Ontological Pluralism, Quantifier Variance, and Ideal Languages

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Abstract

Kris McDaniel has recently defended a criterion of what it is to believe in ways of being that classifies the quantifier variantist as an ontological pluralist. In this paper, I argue that this is a mistake. There is an important difference between the two views, which is often obscured by a certain approach to naturalness or fundamentality. On the *atomistic approach*, individual expressions are the primary bearers of naturalness, and languages are more or less natural or fundamental only derivatively. On the *holistic approach*, it is the other way around. I argue that whereas the atomistic approach struggles to distinguish quantifier variance from ontological pluralism, the holistic approach can do so quite easily. I then propose a criterion for believing in ways of being that does not classify the quantifier variantist as an ontological pluralist. Finally, I discuss various additional advantages of the holistic approach. **Keywords.** Ontological pluralism; quantifier variance; naturalness; fundamentality; metaontology.

Ontological pluralism is the view that there are multiple ways of being.[1] Quantifier variance is the view that "there is no uniquely best ontological language with which to describe the world" (Hirsch 2011: xii). Kris McDaniel has recently defended a criterion of what it is to believe in ways

[1]For recent defenses, see McDaniel (2009, 2010b,a, 2017) and Turner (2010, 2012). For an overview, see Spencer (2012).

of being that classifies the quantifier variantist as an ontological pluralist (2017: 37).[2] In this paper, I argue that this is a mistake. There is an important difference between the two, which is often obscured by a certain approach to naturalness.

Some metaphysical debates concern reality's ultimate structure.[3] Consider the debate over the reducibility of tense. Tensers believe that reality is irreducibly tensed.[4] Any metaphysically perspicuous description of reality must involve tense locutions; no description purely in terms of what goes on at this or that time can capture which times *were*, *will* and are present now. Detensers disagree.[5]

Or consider the debate over the reducibility of modality. Modalists believe that reality is irreducibly modal; any description of reality free of modal locutions is bound to miss out on some of its structure.[6] Antimodalists disagree. They believe that talk of modality is reducible to either talk about what goes on in this or that spatiotemporally disconnected spacetime Lewis (1986), or to some sort of linguistic convention Sider (2003).

Say a language is metaphysically better or more fundamental than another to the extent that it allows for a more metaphysically perspicuous description of reality.[7] If we are willing to say this, we can follow Jason Turner in understanding these debates as debates over what the best or most fundamental language is like:

> [...] The disagreement between those who reduce tense and those who refuse to can be captured as a disagreement about whether the fundamental language involves any tense locu-

[2] In earlier work, McDaniel briefly considers a slightly different criterion that yields the same result (2009: 314).

[3] I take the following characterization of the relevant debates from Turner (2012: §1.1).

[4] See Prior (1968) and Ludlow (1999).

[5] See Sider (2001) and Mellor (1981, 1998).

[6] See Prior (1977) and Plantinga (1986).

[7] This is not intended as an analysis, but as an aid to focus on the right notion. As we shall see in §3, I take the notion of betterness as a primitive.

> tions, such as tense operators WAS and WILL or a tense 'now' predicate that applies to times. And the disagreement between those who reduce modality and those who do not can be captured as a disagreement about whether the fundamental language involves any modal locations (sic), such as modal possibility and necessity operators '◇' and '□' or a modal 'actual' predicate that applies to worlds. (2012: 241)

Just as we may compare languages along a distinctively metaphysical dimension, so it is with individual expressions. Any two electrons are objectively similar in that they are both electrons, but an electron and a cow are not objectively similar in that they are each either an electron or a cow. So, there is an important metaphysical difference between the predicates "is an electron" and "is an electron or a cow." The former is more natural or fundamental; it carves nature closer to its joints.[8]

So, we may speak of both languages and individual expressions as being more or less natural or fundamental than others. We want to make sense of both sorts of talk using as few basic notions as possible. There is a tendency to take the basic notion of naturalness to apply to individual expressions, and then use it to define a derivative notion of naturalness or fundamentality for languages. For instance, Theodore Sider takes his primitive notion of structure or joint carving to apply to individual expressions, and then asks us to "call a language 'fundamental' if all of its expressions carve at the joints" (2011: 8). Similarly, Turner defines a fundamental language as one "where every (undefined) expression is supposed to 'carve reality at the joints'—to correspond to some ultimate structural feature of reality" (2010: 421). In a similar vein, McDaniel writes:

> A language is defective if its primitive predicates are not fun-

[8]This distinction is familiar from Lewis (1983), except that he speaks of natural *properties and relations*. See Sider (2011: ch. 6) for some reasons to speak of natural expressions instead.

> damental. It is certainly a mistake to think that language *must* mirror reality in the sense that one is guaranteed that there will be a correspondence between our words and the world. However, it is no mistake to think that language is in one respect *defective* to the extent that there is no such correspondence between word and world. Having primitive but non-fundamental predicates is one metaphysically bad feature of a language. We can generalize. Call a language *metaphysically ideal* just in case every primitive expression in that language has a perfectly natural meaning (2017: 34).

This is the *atomistic approach*. The primary bearers of naturalness are individual expressions; languages are more or less natural only derivatively. The *holistic approach* says that it is the other way around. In this paper, I argue that whereas the atomistic approach struggles to distinguish quantifier variance from ontological pluralism, the holistic approach can do so quite easily.

In §1, I introduce and motivate McDaniel's criterion for believing in ways of being. In §2, I motivate quantifier variance, introduce Sider's definition of the view, and explain why McDaniel's criterion classifies it as a form of ontological pluralism. In §3, I argue that this is a mistake. I explain why the atomistic approach struggles to distinguish these views, and how the holistic approach can do so. I then propose a criterion for believing in ways of being that does not misclassify the quantifier variantist.

Once we distinguish quantifier variance from ontological pluralism, it becomes clear that Sider's definition of quantifier variance is too narrow; it rules out interesting versions of the view. In §4, I provide a less restrictive definition. With the help of this definition, in §5, I then characterize a particular version of quantifier variance that is immune to some of Sider's arguments against quantifier variance. In §6, I use my definition of quantifier variance as a model to define a more general class of variance views.

One member of that class is truth-functional variance. I argue that this view provides a compelling solution to Sider's problem of hard choices.

Before we begin, some clarificatory remarks are in order. So far I have spoken as if talk of naturalness is best understood by means of a predicate, and the question is just whether it is a predicate of languages or individual expressions. Officially, however, I wish to remain neutral between this view and Sider's operator view, on which such talk is best understood by means of a sentence-forming operator instead (2011: ch. 6). For the sake of convenience, however, I will continue to speak as if the predicate view is true.

1 Ontological Pluralism

Suppose you thought that *abstracta* and *concreta* exist in different ways. If pressed to state your view more formally, how might you proceed? First, you might say that there are two possible restricted quantifiers $\exists_a$ and $\exists_c$.[9] They are restricted in that they quantify over only some of what there is: $\exists_a$ ranges exclusively over *abstracta*, and $\exists_c$ excusively over *concreta*. You might add that they are also semantically primitive. That is, they are not defined up from the unrestricted quantifier $\exists$ and a restricting predicate (2017: 25). '$\exists_a x$ (x is a number)', for instance, is not simply shorthand for '$\exists x$ (x is abstract and x is a number)'.

So far, however, there does not seem to be anything distinctively metaphysical about your view; it amounts to a claim about the possibility of certain linguistic expressions. Interesting though it may be, its acceptance does not make you an ontological pluralist. So, how do we capture what is distinctively metaphysical about your view? McDaniel suggests that we make use of naturalness.

[9] I will be somewhat sloppy with the distinction between quantifiers and quantifier expressions except where it matters.

The ontological monist may allow for the possibility of $\exists_a$ and $\exists_c$, but she should insist that they are highly unnatural; the single most natural quantifier is the unrestricted quantifier. To distance herself from this position, the ontological pluralist might insist that $\exists_a$ and $\exists_c$ are no less natural than the unrestricted quantifier.

Armed with this notion, McDaniel offers the following sufficient condition for being an ontological pluralist: "one believes in ways of being if one believes that there is more than one *relatively fundamental* meaning for an existential quantifier. An existential quantifier is *relatively fundamental* just in case no other quantifier meaning is more fundamental than it" (2017: 37), where "more fundamental" just means "more natural" (2017: 27).

Although this formulation speaks of quantifier-meanings, McDaniel earlier reminds us that we can make sense of this sort of talk without reifying meanings (2017: 35). So, I take the official, more neutral criterion to be that one believes in ways of being if one believes that there is more than one relatively fundamental existential quantifier expression.

2 Quantifier Variance

Quantifier variance is a form of ontological deflationism. Consider the debate over when composition occurs. Universalists say always, nihilists say never, and common sense ontologists say often enough to make sure that there are as many objects as common sense says there are, and no more. There are many other positions, but to keep things simple, let us focus on these three.

Ontological deflationism says that the whole debate is merely verbal.[10] As Eli Hirsch puts it, "nothing is substantively at stake in these questions

[10]One can be an ontological deflationist about some debates but not others. I am picking on the composition debate for the sake of concreteness.

beyond the correct use of language" (2010: 144). That does not mean that there is no right answer, or that each participant speaks truly. In fact, Hirsch argues that given the right way to resolve these sorts of disputes, "the position of common sense ontology must be correct" (2010: 144).

Hirsch offers an example that illustrates how this can be so. Suppose A says, "a glass is a cup," and B disagrees. Given certain accounts of content fixing, it is entirely possible that only B speaks truly, and yet that doesn't render this dispute any less verbal. Imagine a linguistic community whose patterns of speech are just different enough from those of A's actual community to make sure that its members agree with A with respect to all disputed sentences. Call it the A-community. If you take a standard drinking glass, show it to a typical member of the A-community under normal perceptual circumstances, and say, "this is a cup," for instance, they will agree with you. Call their language "A-English." Hirsch writes:

> [B's] dispute with A is verbal because the disputed sentences asserted by A are true in A-English, and, by the same token, the disputed sentences asserted by [B] are true in [B-English]. The only real question at issue is which language is (closest to) plain English. I take it that the answer to that question is that [B-English] is plain English. That's the sense—the only sense—in which [B is] right and A is wrong. In this kind of example it seems obvious that the proper way to resolve a verbal dispute is by appealing to common sense or ordinary language (2010: 148).

The ontological deflationist wants to say the same thing about the composition debate. Consider the languages of the various hypothetical communities corresponding to the various participants to the composition debate: universalist- English, nihilist-English, etc. Following Hirsch, let us

call them the "ontological languages" (2010: xii). From a deflationist perspective, the only real issue here is which of these languages is plain English. And, put that way, the answer seems obvious: it is common-sense-English.

We may characterize quantifier variance by contrasting it with certain anti- deflationist views. One such view is that, in addition to the issue of which of the ontological languages is plain English, there is the issue of which one is the metaphysically better language. Perhaps the nihilist-quantifier carves at the joints better than either the universalist- or the common-sense-quantifiers. If so, then nihilist-English is plausibly the better language. By contrast, I take the core claim of quantifier variance to be that all the ontological languages are metaphysically on a par[11]—provided, that is, that they are all truth-conditionally equivalent.[12]

Now Sider defines quantifier variance as "the claim that there are multiple candidates to be meant by quantifiers, none of which carve perfectly at the joints, but none of which are exceeded in joint-carving by any other quantifier candidate" (2011: 175). This definition is certainly in the same spirit as the above characterization. If the nihilist-, universalist-, and common-sense-quantifiers have equally joint carving meanings, then it is hard to see how any of them could be better than the rest

Although Sider's definition speaks of quantifier-meanings, like McDaniel, Sider shortly thereafter makes it clear that the quantifier variantist need not reify quantifier-meanings (2011: 175). She could instead define her view as the claim that there are multiple quantifier expressions, none

[11]One can be a quantifier variantist with respect to some debates but not others. Here I have characterized quantifier variance with respect the composition debate. To characterize other versions of the view, simply let "the ontological languages" refer to the languages corresponding to the participants of another debate.

[12]Two languages are *truth-conditionally equivalent* just in case for any sentence in one, there is a *truth-conditionally equivalent* sentence in the other, where two sentences are truth-conditionally equivalent just in case, for any context of utterance, the two sentences express the same coarse-grained proposition relative to that context (Hirsch 2010: xii).

of which is perfectly natural, but none of which is exceeded in naturalness by any other quantifier expression.

We are now in a position to see how McDaniel's criterion classifies the quantifier variantist as an ontological pluralist. Suppose you search for the most natural existential quantifier expression. According to the quantifier variantist, you will end up with a tie between the nihilist-, universalist-, and common-sense- quantifiers. Thus, McDaniel's criterion classifies her as an ontological pluralist.[13]

3 The Atomistic vs. the Holistic Approach

McDaniel concedes right away that this result is surprising. This may be so, he suggests, because quantifier variance is supposed to be a deflationary view, whereas ontological pluralism is a paradigmatically inflationary one. However, he recommends that we get over our surprise. "Those who oppose metaphysics are brother and sister metaphysicians with a metaphysics of their own" (2017: 37).

Although I am sympathetic to McDaniel's remarks, I do not think the perceived difference in how inflationary or deflationary the views are gets to the heart of the issue. I think some quantifier variantists might balk at the suggestion that they are ontological pluralists. If pressed to explain why not, they might offer the following speech:

"The ontological pluralist believes that any highly perspicuous description of reality must involve multiple quantifiers. On my view, by contrast, it is perfectly possible to give a highly perspicuous description of reality using a single quantifier. A description purely in terms of the nihilist-quantifier, for instance, need not miss out on any of reality's structure. It

[13] As we shall see, Sider's definition of quantifier variance is too narrow, and I will eventually provide my own definition. However, the present result does not depend on which definition we adopt. That is, McDaniel's criterion classifies the quantifier variantist as an ontological pluralist whether one adopts my definition or Sider's.

is just that different highly perspicuous descriptions may involve different quantifiers."

This speech gestures at a genuine difference between the two views. However, the atomistic approach struggles to capture this difference.

Consider three languages L_n, L_u, and L_{cs} that differ only in that they have different primitive quantifiers $\exists_n$, $\exists_u$, and $\exists_{cs}$, corresponding to the nihilist-, universalist-, and common-sense-quantifiers, respectively. Now consider a quantifier variantist who wants to say that L_n, L_u, and L_{cs} are all metaphysically on a par, and that no language is better. How should the atomist construe this view? Suppose she follows McDaniel in defining a metaphysically ideal language as one whose primitives are all perfectly natural. She could then construe the present view as the claim that L_n, L_u, and L_{cs} are all ideal.

But now consider a silly version of ontological pluralism on which there are three fundamental ways of being: simple-existence, universal-existence, and common-sense-existence. Troutturkeys enjoy only universal-existence, tables enjoy both universal- and common-sense-existence, and certain subatomic particles enjoy both simple- and universal-existence. On the atomistic approach, this view is plausibly construed as the claim that $\exists_n$, $\exists_u$, and $\exists_{cs}$ are all perfectly natural. The problem is that, given the atomist's construal of the two views, the above quantifier variantist is committed to this version of ontological pluralism. If the quantifier variantist is right that L_n, L_u, and L_{cs} are all ideal, it follows from the atomist's definition of "ideal" that $\exists_n$, $\exists_u$, and $\exists_{cs}$ are all perfectly natural.

Consider a language L_{n+u+cs} just like L_n, L_u, and L_{cs}, except that it has as primitives all of $\exists_n$, $\exists_u$, and $\exists_{cs}$. Intuitively, the difference between our versions of quantifier variance and ontological pluralism is this. According to the former, L_n, L_u,and L_{cs} are all ideal. According to the later, none of them are; the only ideal language is L_{n+u+cs}. The problem is that this way of distinguishing the views is unavailable to the atomist. Given her

definition of "ideal", L_n, L_u, and L_{cs} are all ideal if and only if L_{n+u+cs} is also ideal.

Of course, the quantifier variantist could reject McDaniel's definition of "ideal," but it is not clear what she could put in its place. The obvious alternative is this: a language is ideal just in case an expression is a primitive of that language if and only if that expression is perfectly natural. This definition may be independently motivated by pointing out that a language lacking perfectly natural expressions among its primitives may be expressively impoverished and should therefore not count as ideal, even if all its primitives are perfectly natural. Unfortunately for the atomist, this does not help distinguish our versions of quantifier variance and ontological pluralism. This time, the problem is that the proposed definition renders our version of quantifier variance incoherent. Given this definition, our quantifier variantist cannot say that L_n, L_u, and L_{cs} are all ideal, because each of them lacks some perfectly natural expression among its primitives (L_n lacks $\exists_u$ and $\exists_{cs}$, L_u lacks $\exists_n$ and $\exists_{cs}$, etc.). The closest coherent view in the vicinity is that L_{n+u+cs} is ideal, but that is just our silly version of ontological pluralism.[14]

So, let us consider the holistic approach instead. Let us take "is better than" as a primitive predicate of languages.[15] We may then define a language as ideal just in case there is no better language, and an expression as perfectly natural just in case it is a primitive of some ideal language or other. Alternatively, we could take "ideal" as our primitive, and then use it to analyze "is better than." Since I do not know how that analysis would go, here I take the first route. As far as I can tell, however, the benefits I claim for the holistic approach do not depend on our choice of primitive.

[14]Thanks to Thiago de Melo for helpful discussion here.

[15]In previous work, Sider briefly considered a similar proposal: "A simple [nominalistic way to speak of structure] [...] would be to introduce a distinction, call it 'betterness', as applied to entire (interpreted) languages: languages are better or worse depending on how closely they cleave to the structure of the world" (2009: 402-3). However, Sider's concerns in that work are largely distant from my own.

So far we have an analysis of absolute or perfect naturalness. What about comparative naturalness? The "piggyback" approach is to point out that the atomist who takes her basic notion of naturalness to be absolute is also in need of an analysis of comparative naturalness. Thus, the holist can simply borrow whatever analysis the atomist comes up with.

Another approach is to analyze comparative naturalness directly in terms of betterness. Although I have no analysis on offer, here is a plausible sufficient condition: an expression α is more natural than an expression β if α and β are of the same grammatical category, and other things being equal, languages with α as a primitive are better than languages with β as a primitive. That is, for any pair of languages that differ only as to whether they have α or β as a primitive, the α- language is better than the β-language. If replacing a quantifier $\exists_1$ with a quantifier $\exists_2$ makes the language better, you should conclude that $\exists_2$ is the more natural expression; if it makes it worse, you conclude it is the less natural one.

The holist can effortlessly distinguish our versions of quantifier variance and ontological pluralism. On the former, L_n, L_u, and L_{cs} are all ideal; on the latter, L_{n+u+cs} is the only ideal language. This is so even though the two views agree that $\exists_n$, $\exists_u$, and $\exists_{cs}$ are all perfectly natural.

I will now propose a criterion for believing in ways of being that does not classify the quantifier variantist as an ontological pluralist. Call a language *quantified* just in case it has at least one primitive quantifier expression. Say a quantified language is *maximally good* just in case no quantified language is better. One believes in ways of being if one believes that every maximally good quantified language has multiple primitive existential quantifier expressions. Our quantifier variantist believes that L_n, L_u, and L_{cs} are all the maximally good quantified languages, and that they each have a single primitive existential quantifier expression. Thus, the criterion does not classify her as an ontological pluralist.

All I claim for this criterion is that it improves on McDaniel's, not that

it is free of problems. One problem is this. Suppose you thought that the one ideal language has two primitive existential quantifiers, a singular and a plural one, which nevertheless share a domain. My criterion then classifies you as an ontological pluralist: you believe that there are plural and singular ways of being, and that everything enjoys both. But this might seem wrong. Although there are a couple of responses available,[16] I need not discuss them here, since the present problem affects McDaniel's criterion as much as it does my own.

In the next section, I will show that the present criterion does classify *some* quantifier variantists as ontological pluralists. As we shall see, however, this is the intuitively correct result. The problem with McDaniel's criterion is not that ontological pluralism is incompatible with quantifier variance, but that they can come apart.

4 Back to Quantifier Variance

In the previous section, I drew a contrast between a silly version of ontological pluralism and what I described as a version of quantifier variance. According to Sider's definition of quantifier variance, however, the latter is not in fact a version of quantifier variance. For Sider builds it into his definition that the most natural quantifiers cannot be perfectly natural, whereas on the view I described, $\exists_n$, $\exists_u$, and $\exists_{cs}$ are all supposed to be perfectly natural. In what follows, I argue that Sider's definition is mistaken.

Why build it into the definition of quantifier variance that the most natural quantifiers cannot be perfectly natural? According to Sider, "all ontological deflationists must deny that quantifiers carve at the joints" (2011: 182). So, perhaps the thought is this. If $\exists_n$, $\exists_u$, and $\exists_{cs}$ are all perfectly natural, then the composition debate is not merely verbal. Since this defeats the point of quantifier variance, a view on which $\exists_n$, $\exists_u$, and $\exists_{cs}$ are

[16] For discussion of some responses, see Caplan (2011: §6.2) and McDaniel (2017: 40).

all perfectly natural does not deserve the name "quantifier variance." This thought may be motivated as follows.

Consider the version of ontological pluralism where *abstracta* and *concreta* exist in different ways. We may further suppose that, on this view, $\exists_a$ and $\exists_c$ are both perfectly natural. On this view, debates over whether numbers exista or composites existc do not seem merely verbal; they are debates over whether our most fundamental description of reality will quantify over numbers or composites. Or consider again our silly version of ontological pluralism, specifically the version on which $\exists_n$, $\exists_u$, and $\exists_{cs}$ are all perfectly natural. You may dispute this view, but once you accept it, it becomes hard to deny that (hypothetical) debates over whether subatomic particles have common-sense-existence are not merely verbal either; they are debates over whether our most fundamental description of reality will quantify over subatomic particles in a certain way.

Why do the relevant ontological debates not seem verbal given these views? One might be tempted to think that it is precisely because on these views, the quantifiers are perfectly natural. I submit that this thought is only tempting at all if we are not careful to distinguish two ways in which multiple quantifiers might be perfectly natural. They might be perfectly natural because they are all primitives of the same ideal language, or because they are primitives of different ideal languages. If it is the latter, the debates do seem verbal—they are at best debates over which of a range of equally good languages is closest to plain English.

So, I say there is no reason to define quantifier variance in such a way that the various quantifiers cannot be perfectly natural. What should we put in its place? This: quantifier variance is the view that there are multiple maximally good quantified languages that vary in which quantifier expressions they have as primitives.

Given the suggested criterion for being an ontological pluralist and the present definition of quantifier variance, how are these two views related?

We have already seen that the quantifier variantist need not be an ontological pluralist. The converse is also true. Consider a view on which the one ideal language has two primitive existential quantifiers $\exists_a$ and $\exists_c$, one ranging over *abstracta*, the other over *concreta*. Since the one ideal language is the only maximally good quantified language, and it has multiple primitive existential quantifiers, this view comes out as a version of ontological pluralism. Since there is only one maximally good quantified language, however, it does not come out as a version of quantifier variance. This seems intuitively correct.

However, some views come out as versions of both ontological pluralism and quantifier variance. Consider a view on which there are two ideal languages, which share a primitive quantifier $\exists_a$ for *abstracta*. Where one has as a nihilist quantifier $\exists_n$ for *concreta*, however, the other has a universalist quantifier $\exists_u$ instead.[17] Since the two ideal languages are the only maximally good quantified languages, and they both have multiple existential quantifiers, this view comes out as a version of ontological pluralism. Since the two languages vary in which quantifiers they have as primitives, however, it also comes out as a version of quantifier variance. Again, this seems intuitively correct.

5 Deep Quantifier Variance

As we have seen, the quantifier variantist believes that you can use different quantifiers to give equally perspicuous descriptions of reality. Like Sider's, my definition allows for versions of the view on which the relevant quantifiers are less than perfectly natural. Unlike Sider's, however, it also allows for versions of the view on which the relevant quantifiers are all perfectly natural. On these versions of the view, the relevant quantifiers are primitives of different ideal languages.

[17] I owe this example to Byron Simmons.

Let us define *deep quantifier variance* as the view that there are multiple ideal languages that vary in which quantifiers they have as primitives.[18] In what follows, I argue that this view is immune to Sider's No Foundation and Indispensability arguments. Here is the first argument:

> A more promising objection presses the following questions on the quantifier variantist: what *is* fundamental, if quantification is not? What is the world fundamentally like? How will you write the book of the world?
>
> [...] it's natural to assume that the fundamental is "complete", which I spelled out as meaning that it must be possible to give a metaphysical semantics for each nonfundamental language, using a fundamental metalanguage. So in particular, it must be possible to give a metaphysical semantics for the language of physics, using a fundamental language.
>
> Now, the ontological realist can do this in familiar ways. It's easiest if the ontological realist has a reasonably permissive ontology, for then he can take the physicist's language—including the mathematical bit—to *be* a fundamental language. It will be harder if the ontological realist accepts a more restrictive ontology—say, one that contains no mathematical entities. Still, there are well-known programs for at least attempting to formulate physical theories in nominalistic terms.
>
> But *no* serious work on the foundation of physics and mathematics has been done in a quantifier-free setting. So the quantifier variantist must begin from scratch. He must choose some alien quantifier-free language as his fundamental language, and

[18] I intend to use "vary" in such a way that to say that multiple languages vary in which X-type expressions they have as primitives implies that they all have some X- type expressions as primitives.

> then he must somehow give a metaphysical semantics for the quantificational language of physics in its terms (2011: 182-3).

Regardless of the argument's merits when levied against other forms of quantifier variance, the deep quantifier variantist should remain unfazed. There is no reason for him to "choose some alien quantifier-free language as his fundamental language." All his fundamental languages *are* quantified languages.

Here is the Indispensability argument:

> The best argument against quantifier variance, and indeed against all forms of ontological deflationism, is really quite simple. [...] the way to tell which notions carve at the joints is broadly Quinean: believe in the fundamental ideology that is indispensable in our best theories. This method yields a clear verdict in the case of quantification. Every serious theory of anything that anyone has ever considered uses quantifiers, from physics to mathematics to the social sciences to folk theories. And [...] there is no feasible way to avoid their usage. Quantification is as indispensable as it gets. This is defeasible reason to think that we're onto something with our use of quantifiers, that quantificational structure is part of the objective structure of the world, just as the success of spacetime physics gives us reason to believe in objective spacetime structure (2011: 188).

The deep quantifier variantist should be perfectly happy to concede that quantification is indeed indispensible; you cannot write the book of the world without using some quantifier or other. However, this falls short of establishing that any particular quantifier is indispensible. In fact, the deep quantifier variantist is likely to insist that no particular quantifier is. You can always trade the quantifier of one ideal language for that of another.

Even if it could be shown that certain quantifiers are indispensable, this may compatible with some versions of deep quantifier variance. Consider again the view on which the two ideal languages have different quantifiers for *concreta*, but share a single quantifier $\exists_a$ for *abstracta*. This sort of deep quantifier variantist should be perfectly happy to concede that $\exists_a$ is indispensable.

For what it is worth, Hirsch himself agrees that the quantifier variantist may take all her quantifiers to be perfectly natural,[19] and that she need not consider herself "obliged to come up with some quantifier-free description of the world" (2013: 710).[20] This view, which Hirsch dubs "egalitarian" quantifier variance, is very close to what I have been calling "deep" quantifier variance. However, Hirsch formulates his view in Sider's atomistic framework, which, as we have seen, struggles to distinguish quantifier variance from ontological pluralism.

In later work, Sider raises further objections, this time targeted at egalitarian quantifier variance (**?**: 750-3). Although these objections may also affect deep quantifier variance, I shall not discuss them here. The aim of this section is not to defend deep quantifier variance, but to tease apart objections to quantifier variance in general from objections to particular versions of the view. Even if deep quantifier variance is ultimately untenable, the fact remains that Sider's No Foundation and Indispensability arguments are not objections to quantifier variance in general.

We may draw one last lesson from the present discussion. As we have seen, Sider's definition of quantifier variance only allows for versions of the view on which the most natural quantifiers are less than perfectly natural. On these views, quantification does not carve at the joints. Reality lacks ontological structure; fundamentally, nothing exists. Call this view

[19] More accurately, he says that the quantifier variantist can take all her quantifiers to be perfectly natural *provided that* one can take all truth-functions to be perfectly natural, but the implication is that the antecedent is true.

[20] It is not obvious that Hirsch endorses this view.

"ontological nihilism."[21] Some philosophers have suggested that one motivation for this view is that it gives us a way to be deflationists about various ontological debates (1995: 158-161). Deep quantifier variance gives us another way, one that does not require accepting ontological nihilism. So, the desire to be a deflationist can only motivate ontological nihilism on the assumption that deep quantifier variance is false.[22]

6 Truth-Functional Variance and Hard Choices

We may use our definition of quantifier variance as a model for a schematic definition of a more general class of views:

> **X variance:** there are multiple maximally good X-type languages that vary in which X-type expressions they have as primitives.

Similarly, we may define "deep X variance" as follows:

> **Deep X variance:** there are multiple ideal languages that vary in which X-type expressions they have as primitives.

In his discussion of Sider's *Writing the Book of the World*, Hirsch briefly mentions "truth-functional variance" (2013: 710). In what follows, I discuss deep truth-functional variance. In accordance with the above schema, this is the view that there are multiple ideal languages that vary in which truth functions they have as primitives. This view provides a compelling solution to Sider's problem of hard choices.

Sider's approach to fundamentality forces certain hard choices on us. The sentential connectives of propositional logic are plausibly indispensible to our most fundamental theories. On Sider's methodology, this is

[21] See O'Leary-Hawthorne and Cortens (1995) and Turner (2011).

[22] This is not intended as a criticism of Hawthorne and Cortens. They leave it open that there might be other ways to secure the benefits of ontological nihilism. However, they do not identify any other way, which is what I take myself to be doing here.

defeasible reason to think that they are perfectly natural. But, which ones? To simplify, let us assume that there are only three candidate sets: $\{\wedge, \neg\}$, $\{\vee, \neg\}$, and $\{\wedge, \vee, \neg\}$.

There are two main approaches to the present question. Inegalitarian: choose either $\{\wedge, \neg\}$ or $\{\vee, \neg\}$. But doing so would seem arbitrary. It would amount to "drawing invidious metaphysical distinctions" (2011: 218). Egalitarian: choose $\{\wedge, \vee, \neg\}$. (More realistically, we would have to say that all truth-functional connectives are perfectly natural). But this goes against the intuition that the fundamental is non-redundant. Lewis says of the perfectly natural properties that "there are only just enough of them to characterize things completely and without redundancy" (1986: 60). The same seems plausible of the perfectly natural expressions.

In an effort to make the egalitarian approach easier to swallow, Sider gives some reasons to reject the non-redundancy constraint on the perfectly natural. In its place, he offers a non-redundancy constrain on *reasonable belief* in the perfectly natural. Roughly, "we shouldn't multiply ideology beyond necessity; and redundant ideology is often unnecessary ideology" (2011: 219).

Deep truth-functional variance provides an alternative solution to the problem. For simplicity's sake, let us focus on a version of the view on which there are only two ideal languages, with sets $\{\wedge, \neg\}$ and $\{\vee, \neg\}$. Given our definition of "perfectly natural", this view is a form of egalitarianism: $\wedge$, $\vee$, and $\neg$ are all perfectly natural, since they are all primitives of some ideal language or other. So, the truth- functional variantist cannot say that the perfectly natural is non-redundant. So, how does this view represent an improvement over Sider's egalitarianism? The truth- functional variantist should say this:

"What's right about the original constraint is that *ideal languages* are non- redundant. On Sider's egalitarianism, the one ideal language is dramatically redundant. It has many primitive connectives where one or two

would do. By contrast, although I recognize many ideal languages, they are all non-redundant. They all have just enough primitive connectives to characterize things completely."

So, neither Sider nor the deep truth-functional variantist can uphold the original non-redundancy constraint, and they both offer a replacement. However, Sider's replacement is merely epistemic, whereas the truth-functional variantist's is straightforwardly metaphysical. If you think that the original intuition favors a metaphysical reading of the constraint, you should conclude that the truth- functional variantist does better on this score.

7 Concluding Remarks

I have argued that we should distinguish quantifier variance from ontological pluralism, and that, unlike its main competitor, the holistic approach can easily accomplish this. I have then proposed a new criterion for believing in ways of being and a new definition of quantifier variance. With the help of this definition, I have shown that there is a version of quantifier variance that is immune to Sider's arguments. Finally, I have offered a new solution to Sider's problem of hard choices.

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