Comments on Ted Sider's "Which questions are substantive?"

J.R.G.Williams*

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Ted Sider's paper 'Which disputes are substantive?' is incredibly rich and stimulating. I want to raise three questions about it, hopefully pushing further some of the ideas and issues it introduces. I'm sympathetic with much of the discussion, and my real concerns will be at a pretty high and abstract level. The three questions are:

1. How does the primitive naturalness operator work?
2. What are the reasons for pitching the naturalness theory at a subsentential rather than sentential level?
3. Does pitching naturalness at the sentential level have the *pro tanto* (though perhaps outweighed) benefits that Sider claims?

1 Naturalness

Lewis argued that some predicates carve the world at its joints. He also described many things that could mean.

It might mean: there exist Universals, few and far between, more or less as Armstrong (1978) describes them. Certain predicates (the carvers) stand for Universals.

Or it might mean: there exist tropes, again sparsely distributed. The carvers are those predicates that stand for equivalence classes of duplicate tropes.

Lewis also considers an "adequate nominalism"; one that appeals to a plural multigrade relational formulation of contrastive resemblance among particulars. The carvers will be predicates such that satisfying the predicate makes for contrastive resemblance in certain specified ways.

A final suggestion Lewis makes is the following. Firstly, admit into your ontology abundant properties and relations.[1] Almost any predicate you can mention stands for some abundant property in this sense. Then, amongst these properties, we posit a metaphysically basic distinction between those that have the (higher-order) property of *being natural*, N, and those that don't. The former are the carvers.[2]

*In preparing this, I've been very fortunate to get ideas, input, and criticism in discussion with Ross Cameron, Andy McGonigal and Joseph Melia. They shouldn't be blamed...

[1]This might upset certain sorts of nominalists, though others will be comforted by reductively identifying these entities with sets of (tuples of) particulars.

[2]I'm going to call this predicate "metaphysically basic", but deliberately avoid a question that Sider nicely brings to the fore: whether by this I just mean that such a higher-order predicate is needed to do metaphysics, or whether it itself expresses a "metaphysically basic" property. Is naturalness itself a natural property? See Sider's discussion of the Melian view of such matters.

In recent work (2007a; 2007b) Ted Sider has offered us a fourth option. It is like Lewis's final option in (seemingly) taking naturalness to be basic rather than characterized in terms of antecedently understood ontology or relations such as resemblance;[3] but unlike Lewis it does not take attributes of *properties* as basic. In its most basic form, it goes like this:

> Naturalness is indeed primitive. But it is not a primitive (higher order) property. Rather, in this sense 'natural' is an *operator*, attaching to linguistic structures to form a sentence. We might express facts about naturalness by using locutions such as 'It is natural to be in love in the month of May', meaning by this what Lewis in various moods would have expressed by phrases such as:
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> - *being in love in the month of May is a natural property*
> - *A universal exists, namely: being in love in the month of May*
> - *any instance of being in love in the month of May is a sparse trope*
> - *the particulars who are in love in the month of May resemblance each other and do not likewise resemblance any particular not in love in the month of May*.

One appeal of this setting is that, unlike Lewis's version of the primitive naturalness proposal, this version need not have any truck with (even abundant) relations and properties. So it is a proposal that need not take a stand on a Realist/Nominalist debate over abundant properties. Another immediate benefit is that it avoids a tricky problem with the Lewisian framework that Sider (1996) very nicely articulates.[4]

An attractive feature of both the Siderian and Lewisian versions of the primitive naturalness idea, is that it can do more than just identify which *predicates* are carvers. Consider the Lewisian setting. The natural/non-natural distinction, amidst an abundant ontology, can be repeated in various categories. Some objects may be natural, others not. Perhaps Sparky the electron is a natural object, but the fusion of the back leg of a donkey and my right ear is not. In parallel fashion we might apply the distinction to the entities that are the semantic values of operators, adjectives and any other sort of linguistic expression in which we are interested. For example, the semantic value for unrestricted quantification might be taken as natural; the semantic value appropriate for some contextually restricted use of 'there is' in English might be non-natural.

Some of the distinctions that we're now able to draw do seem intuitively appealing. However, it's not as if the property-only story has no story to tell here. Given a natural/non-natural distinction concerning properties it's entirely predictable that one would extend the distinction 'honorifically' to entities in other classes. An object might be called 'natural' honorifically if it is the bearer of natural properties; a quantifier might be called 'natural' if it is the restriction of the unrestricted quantifier by a natural property. An operator might first be related to a special sort of property (of propositions, say) and then that property itself assessed for primitive naturalness.

For a variety of reasons you might want to go beyond honorific extensions of the original Lewis proposal, and endorse a more generous range of application for naturalness proper.

[3]This means that, unlike a theory of universals or nominalistic resemblance, it does not have to assume that naturalness and similarity go along together: something that Sider indicates he might wish to exploit.

[4]The difficulty (first brought up by Armstrong) arises if we regard abundant relations as sets of tuples of particulars. There will be a certain arbitrariness in pairing up relations with sets of tuples in these ways, and this seems in tension with postulating a basic distinction between the natural and the unnatural sets of tuples.

One might wonder whether the Melian interpretation of the Lewisian view—where naturalness is in no sense itself natural—is vulnerable to this objection in the first place.

Here's a Sider-inspired reason: you might want to say that the *unrestricted quantifier* is natural, but deny that the *existence predicate* is natural. The reason? Well perhaps existence is no similarity-maker: the things that share existence can be as dissimilar as you like. Nevertheless, the existential quantifier makes for similarity. For example, one might think of the existential quantifier as capturing similarities between (unsaturated) propositions: those that have at least one true saturation. That seems a pretty important respect of similarity.[5] Again: perhaps existence is no difference-maker.[6] No things are dissimilar in that one exists and the other doesn't. But the existential quantifier seems to be a difference maker: some unsaturated propositions can be truly saturated, others not. That's a joint worth carving.

Extending the Lewisian approach

What would the extension of Lewis's framework amount to? We might speak generically of a "property" of naturalness that could be had by operators, properties, objects and adjectival semantic values (whatever those are) indifferently. Claims that would then be formulable would include:

1. N(Ted)
2. N(the property of being red)
3. N(the existential quantifier)
4. N(the property-forming function *veryness*)
5. N(the property N)

Four of these claims simply do not arise in the original setting, where naturalness drew distinctions between (first order) properties. Of especial interest is the final claim: this is the Melia question of whether naturalness itself is a natural property (Melia suspects it isn't, Sider believes it is). Clearly, if the question for any reason turns out to be ill-formed, Melia will be happier than Sider. (The atheist will be happier than the true believer, if God-talk turns out to be meaningless.)

But can we really make sense of such an extension of the Lewisian approach to naturalness? The obvious way forward is to identify categories of abundant ontology with the set-theoretic semantic values of expressions of the appropriate type (generalizing Lewis's identification of abundant properties with sets of particulars). Then, if N is really an element of this abundant ontology itself, it will be identified with a certain set. Strong limitative results follow: for example, that there cannot be proper-class many natural entities. Perhaps such features may be finessed: for example, by identifying the property N with a proper class, rather than a set. But however we go along these lines, there looks little hope of being able to answer the Melia question, (5), positively. For this would be to say that whatever entity is identified with N is a member of itself. And no set-like or class-like entity can have that feature, on standard theories.

The problem might have been anticipated: clearly a theory of abundant properties is going to have problems with finding surrogates for very general 'properties' such as the identity relation

[5]It's easiest to be expressed, it has to be said, if we allow ourselves to conceive of the existential quantifier as some kind of higher order property: but presumably the similarity-facts do not depend on this or that way of conceiving the ontology.

Compare Sider's discussion of similarity as a relation among facts. He also contemplates breaking the connection between similarity and naturalness.

[6]I think Andy McGonigal suggested we might focus on difference-making as a criterion for naturalness.

and the existence predicate. And N is a rather special sort of property if (5) holds: one that is self-applicable. Russell's paradox immediately threatens any theory of properties that tries to make room for it. That's not a dead hand on progress: there may be non-standard approaches to the property version of Russell's paradox that allow all of the above to hold. It would be interesting to see such a theory of abundant property ontology worked out.

A way to make sense of N-talk within the extended Lewisian setting, while dodging some of these difficult questions, is to regard the predicate 'N' as typically ambiguous: sometimes expressing particular-naturalness, a property of individuals; at other times it expresses property-naturalness: a property of properties; and *mutatis mutandis* for other categories. Various disambiguations of claim (5) would then arise, though it's doubtful that any of them would capture the intended force of the Melia question.[7] These prospective difficulties motivate the search for other formulations.

A syncategorematic proposal

Sider's approach, recall, did not construe naturalness as a distinction within abundant ontology. Rather than forming a singular term *redness* for the semantic value of 'red', Sider's tactic is to *use* that very term itself. In the simplest version, we would be asked to make sense of the following, each of which is taken to be a sentence:

1. N(Ted)
2. N(is red)
3. $N(\exists)$
4. N(very)
5. $N(N)$

It's hard to suggest any paraphrase of 'N', used in this way. Nevertheless, through immersion we might learn to include such a device in our language.

Do puzzles parallel to those facing the Lewisian arise for this theory of naturalness? Not directly. For here, our language is English supplemented by a single new operator, and we do not avail ourselves of any device of quantification over properties. The language just needn't include any theory of abundant ontology in order to get our theory of naturalness going, so it's unlikely that new versions of Russell's paradox will start threatening it.

Nevertheless, there may be related concerns. One is syntactical. What syntactic category is N in? We know it's a sentence-forming operator taking expressions of various types as input. But then, what is a first-order predicate but a sentence-forming operator taking terms as inputs? What is a second-order predicate but a sentence-forming operator taking first-order predicates as inputs? And what is a third-order predicate but a sentence-forming operator taking quantificational expressions as inputs? If there is an expression 'N' that works as above, then it transcends the traditional syntactic types.

More would have to be done to make that observation into an objection. Many hold that language does feature such syncategorematic expressions: the best candidate, perhaps, being the

[7] A Melian will presumably find this congenial.

variable binding operator λ as used, for example, in Cresswell's λ-categorial grammar (Cresswell, 1973). If semanticists can get along with λ-expressions, then perhaps we can spot the metaphysicians a similarly syncategorematic notion.[8]

As well as syntactic analogues of the Lewisian troubles, one might try to reintroduce original puzzles themselves by asking about the semantics of the language. Whatever is semantic value of *N*, surely it'll be something just as problematic as the property that Lewisians were after. Indeed, won't the whole Lewis picture just be replayed at the level of the semantics of the language, with all the familiar troubles?

That line of objection doesn't seem persuasive to me. For one thing, it's significant that the objection doesn't target the metaphysician as such, but rather the metaphysics of the semantic theory of the metaphysician's language. And that gives all sorts of wriggle room: for example, one might just deny that objectual semantic values need be assigned. And indeed, it is exactly with syncategorematic expressions like λ and perhaps *N*, that the case is strongest for implementing semantic theory via a characteristic semantic axiom rather than the assignment of a specific semantic value.

Let us therefore explore this proposal a little further. Given the difficulties that the Lewisian approach had in even formulating the Melia question coherently, let us see how that issue plays out here. Unfortunately, there's no simple story. A sentence-forming operator that can take as input expressions of arbitrary syntactic categories is one thing. But the obvious way to formulate the Melia question is the following:

- $N(N)$

And here we've trying to form a sentence out of the application of *N* to something that isn't of any syntactic category. Is that legitimate? Might we able to develop a theory that allows for sentences with that kind of syntactic structure? I just don't know.

We can get a bit further if we combine the setting with the use of λ-expressions to form compound expressions of various types. And this has some independent appeal. [9] For example, we could then say that *Being beloved* is a natural property, by claiming:

$$N(\lambda x \exists y(x \text{ loves } y))$$

We might then formulate the claim that naturalness is itself natural, as follows:

$$N(\lambda \eta N(\eta)$$

To have the intended force, however, η must be a type-unrestricted variable.[10] Allowing such λ terms to combine with type unrestricted variables again takes us beyond the bounds of things with which I'm familiar.

In the Lewisian setting, for the Melia claim to be true, it looks like we'd need a paradox-free theory of self-applicable properties. In the current setting, for the Melia claim to be well-formed

[8]It is controversial whether λ is irreducibly syncategorematic, or whether the work it does can be replicated within a pure categorial grammar. See Lewis (1970), Cresswell (1973), Varzi (1999) and Williams (2005, appendix C) for discussion.

The parallel to λ might break down at the point where we try to apply *N* to itself. For then we're forming a sentence out of an expression of no syntactic category! That doesn't look to have a precedent.

[9]If one reads λ as a operator that forms terms for properties out of fragments of sentences, as some metaphysicians are inclined to, then you'll arrive at a version of the Lewis proposal. But if it is read in the way it is used in Montague grammar, as a device for variable binding and forming expressions of one syntactic category out of another, no departure from Sider's nominalist-friendly ideas required.

[10]Otherwise we won't get the claim in full generality. For example setting η as an objectual variable, we'll only get the claim that *being a natural object* is natural.

and true, we need a syntactic theory allowing for paradox-free type-unrestricted quantification. I haven't argued that such frameworks aren't available (indeed, they might be extant). But this does look like treacherous ground.

Sider's official proposal

The view just described is not the way that Sider goes. Rather, he formulates the claims in the following way:

1. $N(F(\text{Ted}))$
2. $N(x \text{ is red})$
3. $N(\exists x(Fx))$
4. $N((\text{very } F)(x))$
5. $N(N(Yx))$

This leads to a syntactical simplification. N is now always an operator taking (possibly open) sentences to sentences. The operator N is binds all the free variables in the embedded sentence, so that an N-claim is a closed sentence. As an upshot, we seem to be able to formulate the Melia question without either of the troubles that afflict the previous two proposals. Like the syncategorematic approach, there's no paradox-threatening theory of abundant ontology to worry about. But there's nothing syntactically dodgy about the Melia claim either: it's a simple case of an operator that forms sentences from sentences, being applied to a particular sentence.

Just as with the previous case, paraphrase is hard, but we can convey well enough the intention: Sider tells us that N in application to a sentence containing both constant and variable expressions says what the Lewisian would express by calling the semantic value of the constant part of the sentence, natural.

For all sorts of purposes, we want to be able to quantify over the natural: for example to capture thoughts such as: "The natural properties apply only to microphysical entities". On the Lewis and the syncategorematic approaches, respectively, we could express this as:

- $\exists x$ (Property(x) and N(x) and $\forall y$ (Instantiates(x,y)$\supset$ Microphysical(y)).
- $\exists X$ (N(X) and $\forall y$ ($Xy \supset$ Microphysical(y))

But on the official Sider line, it's impossible to find a good paraphrase. The obvious attempt would be as follows:

- $\exists X$ (N(Xz) and $\forall y$ ($Xy \supset$ Microphysical(y))

But this would go wrong, for at least two reasons. First N is supposed to bind variables within its scope: so that occurrence of Y is not going to be bound by the initial quantifier. Second, on this reading, N does not have any constant expressions within its scope, in particular, Y is not constant. So that part of the sentence simply doesn't express what it needs to, viz. that Y is natural. Effectively, the constant/variable distinction is exploited by Sider in order to give the intended reading of applications of N, but this then messes up any attempt to quantify into such contexts.

Here's another way of making the same point. Consider 'some natural object is red' and 'Ted has some natural property'. The obvious renderings work for the previous setups, but not for the Sider's official line, where we get:

- $\exists Y$ (N(Yx) and Y(Ted))
- $\exists x$ (N(Yx) and red(x))

The point is that the same N-clause is used in the two cases, but it needs to express something very different in each case.

A theoretical reflection of these difficulties is that on Sider's reading N is going to be hyperintensional. The embedded clauses within 'N(red(x))' and 'N(red(Ted))' can have exactly the same fine grained semantic structure relative to a given variable assignment; but still the former may be true relative to that variable assignment (if redness is a natural property) but the latter be false again on that variable assignment (given that *Ted is red* is not a natural fact—presumably it's not a fact at all).

What could be done? Well, we might introduce a syntactic distinction between starred and unstarred variables, and use the unstarred variable/other expression contrast just as Sider suggests using the variable/constant distinction. For example, N would bind all unstarred variables, but leave the starred variables free. This wouldn't do anything to help the ultra-hyperintensionality of N, but it would at least allow us to make grammatical sense of quantifying in. Well, perhaps. It'd be nice to see this laid out systematically.

Let's take stock. Each of the three versions led to puzzles, and the challenge to pursue some non-trivial formal project. However, these challenges arise only *conditionally* in the case of the extended Lewisian approach and the syncategorematic approach: conditionally on our wanting to make sense of a univocal notion of naturalness in terms of which we could formulate and answer positively the Melia question. On the other hand, the various troubles that Sider's official approach has with quantifying in look pretty universal: giving up on quantifying over the natural in general is a far bigger pill to swallow than giving up one very particular controversial thesis.

For all we have said, Melians can be happy to regard the Melia question as ill-formed. I do not see any additional problems with their pursuing either of the first two setups. It is anti-Melians who have the problem. They need to explain exactly how a naturalness predicate or operator would function, such that Melia question is formulable and has a chance of holding.

My first question for Sider is the following: how do we quantify over the natural? How do we do so, and still give the answer he favours to the Melia question?

2 The loci of naturalness

Suppose now that we have chosen a way of formulating naturalness claims in combination with expressions of various syntactic categories. The question then is: which of these claims is true?

For ease of expression, I will talk in the Lewisian way of entities of various categories being natural or non-natural. But, if one favours either of the other alternatives presented above, then one should regard this as so much loose talk, to be replaced by the official idiom in the obvious ways.

What entities, then, are natural? Perhaps some operators, perhaps some properties, some objects perhaps; maybe things in other categories.

Now, the point made earlier in connection with the original Lewis setting should be remembered. Not everywhere you feel the inclination to call things 'natural', do you need to maintain that naturalness proper draws a distinction. One can imagine the following position: charm, charge and the rest are the natural properties; necessity is a natural operator; unrestricted quantifiers are natural operators; and that is all. Still, we want to say that some objects (Sparky the electron, say) are in some sense 'natural' in a way that gerrymandered fusions are not. But,

as before, we can allow this talk without admitting any objects into the realm of the natural. Bearers of natural properties, like Sparky, might be deemed 'honorifically natural': not natural themselves, but related to the natural in ways that makes that kind of talk appropriate.

Of course, exactly which entities are natural will be a matter of dispute between rival metaphysical positions. It is worth, however, separating two general approaches.

The first is Sider's. For Sider, I take it, the properly natural entities will be "subfactual": they'll be things such as operators, properties, objects and the like. Facts themselves will be merely honorifically natural.[11] In the official idiom, locutions like N(Sparky is negatively charged) are never true; though when a true sentence Fa is such that $N(F)$ and $N(a)$ hold, we are entitled to speak of Fa as natural in the merely honorific sense.[12]

The second approach is Fine's. Fine's view might be rendered in the following way in Sider's official idiom: the only truths of the form $N(e)$ are of the form $N(S)$, where S is a sentence. Again, you can the extend the notion of naturalness honorifically to entities in other categories: e is natural in the honorific sense iff it is part of a sentence S such that $N(S)$ holds. (Sider himself seems to see Fine's approach as postulating an alternative to the naturalness metametaphysics, with a rival primitive operator 'it is really the case that'. But I don't think much is lost by presenting it as a variant of the naturalness approach in this way).

Are there virtues of one or the other approach that we can identify in this abstract setting? Or must evaluation wait upon consideration of the details of particular debates?

Sider tentatively suggests that the subfactual approach is more satisfying:

> If it's true in reality that x is a part of y, isn't that because of something special about parthood? I prefer the naturalness metametaphysics precisely because it does not stop with talk of carving at the joints at the level of facts; it *explains* this in terms of carving at the joints at subfactual levels. The level of the fact (or sentence) is not metaphysically ultimate.

I think there's something to this thought, but that when unpacked, it relies on assumptions that Fine should deny.

Suppose we are interested in an operator Q, which applies to some sentences and not to others. Patterns emerge. For example, it might be that whenever one has a true atomic sentence configuring the word 'part' or 'charm' or 'charge', then that primitive operator applies to the sentence. Here are two theories. The first takes Q as primitive ('metaphysically ultimate'). The patterns in the distribution of Q are brute and unexplained. The second takes Q as defined out of other operators (perhaps themselves treated as primitive) that attach at the subsentential level. The patterning within the distribution is now predicated and explained by the distribution of the underlying operator.

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[11] An alternative would be to allow that facts are natural, but to say that their naturalness 'reduces' to the naturalness of subfactual entities. Joseph Melia suggested to me that one way this might be manifested in Sider's general framework is by saying that some naturalness-facts are more natural than others: the naturalness of properties and objects being more natural than the naturalness of facts, for example. I prefer the 'eliminativist' approach here, but someone more sympathetic to the study of meta-naturalness might wish to pursue these thoughts.

[12] Perhaps we could introduce a new operator, $N*$, such that $N(e) \Rightarrow N*(e)$, but $N*(e)$ also holds when e meets the conditions for being honorifically natural.

The talk of *facts* here does prejudge a rather large question for one who goes in for sentence-level naturalness. Is the $N*$ operator to be factive or not? Or can we have both $N*$(Sparky is positively charged) and $N*$(Sparky is negatively charged). Insofar as the application of the $N*$ operator is purely honorific, presumably we are free to adopt either convention. It would be a rather more substantive question for one who took the N operator proper to hold at the level of sentences. If the N operator did apply to false sentences, this presumably be an ontologically non-committal version of the doctrine of negative facts. The idea of there being natural truths and natural falsehoods does not seem so disturbing.

Thus stated, the verdict seems clear: the theory that predicts and explains the patterns is to that extent better than the theory that takes the patterns as brute.

I am guessing that it this very general thought that underlies Sider's dissatisfaction with the sentence-first approach. If so, since the principle concerned is interestingly general, and may be evaluated by looking at its application to other cases. For example, let the operator Q be 'it is true that', and consider the patterning induced by the propositional logical structure of sentences: for example, that Q is applicable to all sentences of the form $\neg(p \wedge \neg p)$. Contrast a theory that takes this truth-operator as primitive, with a theory that takes as its working primitive the application of truth to atomic sentences alone, and then offers recursive clauses to define the truth of compounds. The predication and explanation of the patterning does indeed seem to favour the latter over the former.[13]

An assumption at work here is that both theories treat their operators as primitive—as 'metaphysical ultimates'. If so, then it's reasonable to think that there can be no more explaining done, than that is explicitly mentioned in the story. In that setting, the Siderian thought seems to have power. But in a setting where the expressions involved are not 'metaphysically ultimate', it's not so clear that it'll go through: for it may be that the patterning of Q, though not explained by further operators at a subsentential level, still gets explained.[14]

Now it does seem to be part of Sider's position that we take N to be primitive. So perhaps in his own case, he has reason to go for the subfactual approach. But naturalness needn't be primitive, to work in the ways that Sider describes. For example, a generalization of one of Lewis's other options is possible: in additional to abundant properties, objects, operators etc (or, in the official idiom, meaningful names, predicates, quantifiers etc), we have a separate, sparse ontology of Universals, Substances, "Proper Operators" and what have you. $N(e)$ holds iff e 'stands for' some element of the sparse ontology.[15]

If Sider has that option (whether or no he chooses to take it), Fine has it too. And, indeed, I think that Fine should respond to Sider's plea for explanation of patterns in the 'naturalness' facts, by arguing (a) that his 'it is natural that' is not metaphysically ultimate; and (b) using the theory of how sentence-level naturalness facts emerge to account for the patterning.

Now, one might have the suspicion that any such story will merely shift the problem back a level. The suspicion would be intensified if one tried the analogue of the Lewisian tactic, invoking an ontology of sparse facts or states of affairs, and letting N apply to a sentence just when it "corresponds to" a state of affairs.[16] But suspicion shouldn't be confused with argument, and one must wait to hear the details of the Finean picture to figure out whether the question is dissolved or merely relocated. In Williams (2007b) I have given one interpretation of the Fine framework that treats his operator 'it is really that' merely as an expressive device (a conceptual primitive, perhaps, but not a metaphysical one), to be characterized in terms of a general theory of ontological commitment, and ultimately in terms of appropriately sparse ontology and

[13]For a more controversial case, consider a form of metaphysical modal primitivism, whereby the operator $\Box$ is taken as 'metaphysically ultimate'. Now, patterning again emerges (at least according to a large section of the philosophical community, who admittedly may disagree amongst themselves about precisely what patterning it is). For example, it might be that whenever an atomic sentence is of the form 'N is an animal', then $\Box$ applies to that sentence. Contrast the theory that treats $\Box$ as metaphysically ultimate, with a theory that locates modal primitives at a subsentential level: a crude example would be one that introduced a primitive predicate 'essential', and posited that Essential(animal) holds. The aim would then be to reduce $\Box$ facts to Essentiality facts of this form. Supposing this to be done, the above principle would tell us to dispense with the $\Box$ primitivism in favour of Essentiality primitivism.

[14]Remember the Melians: naturalness won't be a 'metaphysical ultimate' on that view, whatever it applies to!

[15]Notice that one needn't reify semantic values into 'abundant ontology' for this ontological characterization of N to work.

[16]This might actually be a good description of how Armstrong's metaphysics plays out in this setting.

ideology.[17] Of course, this is hardly an uncontroversial setting, but it illustrates that sentence-level naturalness has no need to take the patterning of application of the naturalness operator as metaphysically brute. Against this version of Fine, what I regard as the nice *prima facie* case offered by Sider, will have no impact.

Grounding

Let me offer one reason to like Fine's approach, as opposed to Sider's. Sider is concerned (for good reason!) about whether the sort of microphysicalism that Lewis seems officially to favour can really do the work he demands of it. For foundational semantics, in particular, it is arguable that we need naturalness at a more macrophysical level.

One option is to complicate the naturalness notion. Rather than naturalness simpliciter, we take as basic the relation: *being more natural than*. Another is to extend the range of application of naturalness itself (an option that Jonathan Schaffer (2004) favours). Rather than just the microphysical level being natural, the macrophysical would turn out to be natural as well (we 'regain the macroworld').

Switching from naturalness to relative naturalness raises a host of difficult questions, especially if we allow that in a given world there need be no 'most natural' elements. For example, Lewis's (1986) definition of duplication relied upon a level of perfectly natural properties; the amendment that he and Rae Langton proposed (1998) in part to accommodate worlds with no perfectly natural elements, while intriguing is notoriously counterexample prone. If we took the Schaffer line, we could help ourselves to something like the original Lewis definition.

But Sider is not persuaded. It offends a "physics first" prejudice (which, for what it is worth, I share).

Now, one way of getting back the idea that the microphysical stuff is somehow more basic than the macrostuff, without appealing to relative naturalness, is to introduce another notion, 'grounding', say. Even though my chair and its constituents particles are both natural entities, the chair is grounded in its particles, but not vice versa. Schaffer, of course, thinks precisely the opposite, but let's continue to indulge our prejudice for very small things.

The worry here is that thus far this 'grounding' relation seems a mere label. What are we being told other than that there is an asymmetrical relation between chair and its particles. Well, we and Schaffer can agree with that: to capture our disagreement, we need to say something more about the 'directionality' of the relation. What does the relationship between two entities have to be like, for it to deserve the name 'grounding'?

I don't know how to say much more in the object-to-object case. But as deployed by Fine (2001), I find the notion far more palatable. Let's suppose that my sitting on my chair, and the particles arranged me-wise being atop the particles arranged chair-wise, are each natural facts. Again, the question arises: is either more basic than the other? And again, we can introduce the label grounding to express our microphysicalist inclination: the fact concerning particles grounds the fact concerning me and my chair.

If we are pressed on what sort of relation this is, then in this case we can start to give answers. For example, we might claim it to be an explanatory relationship: that the particles are arranged thus-and-so explains why I am sitting on my chair. That sounds pretheoretically right, and gives a grip on what sort of features are being labelled 'grounding'. Of course, there's a lot more to do to articulate exactly what this grounding relation—which Fine calls 'the tightest explanatory

[17]The view offered is that we are really only ever ontologically committed to things that really exist (indeed, the whole point of a theory of ontological commitments is to spell out what has to be the case in reality for a given claim to be true). This is to see Fine as an eliminativist about the non-fundamental, while separating that metaphysical claim from the semantic doctrine that discourse about the non-fundamental is largely false.

relation'—consists in. But at least we've got some sense of what we're talking about. To try to do the same in the subfactual setting looks ludicrous: to talk of objects explaining other objects just seems like a straightforward category mistake.[18]

My second question for Sider is the following: does his dissatisfaction with the sentence-first approach continue even when naturalness is not assumed to be itself a metaphysical primitive?

3 Invidious choices?

Sider thinks that Fine's framework has an advantage over his in one respect: the avoidance of certain invidious choices. I don't see exactly how this works, so I'm going to finish by setting out what I see as a parity between the two approaches in this area.

Suppose that the unrestricted existential quantifier is natural. What of the unrestricted universal quantifier? Is it natural, or should it be seen as defined? Within mereology, is it parthood or overlap or composition that we should take to be natural? If modalities are primitive, should it necessity, possibility or contingency that is construed as natural?

The choices here seem invidious, because arbitrary. Parthood and overlap and composition seem so much on a par *qua* basic notion for mereology, it's hard to see what could justify dignifying one over the others as 'the natural mereological relation'. The basic truths configuring one of these notions, plus appropriate definitions, will logically entail the same set of truths as any other. And considerations of simplicity, explanatory power and so forth do not seem to help our theory-choice here.[19]

Sider thinks Fine has things easier. For both of the following may hold: it's true in reality that this thing is part of that thing; and it's true in reality that those two overlap. In general, parthood, composition and overlap might all figure amidst the claims that are 'true in reality'. If so, no invidious choices need be made between them. Call this the generosity response to invidious choice: everyone will have prizes!

One might wonder whether the generosity really helps with the original puzzle. Shouldn't we put the puzzle like this: amidst a set of equally good primitive terms, which subset contains all and only the natural ones, or all and only the ones that feature in natural claims? Isn't one choice here as good as any other? Isn't any choice between these invidious? If so, choosing the most generous set and taking all the terms as equally natural/figuring in natural claims, is just to plump unjustifiably in one direction. However, I think the generosity response ca be defended against such 'revenge' problems.[20]

[18] Of course, there may be other asymmetric relations one can appeal to: ontological priority, essential dependence, and so on. I'm far happier with a subspecies the familiar notion of explanation, than these special-purpose metaphysical notions. But I will admit that, if one is happy one has an independent grip on them, they can do a similar job in a subfactual setting that grounding can do in the fact-level one.

[19] Caveats. overlap is symmetrical in a way the others are not. That might be the basis of a principled choice (Dorr, 2004, cf.).

[20] Suppose T and S are alternative primitives. Then if T is natural (/figures in natural claims), but S has exactly the same kind of profile as T as regards, e.g. systematizing truths of science in a simple and explanatorily powerful way, it becomes what criterion for naturalness would allow us to figure out that T rather than S was natural (/figured in natural claims). So, at minimum, it's hard to see how we could know that T was natural.

On the other hand, if generosity is the right approach, and T and S are both natural (/figure in natural claims) it's perfectly possible to envisage some sufficient criterion for naturalness which'd return the same verdict on each. And so just by applying that criterion, we would be in a position to come to know the truth of the matter. So the epistemological worries generated by the original puzzle concerning single candidates for naturalness, do not obviously carry over in connection to the puzzle when reformulated in terms of sets of candidates to be natural. I expect this sort of disanalogy to generalize.

I see here a parity that I'm not sure how to break. Sure, Fine *could* be generous, allowing both overlap and parthood truths to hold in reality. He could also be mean, saying for example that, though it's true both that my hand and I overlap, and that my hand is part of me, only the latter is true in reality.[21] Likewise, Sider might choose to be mean, and say that only one of parthood or overlap is a natural relation. But he could also be generous, and take them both to be generous.

Presumably, if the parity is broken, it is because one or the other option is more problematic in the one setting than the other. And it is this I'm not sure about.

If generosity is the more attractive option in the abstract, for the reasons given above, then the central focus should be the following: if Fine can be generous, why can't Sider be so too? Why can't Sider declare that each of overlap, parthood, and composition, are natural? Why not both existential and universal quantification as natural, or multiple modalities? Why force the choice?

Perhaps there is a general constraint of non-redundancy on the set of natural entities. A reasonably familiar idea is that the set of natural properties and relations is required to be a minimal supervenience basis for all truths.[22] But clearly adding both overlap and parthood, for example, would generate redundancy.

Now, why doesn't the constraint over non-redundancy bite against Fine too? Of course, since we're no longer thinking of a set of properties, it'll need to be reformulated (as indeed, it will to be applicable to Sider's preferred non-property-centric approach). But the spirit of strict minimality seems clearly to be violated: why have both overlap-facts and parthood-facts within reality? Why not go for one or the other? Isn't this a kind of redundancy?

A full answer would have to study carefully the motivations for imposing a redundancy requirements, and the details of formulating the requirement in the various non-standard settings in play. But even at this level of generality, we can see how various analogies arise. Overlap-facts and parthood-facts analytically entail one another; matching this, the overlap relation and the parthood relation are logically interdefinable. Is there some way of deflating the charge of redundancy using the notion of analytical equivalence, that is not available in terms of logical interdefinability? Absent more details, we can only speculate.[23]

Let me finish by noting one concern generated by some types of redundancy, which won't be generated by redundancy meeting either of the constraints just articulated. Suppose that you were concerned to ban necessities that were 'brute' roughly in the sense of Dorr (2004): nec-

Thanks to Joseph Melia here for pressing the possible extension of the puzzle here, and for much helpful discussion.

[21]If Fine's 'in reality' operator had to be closed under conceptual entailment, then presumably the mean approach would not be open for him. But I think he should deny this on independent grounds. For example, it might be that the answer to the special composition question is conceptually true; but I would still urge that it might be that reality contains only simples (it is not conceptually *really* true.)

[22]Though it's questionable whether mereological relations would be allowed to figure in such a minimal supervenience basis. Under the orthodox necessitarian conception of composition, and given microphysicalism, the distribution of simple entities and their properties will fix all the facts about what compound entities there are and what they're like. Thanks to Joseph Melia for raising this concern.

Presumably if one were interested in preserving the claim that mereological notions were a non-redundant part of the supervenience base, then one might either strengthen the notion of necessity used in formulating supervenience claims, or go for some kind of view whereby composition is contingent.

[23]One idea. If one is happy with taking talk of facts seriously, one might say that a given parthood-specified-fact and a given overlap-specified-fact are in fact identical (this would make best sense within a framework where in general one identified facts corresponding to logically equivalent sentences, as one of the premises of the slingshot argument invites us to). Of course, it's harder to identify the ontology corresponding to logically interdefinable relational terms such as 'part' and 'overlaps', for this will be extensionally distinct (maybe one could say that they both correspond to the same 'aspect' of the world, but these "Aspects" would be, to put it kindly, unfamiliar pieces of ontology).

essarily true propositions expressed in perfectly natural terms that were not conceptual truths. Certain types of redundancy would be problematic on these grounds.[24] However, within Fine's setting, so long as propositions configuring the redundant terms are analytically equivalent to one's free of those terms, then we won't get any brute necessities unless we had them already in truths not involving the redundant vocabulary.[25] But parity is maintained, so long as the redundancies within the Siderian setting meet the interdefinability constraint: again, no essentially new brute necessities arise.[26] So again I can't see how to break the parity.

My third question for Sider is the following: what breaks the parity between subfactual and factual approaches, such that the Fine setting can, and the Sider setting cannot, be generous when faced with an invidious choice?

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[24]For the compositional necessitarian who thinks that mereological notions are perfectly natural, non-nihilist answers to the special composition question will be brute in exactly this sense. It is no accident, I suspect, that Dorr is a compositional nihilist.

[25]Take a putative necessary, non-conceptual truth S. Then ex hypothesi this is analytically equivalent to a truth S' free of the redundant vocabulary. So long as necessity and 'being a conceptual truth' are closed under analytic equivalence, then S' will also be a necessary, non-conceptual truth. QED.

[26]Take a putative necessary, non-conceptual truth S. The redundant vocabulary is logically definable out of remainder of the stock of natural expressions. So there is a definitional equivalent S' of S that is free of the redundant vocabulary. So long as necessity and 'being a conceptual truth' are closed under definitional equivalence, then S' will also be a necessary, non-conceptual truth. QED. (It's no accident that this is essentially the same reasoning as for the Finean case).

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