 'physical sortal'. We may associate with each sortal its "adverbial transform". For example, the adverbial transform of 'chair' is 'particles arranged chairwise' and the adverbial transform of 'cup' is 'particles arranged cupwise'. That is to say, for any sortal term of English A, its adverbial transform is ⌜ particles arranged Awise ⌝. (If I were speaking as generally as I might wish, I'd say that the sortal 'chair' had *many* adverbial transforms: 'things arranged chairwise', 'particles arranged chairwise', 'atoms arranged chairwise' … For the purposes of the present discussion, however, I'll say that 'particles arranged chairwise' is *the* adverbial transform of 'chair'.)

The general principle (it could be made *more* general by quantifying over natural languages and applying a suitable generalization of the definition of 'adverbial transform') is this:

For any sortal of English A, and any expression B, if B is the adverbial transform of A, the sentence ⌜ It is analytically true that if there are B, then there is a unique A such that a particle is a part of that A if and only if it is one of those particles ⌝ expresses a true proposition.[8]

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[7] I would prefer this wording: '… for any particles, if those particles are arranged chairwise, there is a unique chair such that a particle is a part of that chair if and only if it is one of them', but I'll try to keep as close to close to Thomasson's language as possible.

[8] That is, for any sortal A, the sentence that consists of 'It is analytically true that if there are' followed by the adverbial transform of A, followed by 'then there is

Now why should one suppose that this principle was true? Or, since the general principle is rather complex, let us consider only a sentence that involves only the sortal 'chair' and its adverbial transform (a sentence we have already encountered):

It is analytically true that if there are particles arranged chairwise, then there is a (unique) chair such that a particle is a part of that chair if and only if it is one of those particles[9]

and ask why one should suppose that *it* was true. (I am sure that if there is a good argument for the truth of this proposition, that argument can be generalized to produce a good argument for the truth of the general principle; and, of course, if there is no good argument for the truth of this proposition, there is no good argument for the truth of the general proposition.)

Thomasson has presented more than one argument for the "unsatisfactory" analytic existence entailment, 'If there are particles arranged chairwise, then there is a chair' (i.e., more than one argument for the conclusion that that conditional sentence is analytic). Or so I would say. I concede that her arguments for that analytic existence entailment are very similar, and I am unsure whether she regards them as distinct (albeit closely related) arguments for the same conclusion or as alternative formulations of one argument. I will try to determine whether these arguments are good arguments for the "satisfactory" analytic existence entailment (the one obtained by adding the words 'such that a particle is a part of that chair if and only if it is one of those particles' to Thomasson's example of an analytic existence entailment).

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One argument, which Thomasson borrows from Stephen Schiffer, proceeds from the premise that we find among the semantic rules of

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a unique' followed by A, followed by 'such that a particle is a part of that', followed by A, followed by 'if and only if it is one of those particles' expresses a true proposition.

[9] '"It is analytically true that if there are particles arranged chairwise, then there is a (unique) chair such that a particle is a part of that chair if and only if it is one of those particles" expresses a true proposition' follows from the general principle and '"chair" is a sortal of English' and '"particles arranged chairwise" is the adverbial transform of "chair"' by universal instantiation.

English certain "rules of pleonastic transformation".[10] Among them:

'If snow is white, then the proposition that snow is white is true' is an
  analytic sentence.
'If snow is white, then snow has the property of being white' is an
  analytic sentence.
'If a poker becomes hot, then the event "the poker's becoming hot"
  occurs' is an analytic sentence.

The first of these rules has the consequence that that snow's being white
is a sufficient condition for the existence of a certain proposition, the
proposition that snow is white (snow's *not* being white would also be
a sufficient condition for the existence of that proposition). The second
has the consequence that snow's being white is a sufficient condition for
the existence of a certain property, the property of being white. The third
has the consequence that a poker's becoming hot is sufficient for the
existence of a certain event, the event that consists in its becoming hot.
And, although the phrase 'particles arranged chairwise' does not belong
to ordinary English, if it were introduced into English, if English speakers
actually came to use this variably polyadic predicate, the following rule
of pleonastic transformation would immediately come into effect:

'If there are particles arranged chairwise, then there is a (unique) chair
  such that a particle is a part of that chair if and only if it is one of
  those particles' is an analytic sentence.

(Of course, Thomasson's statement of the rule would be '"If there are
particles arranged chairwise, then there is a chair" is an analytic sen-
tence'. And I of course insist that that statement of the rule is
unsatisfactory.)

  I see little reason to think there are such rules. Take the "event" rule.
Elsewhere (in an essay addressed to problems having nothing to do
with the metaphysics of material objects) I denied that there were
events. Commenting on this denial, I wrote:

the thesis that there are no events is obviously not the same thesis as the thesis
that substances never gain or lose properties or never begin or cease to stand

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in certain relations. I grant the substances and the properties and the relations, but I see no reason to affirm the existence of items denoted by phrases like 'the acquisition of the property hunger by the substance Socrates' or 'the substances Socrates and Xanthippe coming to stand in the relation "marriage"'. I have recently read the draft of an essay by a very famous philosopher that contains the following argument: When a cold poker becomes hot, that is a change, and therefore changes exist. (The count noun 'change' is, or so I am willing to grant, synonymous with 'event'.) This argument, however, is formally invalid (even if its conclusion is true). It is formally invalid because its premise contains a pronoun, the demonstrative pronoun 'that', that has no antecedent. Its formal invalidity is precisely analogous to the formal invalidity of 'This poker is hot, and that is a property. Therefore, there are properties'. (That argument has a true conclusion but is nonetheless invalid.) (Inwagen 2014: 245)

I concede that Thomasson has not said that anything that implies that 'When a cold poker becomes hot, that is a change and therefore changes exist' is a formally valid argument. She is committed only to analyticity of the statement 'If a poker becomes hot, then the event "the poker's becoming hot" occurs'. And it is much easier to show that a philosopher's argument that is not formally valid is indeed not formally valid than it is to show that a non-analytic statement for which some philosopher has claimed analyticity is indeed not analytic. I can only say that I regard the contention that 'If a poker becomes hot, then the event "the poker's becoming hot" occurs' as not analytic because it is false (because there are no events).[11] I do, however, think that the sentences mentioned in the first two examples given above of "rules of pleonastic transformation" express true propositions, and, indeed, necessarily true propositions. But are those sentences analytic?

I cannot prove that there are no such semantic rules of English as '"If snow is white, then the proposition that snow is white is true" is an analytic sentence' and '"If snow is white, then the proposition that snow has the property of being white is true" is an analytic sentence'. I can, however, insist that I, a native speaker, have never noticed them

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[11] I notoriously contend that my statement 'There are no chairs' does not imply the falsity of an "everyday" statement like "Some of her chairs are very good nineteenth-century copies of Chippendales"; similarly, my statement 'There are no events' does not (I contend) imply that everyday statements like "The sequence of events that led to the reactor meltdown was extremely complex" are in every case false.

and see no reason to think that they exist.[12] I do, as I have said, think that the sentences 'If snow is white, then the proposition that snow is white is true' and 'If snow is white, then snow has the property of being white' express truths – and in fact necessary truths. But then I'm a platonic realist: I think that propositions and properties exist and exist necessarily. But, of course, hardly any philosopher of the present day would maintain that all sentences that express necessary truths are analytic or have truth conferred upon them by the semantic rules of the language to which they belong. It would never have occurred to me to accuse nominalists of not understanding the rules of English, and I'd expect them to laugh at me if I did. But that is exactly what Schiffer and Thomasson (in effect) accuse the nominalists of.

Platonists like myself, according to Schiffer and Thomasson, are guilty of much the same error as nominalists: the error of failing to attend to the rules of English. By "platonists like myself", I mean platonist who attempt to refute the nominalists' denial of the existence of properties by presenting elaborate arguments demonstrating that Quinean quantificational analysis of the sentences that constitute the nominalists' own discourse demonstrates that '$\exists x \; x$ is a property' can be derived from those sentences by standard quantifier logic. If platonists of my stripe were only aware that the semantic rules of English (or the rules of any natural language in which it is possible to say both "Snow is white" and "Snow has the property of being white") included the rule of pleonastic transformation '"If snow is white, then snow has the property of being white" is an analytic sentence', we'd see that our arguments for the conclusion that the nominalists own sentences "carry ontological commitment" to properties are otiose. We'd see that we could *prove* the existence of properties by the following simple, even trivial, argument. (In this argument, we use the boldface '**has**' to express the relation that holds between an object and its

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[12] I would, however, say that the following sentences were analytically true: 'If there is such a thing as the proposition that snow is white, then the proposition that snow is white is true if and only if snow is white'; 'If there is such a thing as the property of being white, then an object has the property of being white if and only if it is white'; 'If there are events – if there are such objects as acquisitions of properties by substances – then the event "the poker's becoming hot" occurs if and only if the poker becomes hot'; 'If there are such things as chairs (and if the ultimate parts of every chair are particles), then, any particles that are arranged chairwise have a fusion, and their fusion is a chair'.

properties, a relation that can be "borne to" nothing but properties. We also assume that the phrase 'the property of being white' occupies a position subject to existential generalization; that is, that it is not a syncategorematic phrase. And we assume that the meaning of this phrase is such that, if it denotes anything, it denotes a property.[13] If we did not make this last assumption, we could not contend that premise (2), containing, as it does, the boldface '**has**', was analytic. The "logic" of the argument is standard, that is, non-free.)

1.   Snow is white.   *Premise*

2.   If snow is white, snow **has** the property of being white.   *Premise*

     hence,

3.   Snow **has** the property of being white.   1,2 *MP*

     hence,

4. $\exists x$ snow **has** x.   3 *EG*

5. $\forall x \forall y$ (x **has** $y \rightarrow y$ is a property).   *Premise*

     hence,

6. $\exists x$ x is a property.   4,5 *EI, UI, MP, EG*

Schiffer and Thomasson will contend that premise (2) is analytic. Given our definition of '**has**', premise (5) is obviously analytic. So, if Schiffer and Thomasson are right about premise (2), every premise of the argument is either a known empirical truth (premise (1)) or analytic.

I of course deny that (2) is analytic (although I as a matter of fact think that it's true) and necessarily true. Let us say that those ontologists who, like me, deny that the sentences that are asserted to be analytic by the various "rules of pleonastic transformation" are indeed

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[13]   I take it that Schiffer and Thomasson would regard the thesis that 'the property of being white' in the sentence 'If snow is white, then snow has the property of being white' occupies a position subject to existential generalization and the thesis that this phrase denotes a property as essential components of their positions.

analytic, are adherents or practitioners of "hard ontology": for short, we are "hard ontologists".

Now *why* do we hard ontologists deny that premise (2) is analytic? Well, the *nominalists* among us think it isn't analytic for the same reason as the reason I think 'If a poker becomes hot, then the event "the poker's becoming hot" occurs' isn't analytic: because the sentence in question isn't even *true*. And the nominalists think (2) isn't true because (a) snow *is* white, and (b) there is no such thing as the property of being white. And, of course, they accept (b) because they think that there are no properties at all. And they think that there are no properties at all because they think that the concept of a property is in some way an incoherent or impossible concept, like the concept of a physical instrument (something like a forceps) for extracting cube roots or the concept of a shadow that casts a shadow. And they have arguments for that conclusion. Those arguments may be flawed (I think they are), but if they were cogent, they would show that there could not be linguistic rules that guaranteed the existence of properties, any more than there could be linguistic rules that guaranteed that if the stuff of the physical world were arranged in certain possible ways, specified by the rules, there would be physical instruments for extracting cube roots or shadows that cast shadows.

Look at the matter this way. If there is such a thing as the property of being white, it will have, for every property, either that property or its complement. So, for example, the property of being white is either a physical thing or a non-physical thing;[14] it's either capable of entering into causal relations or incapable of entering into causal relations (and so, literally, *ad infinitum*). The nominalists deny that a *coherent* set of properties can be assigned to properties. If they are right about that, then there *cannot* be semantic rules of English that confer truth on (2). And if a nominalist presents an argument for the conclusion that, if there *were* such a thing as the property of being white, it would have to have both the property *F* and the obviously inconsistent property *G*, then Thomasson and Schiffer cannot offer the following reply to this argument:

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[14] I'll leave it to the nominalists to explain how *they're* going to understand the (apparent) quantification over properties this argument involves. The problem of how to say much of anything without (apparently) quantifying over properties is one they're going to have to deal with in any case.

The semantic rules of English guarantee that there is such a thing as the property of being white; hence, either there *are* things that have the inconsistent properties F and G, or else there's some mistake in your argument and the property of being white doesn't have both F and G.

The first disjunct is a non-starter.[15] The second has all the advantages of theft over honest toil. What Thomasson and Schiffer should do is to address the nominalist's argument for the conclusion that the property of being white would, if it existed, have both F and G. But, if they did that, they would be engaged in hard ontology.

Now since I believe that the problems that confront nominalism are insoluble, I can't act as a very convincing advocate of their position. Let me therefore consider a logically parallel case in which it *is* my position that there are no things of a certain kind – things that it might be thought were guaranteed to exist by certain semantic rules if the stuff of the world were arranged in a certain way (a way in which it in fact is arranged).

To the degree that the analytic existence entailments (the *supposedly* analytic existence entailments) that have served as examples above are plausible, the following principle seems an equally plausible candidate for an analytic existence entailment:

S Suppose that a part *s* of the surface of an opaque object A is illuminated by (and only by) a light source *L*; suppose that an opaque object B is then placed between A and *L* in such a way that it prevents light emitted by *L* from falling on a proper part of *s*; then B casts a shadow on A.

I mean this principle to imply the existence of a shadow that A casts on B: that is, 'casts a shadow on' is not meant to be a simple two-place predicate with no logical structure. The principle *S* is meant to imply (in fact to be equivalent to):

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[15] Schiffer believes that the semantic rules of English imply the conditional 'If wisdom is non-self-applicable, then wisdom has the property of non-self-applicability' *and* imply that its antecedent is true and its consequent false. But he does not go so far as to say that we should therefore believe that some proposition has the inconsistent properties truth and falsity. See Schiffer 1996, part IV.

S′ Suppose that a part *s* of the surface of an opaque object A is illumi-
nated by (and only by) a light source *L*; suppose that an opaque
object B is then placed between A and *L* in such a way that it prevents
light emitted by *L* from falling on a proper part of *s*; then $\exists x$ (*x* is
a shadow & A casts *x* on B).

But this cannot be a semantic rule of English, because shadows are
impossible objects. For example, a phrase like 'the shadow the flagpole
is casting on the courthouse lawn' cannot be the name of an object: for
if *per impossibile* it were the name of an object, that object could not be
assigned a coherent set of properties.[16]

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I turn now to an argument that is either a second argument for the
analyticity of 'If there are particles arranged chairwise, then there is
a chair' or an alternative formulation of the argument discussed in the
Section 2.

Thomasson contends that every sortal has "application condi-
tions", and that the application conditions for 'chair' guarantee
that 'chair' "applies" if (and only if) there are particles arranged
chairwise.

I do not understand the idea of the application conditions of
a sortal – that is, I do not understand what *Thomasson* means by
phrases like 'the sortal "chair" applies' – applies *full stop*, applies
period, applies *simpliciter*. As I understand the verb 'apply', it must
have an indirect object – and it usually has both a direct and an indirect
object:

Sub-paragraph 627c applies only to legal residents of the United States.
(*indirect object only*)

Laplace applied perturbation theory to Newton's problem of the sta-
bility of the planetary orbits. (*direct and indirect object*)

Any apparent exceptions to this rule arise simply because the indirect
object is "understood" in the context in which a sentence is used:

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[16] For a defense of the impossibility of objects that satisfy '*x* is a shadow', see my
2014a: 8–9.

The rule established in *Harley v. Fergusson* does not apply if it can be proved that a sworn witness has an interest in the case.

Does not apply to *what*? Well, it's being (tacitly) asserted of some thing or some plurality of things that the rule doesn't apply to *it* or *them* in the stated circumstance. Those who know what 'the rule established in *Harley v. Fergusson*' refers to will know what it is that that rule is being said not to apply to if (etc.).

I can understand the notion of an "application condition for a sortal" if the statement of the condition includes an indirect object. For example, the following statement makes perfect sense:

The sortal 'housecat' applies to **something** if it is a small, lithe, furry quadruped of the genus *Felis* of the sort that is commonly kept as a domestic pet or for the control of vermin.

(I'll put indirect objects in boldface in the sample sentences in my discussion of the application conditions for sortals.) But what does the sentence 'The sortal "housecat" applies' ('applies' *simpliciter*, 'applies' *full stop*, 'applies' *period*) mean? It's certainly a rather puzzling sentence. Probably no one would speak or write it, even in a context in which the topic was the application of sortals. Nevertheless, there's only one thing it *could* mean: 'The sortal "housecat" applies to **something**' – or '$\exists x$ (the sortal "housecat" applies to x)'. That is, the fact that in the sentence 'The sortal "housecat" applies' the verb 'applies' apparently lacks an indirect object is due to the fact that its indirect object is "understood". (Cf. 'When the applause had finally died down, she presented the award'; 'Finally, after many days of indecision, he sent the e-mail'.)

I can, therefore, understand the statement:

The sortal 'chair' applies if and only if there are particles arranged chairwise

if it means:

($\exists$) The sortal 'chair' applies to **something** if and only if there are particles arranged chairwise.

Is that what Thomasson means by 'The sortal "chair" applies if and only if there are things arranged chairwise'? If not, I have no idea what she means by that sentence, so let's suppose it is. Still, although

I *understand* (∃), I must protest that it's not a very informative statement. It faces "lack of specificity" problems similar to those I earlier contended faced the sentence 'If there are particles arranged chairwise, then there is a chair'. For example, (∃) is logically consistent with

(E) The sortal 'chair' applies to **something** if and only if it is an elephant

and I do not think that Thomasson intended her sentence 'The sortal "chair" applies if and only if there are particles arranged chairwise' to mean something so uninformative that it was logically consistent with (E) (and with any of a vast array of other sentences that could be obtained by replacing 'elephant' in (E) with some other sortal). If she replaces 'The sortal "chair" applies if and only if there are particles arranged chairwise' with a sentence in which 'applies' has an indirect object, then that indirect object *should* be a word or phrase whose meaning is more intimately connected with the meaning of 'particles arranged chairwise' than is the meaning of 'something'. What word or phrase might serve? Well, we know *this*:

> If the sortal 'chair' applies to **a fusion of particles**, then those particles are arranged chairwise.

We know that because it's true by definition – analytic. And that suggests that we replace (∃) with:

(F) The sortal 'chair' applies to **something** if and only if it is the fusion of certain particles and those particles are arranged chairwise.

Now, I would certainly say that (F) was a correct statement of the "application conditions" for 'chair' (or at least one correct statement – there are various others, such as '… it is an artifact manufactured for the purpose of sitting on that has a back'). But, as might be inferred from the fact that *I* regard (F) as a satisfactory statement of the application conditions for 'chair', it does not imply that if there are particles arranged chairwise, there are chairs. The only way to modify (F) so that the modified version has that implication is by brute force:

(F′) The sortal 'chair' applies to **something** if and only if it is the fusion of certain particles and those particles are arranged chairwise – *and, moreover, any* particles *arranged chairwise have a fusion.*

Beneath me, as I write, there are certain particles that are arranged chairwise. Call them '*THE PARTICLES*'. The statement:

(C) If *THE PARTICLES* are arranged chairwise, they have a fusion and the sortal 'chair' applies to **that fusion**

follows logically from (F′). And if (F′) is a correct statement of the "application conditions for 'chair'" (in terms of the arrangement of the constituent particles of a chair), it is *true by definition* that *any* particles arranged chairwise have a fusion – and thus true by definition, or at any rate analytically true, that if a particle is one of some particles arranged chairwise it is a proper part of something solid and visible and tangible.

And to say that is simply to assert, without argument, that hard ontology rests on a mistake. The *appearance* of an argument against hard ontology is due to the use of biconditionals of the form 'The sortal 'chair' applies if and only if . . .'. "Applies to *what*? A term can 'apply' only if there is something for it to apply *to*," the hard ontologist cries in exasperation.

Very well: the sortal 'chair' can apply only to a fusion of particles. And if certain particles are arranged chairwise, the term 'chair' – or any term whatever – can (who could dispute this?) apply to their fusion only if they *have* a fusion.[17] And why should we suppose that particles arranged chairwise have a fusion? We should suppose that, I maintain, only if we

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[17] But is it really true that if 'chair' applies to anything at all, the things to which it applies must be fusions of particles? Kyle Mitchell (2014: 572) describes Thomasson's position in these words: "knowing how to apply 'table' means knowing that it applies to particles arranged tablewise." Leaving aside the fact that Aristotle knew how to apply 'table' (or at any rate '*trapézi*') if anyone ever has, despite his belief that there were no particles (*átoma*), this is simply not Thomasson's position. In her view, rather, 'apply' does not require an indirect object, even a tacit or understood one. In any case, the position Mitchell ascribes to her is incoherent. If 'my writing table' applies to anything, it applies to *one* thing, and the number of the particles arranged tablewise that are before me as I write is on the order of $10.^{30}$ Might 'chair' then apply to an *arrangement* of particles? I must ask: what does a putative singular term like 'the (present) arrangement of *THE PARTICLES*' refer to – or even *purport* to refer to? If it does not purport to refer to the fusion of *THE PARTICLES*, what does it purport to refer to? I am inclined to think that either this phrase refers to some abstract object – perhaps a variably polyadic relation that *THE PARTICLES* enter into (at the present moment) – or else it is what Quine liked to call a syncategorematic expression and is not in the referring business at all. Cf. 'the equator', 'the mass of the sun', 'the distance from Chicago to Salt Lake City'.

have reason to accept an answer to the Special Composition Question that entails the truth of the following:

> For any particles, if those particles are arranged chairwise something has all and only those particles as parts.[18]

That is to say, we can state "application conditions" for 'chair' (or at any rate, application conditions that turn on the phrase 'particles arranged chairwise') only after we have done some hard ontology. I contend that the whole purpose of the indirect-objectless 'applies' is to enable its employers to avoid addressing the arguments of the present section.

4

In this, the final section of this essay, I will present what seems to me a good reason to deny that:

(A) If there are particles arranged chairwise, those particles have a fusion

is an analytic sentence. To appreciate this reason, it will be convenient to compare the case of particles arranged chairwise with a simpler case of the same sort, the case of pairwise-related gloves. If (A) is analytic, then, presumably:

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[18] Thomasson's 2007, ch. 7 ("The Special Composition Problem") is, as its title suggests, an examination and critique of the place of the Special Composition Question in investigations of the ontology of visible, tangible objects.
   The chapter is complex and I cannot summarize it here. But I urge any reader of that chapter to consider two points. First, the Special Composition Question can be formulated without using any such count-nouns as 'thing' or 'entity' or 'object': variables and the existential quantifier (or pronouns and 'something') are all that are needed (cf. n. 7). (It is, moreover, false that one must employ some count-noun or count-nouns to "specify a domain of quantification" for the existential quantifier before one can use it meaningfully. It is false for the simple reason that one can use the existential quantifier meaningfully without specifying a domain of quantification at all.) Secondly, I have nothing against non-uniform or highly disjunctive answers to the Special Composition Question. Or nothing but this: no one has ever actually proposed one – and, therefore, it is not possible to compare the merits and demerits of any non-uniform answer to the Special Composition Question with the answers that have actually been proposed and are available for evaluation (universalism, for example, or nihilism or organicism).

(G) For any right-hand glove and any left-hand glove, if those gloves are
pairwise-related, then those gloves have a fusion

is analytic. Or, to consider a particular example, suppose that Dexter is
a right-hand glove and Sinister is a left-hand glove and Dexter and
Sinister are pairwise-related.

It follows from this supposition and (G) (and the definition of
'fusion') that Dexter and Sinister have a fusion – that is, that something
is such that everything that overlaps it overlaps either Dexter or
Sinister. Let us call this fusion (or call one of them if they have more
than one fusion) 'Denster'. What properties does Denster have?
(I assume it is uncontroversial that if Dexter and Sinister have more
than one fusion, all their fusions are perfect intrinsic duplicates.)
"Well," the Interlocutor replies, "Denster is nothing other than a pair
of gloves. It has the properties that you would expect a pair of gloves
composed of Dexter and Sinister to have: it's a scattered object, each of
its maximally connected parts is a glove, a point in space falls inside it
just in the case that that point falls either inside Dexter or inside
Sinister … I could go on, but what's the point? Isn't it obvious what
properties a pair of gloves composed of Dexter and Sinister has?"

Well, no. Supposing that Denster exists, it is a material object, and,
like all material objects, it has a history. I'll tell you a bit about its
history.

There is a glove factory that consists mainly of three machines. One
of them makes men's right-hand gloves, size "medium" (each, for all
practical purposes, an intrinsic duplicate of all the others). Another of
the machines makes men's left-hand gloves, size "medium" (each …).
(The right-hand and left-hand gloves are alike in every respect but
"handedness".) And the third makes glove boxes. Each dumps its
products into a bin – the right-hand bin, the left-hand bin, or the box
bin. One day, Winifred, a worker in the factory, acted as follows. She
reached into the right-hand bin and chose a glove at random (it hap-
pened to be Dexter); she reached into the left-hand bin and chose
a glove at random (it happened to be Sinister); she reached into the
box bin and chose a box at random; she placed Dexter and Sinister in
that box – she "box-paired" the two gloves – and put the box in a pile of
boxes each of which contained a right-hand and a left-hand glove. All
the boxes in the pile were shortly thereafter delivered to Whipple's
Glove and Scarf Emporium in Moline, Illinois, where, a few days later,

the box containing Dexter and Sinister was purchased by one Byron Gore-Hastings – who is, at this very moment, wearing Dexter on his right hand and Sinister on his left.

Now consider a possible world *W* that diverged from the actual world very shortly after Winifred drew Dexter from the right-hand bin in the actual world: in *W*, Winifred's hand, seconds later, groping in the left-hand bin, happened to seize on the glove Aristeros, and not, as in the actual world, on Sinister. Winifred proceeded to box-pair Dexter and Aristeros. (A moment later, she box-paired Sinister and the right-hand glove Dexios.) In consequence, in *W*, Byron Gore-Hastings is at this moment wearing Dexter on his right hand and Aristeros on his left.

Does Denster exist in *W*? – that is *would* Denster exist if *W* were actual? – that is, does Denster have the following *de re* modal property: "would exist if both its maximally connected parts existed but were not pairwise-related"? If Denster exists, it must either have or lack this property – at least assuming that there are such things as *de re* modal properties, and this I am going to assume.

Now suppose that (G) is indeed an analytic sentence. Suppose, that is, that the existence of the fusion of Dexter and Sinister to which we have given the proper name 'Denster' is guaranteed by the truth of our story (the story of Winifred's movements in the factory on the day she caused Dexter and Sinister to be pairwise-related). We have Denster before us (courtesy of Mr Gore-Hastings). Here it is. It has the properties it has, and the properties it has include its *de re* modal properties. We know (let us suppose) all the intrinsic properties of Dexter and all the intrinsic properties of Sinister, including their intrinsic *de re* modal properties. We know the meanings of all the words and phrases we have used to introduce the name 'Denster' into our discourse – 'glove', 'pair of gloves', 'pairwise-arranged' (in which class should be included mereological terms: 'part', overlap', 'fusion' ...). If the existence of Denster is somehow guaranteed by language,[19] then our knowledge of the intrinsic properties of Dexter and Sinister and our knowledge of their mutual causal history, together with our linguistic knowledge, should be sufficient to enable us to answer *all* questions about Denster. (Just as our knowledge of the meaning of the word 'bachelor', combined with our knowledge of all facts that can be stated without using

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[19] Recall the title of Schiffer 1996: "Language-created, language-independent entities."

the word 'bachelor' enables us to answer *all* questions about bachelors;[20] not only questions like 'How many bachelors have married sisters?', but *de re* modal questions like 'Could [someone who is in actuality] a bachelor have been a poached egg?' To be able to answer the latter question, of course, one would need to know whether any *male human beings* could have been poached eggs – but either 'Some male human beings could have been poached eggs' or 'No male human being could have been a poached egg' is one of those "facts that can be stated without using the word 'bachelor'".) But philosophers, even those philosophers who accept the existence of both *de re* modal properties and pairs of gloves, are going to disagree about whether Denster has this property. A mereological universalist (one who – unlike David Lewis – is a *de re* modal realist), for example, will almost certainly say that *of course* Denster exists in any possible world in which both Dexter and Sinister exist. (She may want to qualify this statement by going on to say something like, "I concede that in a world in which Dexter and Sinister both exist but are not pairwise-related, Denster is not a pair of gloves; in such a world Denster *is not but could have been* a pair of gloves.") Other philosophers who accept the existence of Denster will insist that *being a pair of gloves* and *being composed of Dexter and Sinister* are both essential properties of Denster, and that Denster therefore does not exist in *W*, since it is a necessary truth that two gloves compose a pair of gloves only if they are pairwise-related. (That's probably what *I'd* say if I thought there were such things as gloves and pairs of gloves.) Imagine, then, two philosophers who take these opposed positions. They do not disagree about how matter is distributed in space-time. They do not disagree about the meanings of words. (And, for good measure, they know everything there is to know about the intrinsic *de re* modal properties of Dexter and the intrinsic *de re* modal properties of Sinister.) If the way matter is distributed in space-time and the meanings of words guarantee the existence of Denster, how is it possible for people who do not disagree about these things to disagree about the *de re* modal properties of Denster?

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[20] What about questions involving vague terms – questions like 'Is a bachelor who is 180 cm tall a tall man?'? The answer to this question is, 'He is a borderline case of a tall man'. Essentially the same point applies to 'Is a never-married 30-year-old Roman Catholic priest who was laicized yesterday, and who has no plans to marry, a bachelor?'

A moment ago, I said:

If the existence of Denster is somehow guaranteed by language, then our knowledge of the intrinsic properties of Dexter and Sinister and our knowledge of their mutual causal history, together with our linguistic knowledge, should be sufficient to enable us to answer *all* questions about Denster.

But is this in fact true? Might the existence of Denster be "guaranteed by language" – given, to be sure, the intrinsic properties of Dexter and Sinister and the history of their mutual spatial and causal relations – and yet Denster have properties that do *not* supervene on those "givens"?

Where might the source or ground of such "additional" properties lie? I can see only one possibility: the additional properties might follow from the "givens" conjoined with certain necessary truths that are not analytic – necessary universal propositions that apply to Denster because they necessarily apply to everything or at least to everything that has certain properties that are among the "uncontroversial" properties of a pair of gloves (properties like those that I had the Interlocutor list a moment ago). Here is a plausible example of a *de re* modal property that Denster might have in virtue of a necessary, non-analytic universal proposition:

Even if there are possible worlds in which Denster's two maximally connected parts, Dexter and Sinister, are interpenetrable, there is no possible world in which (each has the size and shape and chirality it has in actuality and) they coincide spatially.

(Denster's having this *de re* modal property is in effect a consequence of the "givens", the assumption that the chirality of a glove is essential to it, and a theorem of topology that says that two sets of points in a three-dimensional space that are "mirror images" of each other and which satisfy certain further conditions cannot be made to coincide by translation and rotation – this theorem being a necessary truth that is not analytic.)

I can see no way to rule out the possibility that there might be such an account of all Denster's *de re* modal properties. But I haven't any idea what necessary universal propositions might confer truth or falsity on statements like 'Denster necessarily exists if both Dexter and Sinister exist – even if they aren't pairwise-related' – not at any rate if these propositions are consistent with the proposition that Denster "owes" its existence to an analytic existence entailment like (G). Various substantive

modal-mereological principles would certainly settle the truth-value of the proposition that Denster necessarily exists if both Dexter and Sinister exist. Consider, for example, the following two substantive metaphysical principles, "Necessary Universalism" and "Strengthened Metaphysical Essentialism":

(NU) Necessarily, for any xs, those xs have a unique fusion.

(SME) For any xs and for any worlds w and w' and any y, if y is the fusion of the xs in w,

then

(a) if y exists in w', y is the fusion of the xs in w'

and

(b) if the xs exist in w', y is the fusion of the xs in w'.

If Denster exists, he is certainly the fusion of Dexter and Sinister. (Dexter and Sinister are both parts of Denster, and every part of Denster overlaps either Dexter or Sinister.) NU ensures that Denster exists and, given its existence, SME ensures that it exists in all and only those worlds in which Dexter and Sinister exist. (It does not follow, however, that Denster is a pair of gloves in every world in which it exists; perhaps a fusion of two gloves is a pair of gloves only if the two gloves are pairwise-related.)

Metaphysicians who accept NU and SME have their answer to the question whether Denster exists in W (a world in which Winifred box-paired Dexter and a glove other than Sinister): Yes. And, given their knowledge of the individual modal properties of Dexter and Sinister, they will be able to answer any well-formed question about Denster's modal properties.

But metaphysicians who accept NU and SME will have no use for such analytic existence entailments as:

If two gloves are pairwise-related, there is a pair of gloves (composed of those two gloves).

(It's not that they will say this statement is false. They'll agree that it's true but deny that it's analytic. They'll contend that it is true because – given any reasonable definition of 'pair of gloves' – it follows from NU, a universal non-analytic but necessarily true metaphysical principle.) Even if these metaphysicians believe that two gloves are parts of a *pair*

of gloves only if they are pairwise-related, they will need only the following universal (as opposed to existential) principle to determine whether a pair of gloves is present on any actual or counterfactual occasion:

> If an object has two maximally connected parts each of which is a glove, and its maximally connected parts are pairwise-related, then it is a pair of gloves.

These metaphysicians "already" believe that any two gloves "automatically" have a fusion, and they know, or think they know, what to say about which possible worlds a given fusion of two gloves exists in. The offset principle simply tells them how to determine whether any given object counts as a pair of gloves: an object is a pair of gloves if and only if (a) it is a fusion of two gloves, and (b) those two gloves are pairwise-related.

And, I contend, *any* metaphysical principles that would provide answers to questions about the *de re* modal properties of pairs of gloves,[21] would also render otiose analytic existence entailments that secure the existence of pairs of gloves.

What applies in the simple case of pairs of gloves applies *mutatis mutandis* to the case of chairs. Metaphysicians who accept NU and SME will have no use for analytic existence entailments like:

> If there are particles arranged chairwise, then there is a (unique) chair such that a particle is a part of that chair if and only if it is one of those particles.

They will need only the following analytic principle (a principle without existential import) to determine whether a chair is present in any actual or counterfactual situation:

> If an object is a fusion of certain particles, then it is a chair if and only if those particles are arranged chairwise.

Brief Appendix on Ryle and Counting

"That is all very well, but, as Ryle pointed out long ago, the question, 'There are a right-hand glove and a left-hand glove on the table

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[21] Here is another pair of principles that would suffice to settle such questions: Universalism (Any objects whatever have a fusion) and Spinozism (A proposition is true if and only if it is necessarily true).

("pairwise-related", to use your term), but is there also a pair of gloves on the table?' is an absurd question."

Well, Ryle did say that (more or less). But then he also thought that the individual gloves and the pair existed in different senses of 'exist'. But if we suppose, as I do, that there is only one sense of 'exist' and that it is adequately captured by the existential quantifier of formal logic, this is not a tenable position. Consider these sentences:

$$\exists x \exists y \, (Gx \, \& \, Gy \, \& \, x \neq y)$$

$$\exists x \, Px$$

$$\forall x \, (Px \leftrightarrow \sim Gx)$$

The smallest domain in which all three sentences are true contains three members. And this elementary model-theoretic truth is of course independent of the interpretation given to 'Gx' and 'Px'. So, if there are both gloves and pairs of gloves, and if no pair of gloves is itself a glove, a domain that contains two gloves and a pair of gloves must comprise at least three numerically distinct objects.[22] If, therefore, the gloves do not have a fusion, our three sentences (interpreting 'Gx' as 'x is a glove' and 'Px' as 'x is a pair of gloves') cannot all be true. Whether the two gloves have a fusion, moreover, cannot be settled by any rule of language. A rule of language can specify the conditions under which the sortal 'pair of gloves' applies to a fusion of two gloves. No rule of language could have the power to "force" two gloves to have a fusion – or not to.

I now present an argument for the conclusion that a universe that contains a pair of gloves must contain at least three objects – which is not quite the conclusion of the argument of the preceding paragraph (which was that a universe that contains *two gloves and a pair of gloves* must contain at least three objects). This second argument turns on considerations of deducibility rather than of modeling.

Excepting the first, each of the following sentences is a logical or analytic or conceptual truth (at least I *think* so; each can certainly be seen to be true by *a priori* reflection):

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[22]   On this use of the word 'object', see n. 6.

There exists exactly one pair of gloves.

Every pair of gloves is a scattered object with exactly two maximally connected parts, each of which is a glove and each of which is of the same non-zero volume as the other.

The volume of a scattered object with exactly two maximally connected parts each of which is of the same non-zero volume as the other is twice the volume of either of its two maximally connected parts. For any x and any y, if the volume of x is twice the volume of y, then $x \neq y$.

"Symbolize" these four sentences as you would if they were exercises in an introductory logic course (use any scheme of abbreviation you like, but chose one that allows you to represent the maximum amount of logical structure that can be exploited by the inferential apparatus of textbook quantifier logic with identity – do not, for example, abbreviate 'There exists exactly one pair of gloves' as '*p*') From the result, you will be able to deduce, using only the rules of quantifier logic with identity, the sentence:

$\exists x \exists y \exists z\ (x \neq y\ \&\ x \neq z\ \&\ y \neq z).$