

The new collapse argument against quantifier variance*

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The collapse argument against quantifier variance is usually presented as follows. According to quantifier variance, quantifiers can change their meanings in a way that affects truth value, despite retaining their usual logical behavior. For instance, the existential quantifier could obey the usual logical rules in each of a pair of languages, but vary in meaning so that some sentence $\exists xFx$ is true in one language and false in the other (without the predicate F varying in meaning). But suppose we introduce a single language containing a symbol \exists_1 that means what \exists means in the first language, and a second symbol \exists_2 that means what \exists means in the second (and in which F 's meaning is unchanged). Then \exists_1xFx should be true in the combined language and \exists_2xFx should be false. Moreover, \exists_1 and \exists_2 should each obey the usual rules of inference in the combined language. But this cannot be, for that language would then contain a logically correct derivation of the false \exists_2xFx from the true \exists_1xFx :¹

\exists_1xFx	(assume)
Fa	(existential elimination for \exists_1)
\exists_2xFx	(existential introduction for \exists_2)

As Cian Dorr shows in his remarkable paper, “Quantifier Variance and the Collapse Theorems”, this argument is a hot mess. When one bears down on the details as Dorr has done, many subtle obstacles arise.² And many of the cleaned-up arguments one can construct have no chance of working, for uncontroversial reasons. But some of them do have a fighting chance of working, Dorr argues. Although these arguments are not decisive, Dorr argues that they carry some weight.

Our understanding of the collapse argument against quantifier variance—and of collapse arguments in general, and of quantification, and of concepts—has been greatly increased by Dorr’s paper. My aim is to show that quantifier

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¹We can also argue, in parallel fashion, from \exists_2xFx to \exists_1xFx . See Belnap (1962); Harris (1982) for related arguments in another context.

²See also Warren’s (2015) critique of the argument.

variance is nevertheless not really threatened.³ But there is no question that the debate has been reconfigured. As Dorr says in the final sentence of his paper: “So, we are making progress”.

1. Quantifier variance

Quantifier variance (of one sort) is the metaphysical core of Eli Hirsch’s ontological deflationism, which is a reaction to ontological debates like this one:⁴

Universalist: Tables and chairs exist! So do “scattered” objects, such as the sum of all the coins in the world and the Eiffel Tower. *Any* collection of entities has a mereological sum.

Organicist: No, tables and chairs do *not* exist! (Let alone scattered objects.) But people, and animals, and trees, and other living things do exist. The only material objects that exist are partless “simples” and living things.

According to Hirsch, this debate rests on false presuppositions. (Hirsch puts it more colorfully.) The participants assume an inflationary conception of ontology, according to which questions about what there is are substantive and worldly, are to be settled by “theoretical means”, and perhaps have revisionary answers. According to Hirsch, on the other hand, ontological questions are nonsubstantive and should be answered by conceptual analysis; revisionary answers are therefore unthinkable. For *quantifier variance* is true: quantifiers have multiple possible meanings. We could choose to speak a language, call it “Universalese”, in which quantifiers have a meaning that renders sentences like ‘there are chairs’ and ‘any collection has a mereological sum’ true. Or we could choose instead to speak a language, “Organicese”, in which ‘tables do not exist’ and ‘everything is either simple or alive’ are true. Or we could choose to speak in accordance with any of the other “positions” in this pseudo-debate. Given quantifier variance, according to Hirsch, the only sensible question to ask is

³Dorr himself discusses possible lines of defense on behalf of quantifier variantists, but his discussion is in a certain sense very abstract. I want to do it in a way that you can really wrap your molars around, as my college roommate used to say. For another reply to Dorr, see Warren (forthcoming).

⁴Lewis (1986, 211–13) and van Cleve (1986) defend universalism; van Inwagen (1990) defends organicism. Hirsch’s writings on quantifier variance are collected in Hirsch (2011). Quantifier variance is closely akin to the views of Putnam (1987) and perhaps even Goodman (1978).

the conceptual question of which language is *our* language. (And the answer to that, he says, is obviously *not* either Organicism or Universalism.)

2. Dorr's collapse argument

Here is what Dorr takes to be the best collapse argument against quantifier variance.⁵ Rather than employing a combined language, we stay put: from the perspective of our own language we discuss the “algebraic” behavior of the meanings that ‘ \exists ’ has in Organicese and Universalese. To do so, our language must have the ability to quantify over meanings of various sorts. (It could be a first- or higher- order language.) The meanings of predicates are *concepts*; the meanings of sentences are *propositions*; and the meanings of quantifiers are *functions from concepts to propositions*. For instance, the function that the existential quantifier means in our language maps the concept of *being a chair* to the proposition that there is a chair.

Another crucial notion in Dorr's argument is *entailment*, which applies to both concepts and propositions.⁶ The proposition that snow is white entails the proposition that either snow is white or grass is blue; the concept of *being a chair* entails the concept of *being either a chair or a donkey*.

The argument also employs an operation of “expansion”, which maps propositions to concepts. The expansion $\text{Exp}(p)$ of a proposition p is the concept of being such that p is true.⁷ The expansion of the proposition that snow is white is the concept of being such that snow is white.

We'll also need a pair of definitions, where Q is any function from concepts to propositions:⁸

Q obeys \exists -intro =_{df} c entails $\text{Exp}(Q(c))$, for any concept c

Q obeys \exists -elim =_{df} if c entails $\text{Exp}(p)$ then $Q(c)$ entails p , for any concept c and proposition p

⁵I will simplify in many ways, such as ignoring the machinery needed to deal with sentences with multiple quantifiers and polyadic predicates, and ignoring issues having to do with contingently existing objects. The issues I want to discuss emerge even in this simplified context.

⁶Dorr in fact treats propositions as zero-adic concepts.

⁷More generally, the expansion of an n -adic concept c is an $n + 1$ -adic concept that is just like c but with a redundant argument place at the end.

⁸These are Dorr's *global, open* versions of \exists -intro and \exists -elim; see Dorr (2014, p. 547).

These notions of obeying \exists -intro and \exists -elim correspond to quantifier introduction and elimination rules in sequent calculi in which sequents are allowed to contain formulas with free variables.⁹ To illustrate, let E be the meaning of ‘ \exists ’

⁹Sequent calculi are less familiar than the natural deduction systems of introductory textbooks, in which reasoning with assumptions (in conditional proof or reductio, for instance) is handled “graphically”, in that whether a line in a proof holds absolutely, or merely conditionally on an assumption, and whether a line is available for use at a given point in the proof, is “marked” by some graphical means. Here is an example of a derivation in a typical natural deduction system:

1.	$\exists x Cx$	
2.	Cx	2, $\exists E$
3.	$Cx \vee Ux$	2, $\vee I$
4.	$\exists x(Cx \vee Ux)$	3, $\exists I$
5.	$\exists x Cx \rightarrow \exists x(Cx \vee Ux)$	1–4, $\rightarrow I$

Line 1 is an assumption, which is marked by a horizontal line. The vertical line marks that lines 2–4 (and 1 itself) hold only conditional on that assumption. Thus those lines cannot be referenced later on, if the proof continues (except when using the special rule $\rightarrow I$, a.k.a. conditional proof, which discharges the assumption and discontinues the vertical line).

In sequent calculi, on the other hand, any dependence on assumptions is explicitly indicated in each line. A line in a sequent proof is never a single formula, but rather a “sequent”, $\Gamma \vdash \phi$, consisting of a list Γ of formulas (the “assumptions”) followed by another formula, the “consequent” ϕ , which is said to follow from the assumptions. (In some systems, the notion of sequent is generalized to allow multiple consequents. ‘ \vdash ’ is a symbol separating the assumptions from the consequent.) Sequent rules of inference specify how to move from some sequents to a further sequent. Thus whereas natural deduction rules say “if this then that”, sequent rules say “if this implies that, then this other thing implies that other thing”. Here is how the example above works in a sequent system:

1.	$Cx \vdash Cx \vee Ux$	$\vee I$
2.	$Cx \vee Ux \vdash \exists x(Cx \vee Ux)$	$\exists I$
3.	$Cx \vdash \exists x(Cx \vee Ux)$	1, 2, cut
4.	$\exists x Cx \vdash \exists x(Cx \vee Ux)$	3, $\exists E$
5.	$\vdash \exists x Cx \rightarrow \exists x(Cx \vee Ux)$	4, $\rightarrow I$

(The “cut” rule at line 3 is a sort of transitivity of implication. And note how the discharging of an assumption by the rule of $\rightarrow I$ works: $\exists x Cx$, which was on the left of ‘ \vdash ’ in step 4, moved to the right of ‘ \vdash ’ in step 5, as the antecedent of a conditional.) The correctness of an application of a sequent rule depends only on the sequents involved, and not on any further graphical marking, since any dependence on assumptions is already incorporated into the sequents. (Thus each line in a sequent proof is a logically correct sequent—compare Hilbert-style proofs.) A sequent “says” that its assumptions logically imply its consequent. Thus line 4 says that

in our language, and let c be the concept expressed by the predicate ‘is a chair’ in our language. Thus c is the concept of *being a chair*, and E is the function that maps each concept to the proposition that something has that concept. So $E(c)$ is the proposition that there is a chair, and $\text{Exp}(E(c))$ is the concept of *being such that there is a chair*. So if E obeys \exists -intro, the concept of *being a chair* must entail the concept of *being such that there is a chair*; and similarly, the concept of *being a chair or a unicorn* must entail the concept of *being such that there is something that is either a chair or a unicorn*. And if E obeys \exists -elim, then if the concept of *being a chair* entails the concept of *being such that there is something that is either a chair or a unicorn*, then the proposition that something is a chair must entail the proposition that there is something that is either a chair or a unicorn.

The simple glosses of meanings given in the previous paragraph depended on the fact that those meanings were signified by expressions in our language. We can call $E(c)$, for instance, “the proposition that something is a chair” only because E is what our word ‘something’ means. Where E' is some other function from concepts to propositions (perhaps the meaning of ‘ \exists ’ in some other ontological language), there is no guarantee that the proposition $E'(c)$ can be glossed in that way; indeed, our language might not contain any simple gloss at all. However, although meanings’ *glosses* are language-relative in this way, the meanings themselves are not language-relative, nor are the algebraic notions of entailment, expansion, and \exists -intro and \exists -elim obedience. The claim that E obeys \exists -intro, for instance, makes no reference whatsoever to our language; it means that for *any* concept c (not just ones that are signified by predicates in our language), c entails $\text{Exp}(E(c))$, where the operative notion of entailment is not relative to language but rather applies directly to meanings.¹⁰

$\exists x Cx$ implies $\exists x(Cx \vee Ux)$, and the sequent in line 5, which has no assumptions, says that $\exists x Cx \rightarrow \exists x(Cx \vee Ux)$ is logically implied by the empty set of assumptions (and thus is a logical truth). The rule of existential introduction (used in line 2) allows us to infer (without needing any “input” sequent at all) any sequent of the form $\phi(\alpha) \vdash \exists v \phi(v)$. If we think of formulas with free variables as standing for concepts, line 2 can be thought of as saying that the concept of being either C or U implies the concept of being such that something is either C or U . The rule of existential elimination (used in the move from 3 to 4) lets us move from a sequent of the form $\phi(\alpha) \vdash \psi$ to the sequent $\exists v \phi(v) \vdash \psi$ (provided α does not occur in ψ except perhaps as a bound variable). Continuing to think of formulas with free variables as denoting concepts, the move from 3 to 4 can be thought of thus: if the concept of being C entails the concept of being such that something is either C or U (as line 3 says), then the proposition that something is C entails the proposition that something is either C or U (as line 4 says).

¹⁰The question of whether words like ‘concept’, ‘proposition’, or ‘entails’ have different

Relatedly, for any function E' from concepts to propositions, we can sensibly discuss, for instance, whether c entails $\text{Exp}(E'(c))$ —i.e., the concept that results from first applying the E' function to the concept of *being a chair*, and then applying the expansion operation to that—even if no expression in our language denotes the resultant concept. Thus in particular, it makes sense to ask whether the quantifier meanings in Organicese, Universalese, and other alternative ontological languages obey \exists -elim and \exists -intro, even if we have no simple glosses in our language for propositions formed from those meanings.

We can now state the collapse argument. Its main premise is that the meaning, O , of ' \exists ' in Organicese, and the meaning, U , of ' \exists ' in Universalese are both functions from concepts to propositions that obey \exists -intro and \exists -elim. (This is meant to be the statement, in the present setting, of the quantifier variantist's assumption that quantifiers in alternate ontological languages "retain their usual logical behavior".) The argument is simple. Where c is any concept:

c entails $\text{Exp}(O(c))$ (since O obeys \exists -intro)

So, $U(c)$ entails $O(c)$ (since U obeys \exists -elim)

A parallel argument (using first the fact that U obeys \exists -intro and then the fact that O obeys \exists -elim) shows that $O(c)$ entails $U(c)$. Conclusion: for any concept, the propositions generated by applying U and O to that concept are mutually entailing.

Now, in addition to its main premise, this argument also implicitly assumes that $O(c)$ and $U(c)$ are well-defined. More generally, it assumes that there is a common stock of concepts, such that quantifier-meanings from alternate languages are well-defined on all of them.

I used to think that this assumption (or rather, one like it) should be rejected by quantifier variantists (Sider 2007, section 2.7; 2011, section 9.6.1). My picture was that a concept—a possible predicate-meaning—is just a way of making a cut in a domain, of distinguishing some things from others, and so is tied to a particular conception of "thinghood".¹¹ Thus the entire domain of

meanings in different ontological languages will be considered below. The point here is just that as we use those terms, they don't express relations to languages.

¹¹An argument in this vicinity: any predicate F means the same thing as ' $\lambda x.Fx$ '; when \exists varies in meaning, all other variable-binders, including λ , vary; so ' $\lambda x.Fx$ ' varies. (The final inference, notice, assumes a certain degree of structure to meanings.) A defender of the transcendent conception of concepts might reject the argument by rejecting the connection between variable-binding and "thinghood", by saying that variables in λ abstracts are solely

concepts covaries with the meanings of quantifiers. Each ontological language has its own proprietary stock of concepts.

One implication of this picture is that no predicate in one ontological language means the same thing as any predicate in any other ontological language. Here is an argument that this is indeed correct. Suppose I speak a “smaller” language, and that the meaning c of one of my predicates is also meant by some predicate in a “larger” language. Then c must be the kind of entity that does something more than merely the following: distinguishing between things that are a certain way and things that aren’t. (I am speaking my own language, using my own meaning for the quantifier ‘things’.) For c is capable of attaching to the meanings of names of the richer language and yielding a truth value; and those meanings aren’t entities (again, I’m using my own meaning of ‘entity’).¹² But (I used to think), none of *my* predicates have such a rich meaning; all that my predicate-meanings know how to do is operate on objects to yield truth-values (or propositions).¹³

But Dorr (2014, pp. 530–1) has convinced me that my earlier reaction was a little narrow-minded.¹⁴ A “transcendent” conception of concepts, on which the quantifier meanings operate on a common stock of concepts, now strikes me as being compatible with the spirit of quantifier variance. (Or rather, with the spirit of one variety of quantifier variance. See section 9.) For the time being, let’s assume the transcendent conception of concepts.

for characterizing the algebra of concepts, and by holding that quantifiers are not variable binders but rather attach to λ abstracts. Incidentally, I wonder how much the attraction of the transcendent conception of concepts is tied to this Montagovian conception of quantification.

¹²Possible objection (inspired by Montague): in richer languages—and perhaps in all of the languages— c doesn’t operate on name-meanings to produce propositions; rather, name-meanings operate on c to produce propositions.

¹³One might think that because of Frege’s puzzle there is a richer dimension to predicate meanings, but that doesn’t seem germane here. We could stipulate that the predicates at issue in the collapse argument are austere in a certain sense.

¹⁴Partly I just wasn’t thinking of how the higher-order viewpoint might bear on the question. Perhaps I was also overly guided by the realism about metaphysically best descriptions defended in Sider (2011). If predicate meanings have a metaphysically best description; and if that description would need to be stated using quantifiers, as I suppose it must if we neglect the higher-order viewpoint (I was opposed in Sider (2011) to reference to abstract entities in metaphysically fundamental contexts); and if each language shares predicate meanings; then the quantifiers in the description of those shared predicate meanings would seem to be metaphysically privileged. However, realism about metaphysically best descriptions is itself arguably in tension with quantifier variance independently (compare Sider (2011, section 9.6.2)). I propose to set it aside and evaluate the cogency of the collapse argument as a stand-alone.

3. Transcendent vs immanent entailment

There is a question of whether entailment should also be conceived as transcendent, or else as being “immanent” in that ‘entails’ means different things in different ontological languages. Suppose, for instance, that ‘entails’ were defined, in each language, in terms of (first-order) quantification, as in:

Quantificational Entailment concept d entails concept d' =_{df} necessarily, for all x , if x is d then x is d'

‘Entails’ would then mean different things in different languages, and the collapse argument would collapse.¹⁵ For ‘obeys \exists -intro’ and ‘obeys \exists -elim’ would also mean different things in different languages (they are defined in terms of ‘entails’). So even if in each language the meaning of ‘ \exists ’ has the properties expressed *in that language* by ‘obeys \exists -intro’ and ‘obeys \exists -elim’, it might lack the properties expressed by those phrases in *other* languages, and in particular, in the language used to state the collapse argument.

Let’s look at this more closely. Quantifier variantists say that quantifiers “obey the usual rules” in each of the various ontological languages. Their motive for saying this is that they hope thereby to avoid trivializing their position. The mere assertion that existential sentences, understood as bare strings of symbols or sounds, could have different meanings is a pretty banal one. *Everyone* agrees that the bare symbols or sounds ‘There is a chair’ could have been used to mean that snow is blue or that the sky is purple or any other proposition we are capable of thinking about; quantifier variance is meant to go beyond this truism. What quantifier variantists think is that the words ‘there is’ could be used with a *somewhat* different meaning while still retaining enough similarity to their actual meaning to count as “being a quantifier” in some sense—as still expressing “a notion of the existence of something” (Hirsch, 2002*b*, p. 53). And a big part of this similarity is retaining the same inferential role.

That is their *motive* for saying that the usual logical rules are obeyed in all the languages; here is their picture of how this happens. Different ontological languages result from adjusting “material” dispositions of speakers to accept sentences, while leaving “logical” dispositions intact. (Exactly what sort of “use-based metasemantics” is being assumed here may be left open.) English speakers are disposed to accept ‘There is a chair in this room’ in certain circumstances, but they could start instead refraining from accepting that sentence in those

¹⁵See Dorr (2014, p. 537).

circumstances and even accepting its negation. Moreover, they might do so while continuing to maintain the dispositions that determine what ‘chair’ means. They might continue to accept sentences like ‘a chair is an artifact used for sitting’; they would simply need to refrain from accepting ‘there is an artifact for sitting’ in the circumstances in question. Moreover—and this is the important point—they might do all this without altering “logical” dispositions; they might continue to be disposed to *reason* in the same way using ‘there is’. It is adjustments like these that are meant to transform a community of English speakers into a community of speakers of Organicese.

Now, I will argue in a moment that these logical dispositions call only for “intra-language”, and not “inter-language”, obedience of \exists -intro and \exists -elim, given Quantificational Entailment. (That is, the meaning of the existential quantifier in a language L must have the properties expressed by ‘obeys \exists -intro’ and ‘obeys \exists -elim’ in L , but perhaps not the properties expressed by those phrases in a distinct language L' ; compare) But there is a wrinkle. There is a disconnect between the relevant sort of logical dispositions, on one hand, and \exists -intro and \exists -elim, on the other. For the dispositions concern entire sentences: we infer sentences from sentences, for instance, not predicates from predicates. And although it is clear how such dispositions bear on *propositional* entailment, it is initially unclear how they bear on entailment between *concepts*, and thus initially unclear how they bear on whether the meaning of ‘ \exists ’ obeys \exists -intro and \exists -elim.

This disconnect will be important in section 6 below, but here it can be bridged. Given Quantificational Entailment, obedience of \exists -intro and \exists -elim amount to the following:¹⁶

Q obeys \exists -intro =_{df} For any concept, c , necessarily, for all x , if x is c then x is $\text{Exp}(Q(c))$

Q obeys \exists -elim =_{df} For any concept c and proposition p , if necessarily, for all x , if x is c then x is $\text{Exp}(p)$, then necessarily, if $Q(c)$ then p

And it is clear what sorts of logical dispositions are relevant to whether the meaning, Q , of ‘something’ obeys these constraints: they will be dispositions to accept sentences like (1) in the case of \exists -intro, and (2) in the case of \exists -elim:¹⁷

¹⁶Understanding propositional entailment as necessitation, in concordance with the current modal-quantificational understanding of entailment between concepts.

¹⁷And also dispositions to infer the consequent of (2) from its antecedent, though given that the speakers in question use conditionals as we do, this yields nothing new.

- (1) necessarily, for all x , if x is a chair then x is such that something is a chair
- (2) *If* necessarily, for all x , if x is a chair then x is such that something is either a chair or a unicorn, *then* necessarily, if something is a chair then something is either a chair or a unicorn

For if ‘something’ means Q , (1) and (2) are instances of ‘obeys \exists -intro’ and ‘obeys \exists -elim’, respectively.

Or rather, they are instances if ‘for all x ’ has the same meaning throughout— if, that is, ‘for all x ’ has the same meaning in (1) and (2) as it has in the definitions of ‘obeys \exists -intro’ and ‘obeys \exists -elim’. But if ‘for all x ’ means something different then speakers’ dispositions regarding (1) and (2) will be simply irrelevant to whether the meaning of their word ‘something’ has the property expressed by ‘obeys \exists -intro’ and ‘obeys \exists -elim’, just as our dispositions to accept ‘all bachelors are unmarried’ are irrelevant to the question of how our meaning for ‘bachelor’ relates to the meaning of ‘unmarried’ in a language in which that word means something different from what it means in English.

Exactly how does this undermine the collapse argument:

- c entails $\text{Exp}(O(c))$ (since O obeys \exists -intro)
- So, $U(c)$ entails $O(c)$ (since U obeys \exists -elim)

(where c is the concept of *being a chair*, O is the meaning of ‘ \exists ’ in Organicese, and U is the meaning of ‘ \exists ’ in Universalese)? The answer depends on which language we are speaking when we give the argument (since ‘obeys \exists -intro’ and ‘obeys \exists -elim’ are defined in terms of ‘entails’ which in turn is defined using the quantifier ‘for all x ’). Suppose, for instance, we are speaking Organicese. We should then reject the move from the premise to the conclusion, and thus should reject the argument’s assumption that U obeys \exists -elim. For as we saw above, the dispositions of Universalese speakers to accept *Universalese* sentences like (2) do not favor an attachment of their word ‘something’ to a meaning that satisfies what *we* call “obeying \exists -elim”. And in fact, their dispositions *disfavor* such an attachment. Letting ‘is organic’ abbreviate ‘is either a living organism or is mereologically simple’, speakers of Universalese accept ‘Necessarily, every organic-and-nonorganic chair is such that $2 + 2 = 5$ ’ (since the antecedent is necessarily false) and deny ‘Necessarily, if something is a non-organic chair then $2 + 2 = 5$ ’; thus they would reject:

- (3) *If* necessarily, for all x , if x is organic and x is a nonorganic chair then x is such that $2 + 2 = 5$, *then* necessarily, if $U(\text{nonorganic chair})$ then $2 + 2 = 5$

But (3) is necessarily equivalent to what we speakers of Organicese would express thus:

- (4) *If necessarily, for all x , if x is a nonorganic chair then x is such that $2 + 2 = 5$, then necessarily, if $U(\text{non-organic chair})$ then $2 + 2 = 5$*

For what we mean by our unrestricted quantifier “For all $x \dots$ ” is necessarily equivalent to what Universalese speakers mean by their restricted quantifier “For all x , if x is organic \dots ”. But (4) is an instance of U obeying [what we call] \exists -elim. Thus their disposition to reject (3)—and a host of other such dispositions—disfavors the attachment of their word ‘something’ to a meaning U that satisfies [what we call] \exists -elim. (To be sure, their dispositions favor an attachment to a meaning that satisfies what *they* call ‘ \exists -elim’.)

Intuitively: the failure of Universalese dispositions to favor U obeying \exists -elim is due to the fact that from the point of view of speakers of Universalese, our Organicese notion of entailment over concepts is too weak (since it is defined using our narrower quantifier). This relative weakness in our notion of entailment results in corresponding relative weakness in the premise of \exists -Elim, namely “ c entails $\text{Exp}(p)$ ”, but not in any corresponding relative weakness in its conclusion “ $U(c)$ entails p ”, since that involves propositional entailment, which isn’t defined in terms of quantification (over individuals).

The collapse argument, then, fails if ‘entails’ is defined in terms of quantification, as in Quantificational Entailment. It’s natural to conclude that *no* immanent notion of entailment will do, and that the argument must therefore employ a transcendent notion of entailment—that is, a conception of entailment under which ‘entails’ means the same thing in each language.¹⁸

Dorr considers several non-quantificational definitions of entailment, the simplest of which is this: for concept d to entail concept d' is for d to be identical to its conjunction with d' : $d = d \wedge d'$. This employs an operation of conjunction on concepts and presupposes a non-structured conception of concepts, of a sort that is now familiar in the literature on higher-order metaphysics.¹⁹ An alternate approach would be to take entailment as an undefined notion, posited to be transcendent. Either way, let’s assume for now that entailment—and hence the notions of \exists -intro and \exists -elim obedience—are transcendent. This assumption is, I think, natural to pair with the transcendent conception of concepts. Since the stock of transcendent concepts is common amongst the

¹⁸Although it’s tricky to argue for this in general, because of the disconnect mentioned above.

¹⁹See Dorr (2016).

languages, it constitutes an objective backbone for describing the world. But it's natural to think of entailment, in either of the senses now being entertained, as being tied up with the very nature of concepts, and thus natural to expect entailment itself to be part of the objective backbone.

4. The collapse argument in a model

Below I will argue that the collapse argument is unconvincing, even assuming a transcendent notion of entailment. But first I would like to show how it fails in a simple model. In this model we will be able to represent all the elements of the collapse argument: a common stock of transcendent concepts, the various quantifier-meanings defined on that common stock of concepts, a transcendent entailment relation, and the Exp operation. As we'll see, there are certain elements of the model that quantifier variantists won't want to take seriously. Nevertheless, the model is suggestive.

Quantifier variance is sometimes described this way: "whether a given portion of reality counts as an object depends on how we're carving up reality into objects". On the face of it this is problematic since it seems to treat all the quantifier meanings as restrictions on a privileged quantifier over a domain of "portions of reality". Nevertheless it will be the inspiration for my model. (And in fact, I will argue later that (some) quantifier variantists should embrace talk of portions of reality, taken with an appropriate grain of salt.)

In the model, objects will be treated as regions of spacetime. Start with a space of possible worlds, each of which contains exactly the same spacetime points. A *region* is just a set of spacetime points. A *carving* is a function that assigns to any world a set of spacetime regions. Think of a carving R as a specification of what counts as an object: $R(w)$ is the set of spacetime regions that, according to R , count as objects in w .

We can think of the set of *all* regions as the "unrelativized" domain of the model, since it consists of all objects that are recognized under any carving. But the quantifier variantist might view the unrelativized domain as an artifact of the model, since it might seem to amount to the range of a privileged quantifier of which all others are restrictions.

We can model the various elements of the collapse argument as follows. First, concepts:

A *concept* is a function that maps any world to a set of space-time regions²⁰

Where c is a concept and w is a world, we can think of $c(w)$ as the “unrelativized extension” of c at w . Like the unrelativized domain, this might be seen as an artifact of the model. But the *function* c is not an artifact. It represents something real: a concept.

Next, entailment:

Concept c *entails* concept c' iff for every world w , $c(w) \subseteq c'(w)$

That is, for every world, w , every entity of the unrelativized domain that is in the unrelativized extension of c at w is also in the unrelativized extension of c' at w . Note, however, that even if unrelativized domain and unrelativized extension are regarded as artifacts, the notion of entailment will not be. Entailment is one of the key notions of the collapse argument; the model is intended to model it.

The notion of entailment just defined is not relative to carvings, which makes it suitable to model a transcendent notion of entailment. A carving-relative notion could also be defined, and would be apt for modeling immanent entailment: c *entails* _{R} concept c' iff for any world, w , $c(w) \cap R \subseteq c'(w)$ —that is, at any world, everything that R counts as an object that is in c 's unrelativized extension is also in c' 's unrelativized extension.

Next, propositions and propositional entailment:

A *proposition* is a set of worlds

Proposition p *entails* proposition p' iff $p \subseteq p'$

(That is: p' is true at every world in which p is true.)

Next a model for the various quantifier meanings:

For any carving, R , the *existential quantifier meaning for* R is the following function E_R from concepts to propositions: $E_R(c) = \{w | c(w) \cap R(w) \neq \emptyset\}$

That is, E_R maps c to the proposition that at least one entity in the unrelativized extension of c is recognized as an object by R . As above, although this gloss refers to unrelativized extension, which is perhaps an artifact, the operations E_R themselves are not artifacts; they are meant to model possible quantifier-meanings. (The model enables the definition of a function that we might call

²⁰Thus concepts are just carvings.

“unrelativized existential quantification”, $E_T(c) = \{\omega \mid c(\omega) \neq \emptyset\}$, which maps a concept to the set of worlds in which the concept’s unrelativized extension is nonempty. But this may be regarded as an artifact.)

Finally, the notion of expansion:

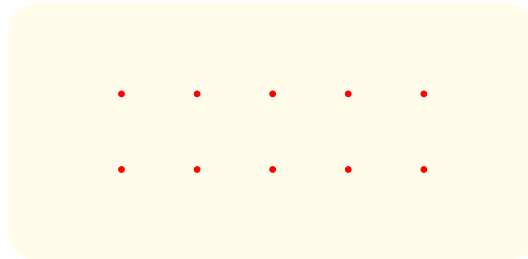
For any proposition, p , the *expansion* of p ($\text{Exp}(p)$) is the function from worlds to sets of regions such that:

$$\text{Exp}(p)(\omega) = \begin{cases} \text{the set of all regions if } \omega \in p \\ \emptyset \text{ if } \omega \notin p \end{cases}$$

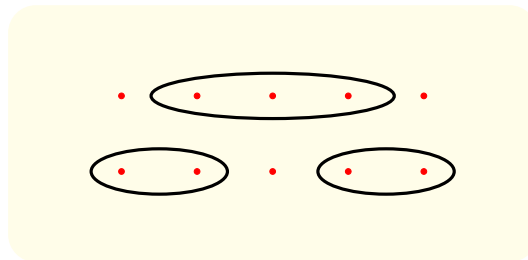
Note that:

(*) For any region, r , proposition p , and world ω , $r \in \text{Exp}(p)(\omega)$ iff $\omega \in p$

To illustrate all this, begin with a representation of a world, ω :

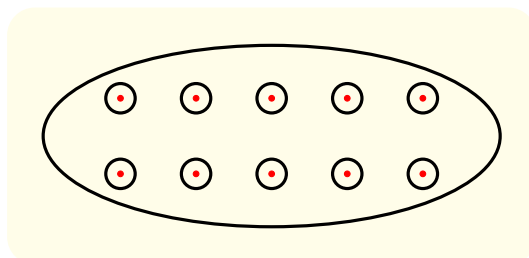


Each dot represents a spatial point. Now add a carving, R :

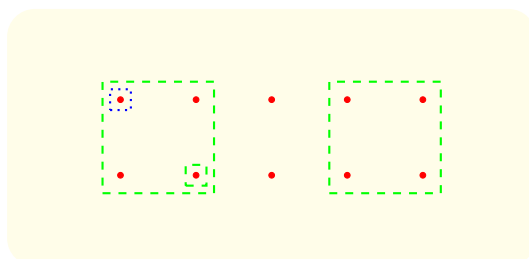


The three boldface ellipses are the “objects recognized by R ”—i.e., the regions (sets of points) that are members of $R(\omega)$. Here is a different carving, R' ,

recognizing different objects:



R' recognizes eleven objects: ten “unit regions” containing one point each, and then one large region containing all ten points.²¹ We can also represent a pair of concepts, c (represented by a dotted line: \cdots) and d (represented by a dashed line: $--$):



The transcendent extension of c at w (i.e., $c(w)$) contains just one region: the unit region at the upper left. The transcendent extension of d at w contains three regions: one unit region and two larger regions (each of the latter containing four points). Note that c does not entail d , since the upper left unit region is a member of the transcendent extension of c at w but is not a member of the transcendent extension of d at w . (The upper left *point* is a member of the region containing the four left-most points, and that region in turn is a member of the transcendent extension of d at w . But that’s different.) Note also that members of the transcendent extension of a concept at a world can be recognized as objects by some carvings but not others: the upper left unit region, which is a member of the transcendent extension of c at w , is recognized as an object at w by R' but not by R . But the fact that c fails to entail d holds absolutely, not relative to carvings.

²¹Some quantifier variantists may reject (unrestricted) quantifier meanings corresponding to the first carving, R , since it omits the unit regions. Perhaps some entities—subatomic particles, say—must be recognized by every quantifier meaning, so to speak.

Now consider the collapse argument in the model. Let R_O and R_U be carvings corresponding to Organicese and Universalese. R_O maps any world to the set of regions that an Organicist would describe as being entities at that world, and similarly for R_U . Thus R_O maps each world to the set of spacetime regions that are “organic-ish” (i.e., either “particleish” or “living-thing-ish”), and R_U maps each world to the set of spacetime regions that are “fusion-of-particles-ish”. Let O and U be the existential quantifiers associated with R_O and R_U —i.e., $O = E_{R_O}$ and $U = E_{R_U}$. O and U are inequivalent over concepts. For instance, where w is any world which, like the actual world, contains at least one region of spacetime that is chair-ish but no regions that are both chair-ish and organic-ish, and c is the concept of *being a chair* (i.e., the function that maps any world to the set of regions that are chair-ish in that world), $w \in U(c)$ but $w \notin O(c)$. So: the proposition $U(c)$ does not entail the proposition $O(c)$.

But the collapse argument says that $U(c)$ *does* entail $O(c)$. Of course, Dorr’s collapse argument concerns the “real life” notions of concept, expansion, and so forth, whereas the preceding paragraph was about the similarly-named elements of our model. Still, it is instructive to consider the argument as applied to our model. Its conclusion, thus understood, is false, so we can ask where it goes wrong.

It goes wrong in its assumption that O obeys \exists -intro. To say that O obeys \exists -intro is to say that any concept, c , entails $\text{Exp}(O(c))$. In the model, to say that c entails $\text{Exp}(O(c))$ is to say that for any world, w , any region in $c(w)$ is in $\text{Exp}(O(c))(w)$. But given (*), a region is a member of $\text{Exp}(O(c))(w)$ if and only if $w \in O(c)$. So: to say that c entails $\text{Exp}(O(c))$ is to say that for any world, if any region is chair-ish in w , then the proposition $O(c)$ must be true in w . That clearly is false: $O(c)$ is false in worlds w that contain chair-ish regions, provided none of those regions are counted as objects by the carving R_O —in other words, provided that none of them are members of $R_O(w)$, that is, none of them are organic-ish in w .

5. The collapse argument in real life

In my view, a quantifier variantist like Hirsch should say that the collapse argument fails “in real life” for the same reason it fails in the model: O , the meaning of the existential quantifier in Organicese, does not obey \exists -intro.

Suppose we are speaking Organicese. We will then say that the following three concepts are necessarily coextensive:

being a non-organic sofa

being a non-organic table

being either a non-organic sofa or a non-organic table

(where ‘organic’ again abbreviates ‘is either a living organism or is mereologically simple’). They are necessarily coextensive because nothing could have any of them, since it’s necessary that *everything* is organic [my quantifier ‘everything’]. Despite that fact, whereas the first entails the third, if entailment is transcendent then the first does not entail the second. This can be seen as follows: (a) ‘Not every non-organic sofa is a non-organic table’ is true in Universalese; (b) So this sentence is true in Universalese:

(+) the concept *being a non-organic sofa* does not entail the concept *being a non-organic table*;

(c) But given transcendent entailment, ‘entails’ in Universalese means what *we* mean by ‘entails’; and everything else in (+) means the same in Universalese as in our language; and so (+) is true in our language as well; (d) So, *being a non-organic sofa* does not entail *being a non-organic table*.

Thus we can say (as speakers of Organicese) that entailment is “sensitive to trans-ontic structure”. The three concepts are ontically equivalent (necessarily coextensive) but not equivalent when it comes to entailment. (Speakers of Universalese would not call the relevant structure “trans-ontic”, since they would say that some non-organic sofas are not tables. What ‘ontic’ means depends on what one’s quantifiers mean.) This sensitivity is unsurprising. As noted in section 2, a concept (under the transcendent conception) is more than just a way of distinguishing things that have it from things that don’t. (I continue to speak Organicese.) The concept of *being a chair* can “do more” than merely combine with a thing to yield a truth value. Where ‘Claire’ is a Universalese name for a chair (better: ‘Claire is a chair’ is true in Universalese), the concept of *being a chair* is capable of combining with the meaning of ‘Claire’ in Universalese—which is not an entity [my word ‘entity’]—to yield a truth value. If concepts themselves are sensitive in this way to trans-ontic structure, it’s unsurprising that concepts’ entailments are sensitive to this structure.

The move in the argument from step (a) to step (b) is based on the assumption that the sentence:

(E) One concept entails another only if everything satisfying the first satisfies the second

is true in each language. To be sure, we are not defining entailment between concepts in quantificational terms. But any reasonable notion must surely be subject to this quantificational *constraint*. Speakers of any of our ontological languages would regard (E) as a “meaning postulate” on ‘entails’. They’d offer up the infamous refrain: “if you deny it, I don’t know what you mean by ‘entail’”.²²

A similar argument can be given for the conclusion that c does not entail $\text{Exp}(O(c))$: (a) ‘Not every chair is such that $O(c)$ ’ is true in Universalese (even Universalese speakers accept “there are chairs” expresses a false proposition in Organicese’); so (b) ‘ c doesn’t entail $\text{Exp}(O(c))$ ’ is true in Universalese; (c) ‘entails’ and everything else in the sentence just quoted mean the same things in Universalese as in our language, and so that sentence is true in our language; (d) and so, c doesn’t entail $\text{Exp}(O(c))$. And so, O does not obey \exists -intro.

This argument provides only an “indirect” reason for thinking that c does not entail $\text{Exp}(O(c))$, via consideration of other languages. But the model suggests a more direct reason: although there do not exist any chairs (I continue to speak Organicese), there are nevertheless “chair-ish portions of reality” (compare the model’s chair-ish regions); and since none of these are such that there are chairs, c doesn’t entail $\text{Exp}(O(c))$. This talk of “portions of reality” of course is in need of clarification, but a prior question should first be addressed. Does denying that O obeys \exists -intro violate the reasons for thinking that quantifier-meanings in alternate ontological languages “obey the usual logical rules”?

6. “The usual logical rules”

The question is whether our logical dispositions, as Organicese speakers, favor the assignment of a meaning to our word ‘something’ that obeys \exists -intro. In

²²It’s essential to the argument I’m making that there is not a similarly strong case for the converse of (E), or a modalized converse of (E), being true in every language.

The strength of the case for (E) does not depend on any particular understanding of entailment, since the argument is that whatever ‘entails’ means, it must satisfy (E). Thus it is applicable whether we are taking ‘entails’ to be undefined or defined in terms of concept-conjunction. To be sure, we could define ‘obeys \exists -intro’ and ‘obeys \exists -elim’ in the collapse argument in terms of a notion of ‘entails’ that is decoupled from the ordinary understanding of that term. But then the argument’s assumption that the meaning of ‘ \exists ’ “obeys \exists -intro and \exists -elim” could not be supported by appeal to logical dispositions and would not achieve the desired result of all quantifier meanings counting as “kinds of quantification”, since each, I assume, is tied to the ordinary notion of entailment.

fact they do not, because of the disconnect mentioned in section 3 between entailment between concepts and inferential dispositions, which are sentential.

What are the relevant logical dispositions? For one thing, we are (arguably) disposed to infer ‘something is ϕ ’ from any sentence of the form ‘ a is ϕ ’, where a is a name, demonstrative, or indexical. (“Arguably” because of issues about empty terms and quantification into “opaque contexts”.) Relatedly, we are disposed to utter ‘something is ϕ ’ when describing circumstances that could be truly described by a sentence of the form ‘ a is ϕ ’. Further, we are disposed to continue to draw such inferences and make such utterances even if our conceptual resources were enriched in various ways, such as by additions to our stock of names and predicates or enhancements of our abilities to demonstrate or perceive or otherwise come into cognitive contact with objects.

Now, these dispositions certainly do not *preclude* an assignment of an \exists -intro-obeying meaning to our word ‘something’, since they are consistent with the idea that the concept d expressed by ϕ entails $\text{Exp}(O(d))$; they are consistent with the idea that ϕ -ness entails being such that something is ϕ . But such an assignment would go far beyond what the dispositions *mandate*, because of the disconnect mentioned earlier. The dispositions in question to utter ‘Something is ϕ ’ have only “sentential triggers”: they are conditional on utterance or acceptance of a complete sentence ‘ a is ϕ ’; and of course the singular term a in these sentences will be one that we, as Organicese speakers, regard as denoting an entity.²³ None of the dispositions are triggered by anything sub-sentential; there is no such thing as asserting or accepting a predicate. The triggers thus are sensitive only to ontic structure. But as we saw, concept entailment makes demands on reality’s trans-ontic structure as well. (Recall the fact that *being a non-organic sofa* does not entail *being a non-organic table*, despite their ontic equivalence.) In order for ϕ -ness to entail being such that something is ϕ , it not only needs to be the case that each ϕ is such that something is ϕ ; but also, we might say, every “ ϕ -ish portion of reality” must be a portion of reality such that something is ϕ .

Since the dispositions don’t concern this trans-ontic dimension of entailment, in addition to being consistent with the strong hypothesis that *every* concept d entails $\text{Exp}(O(d))$, they are also consistent with any weaker hypothesis that agrees with the strong hypothesis on ontic structure but diverges on trans-ontic structure. For it is only concepts d such that we recognize a singular term a for some d that these hypotheses are put to the test by our dispositions;

²³Unless we know it to be empty; but then we won’t be disposed to infer “Something is ϕ ”.

the differences amongst the hypotheses emerge only for concepts d where we *don't* recognize such a singular term. In particular, helping ourselves to some dodgy language that will be justified below, the dispositions are compatible with the weak hypothesis that for any concept d such that any “ d -ish portion of reality” would constitute an object by our lights, d entails $\text{Exp}(O(d))$.

(This limited obedience of \exists -intro can be represented in the model. Say that a concept c *respects* a carving R iff for any world, w , $c(w) \subseteq R(w)$ —that is, everything in c 's unrelativized extension in a world is recognized by R as an object at that world. In these terms, what I am saying is that for a language based on carving R , with existential quantifier meaning E_R , speakers' dispositions don't support that *all* concepts c entail $E_R(\text{Exp}(c))$; they only support that all concepts c that respect R entail $E_R(\text{Exp}(c))$.)

Furthermore (continuing with the dodgy language), we speakers of Organicese have further dispositions that are compatible with the weak hypothesis but can be argued to be incompatible with the strong hypothesis. For many predicates ϕ we are not disposed to accept “something is ϕ ”, and are even disposed to reject it, even when we know of particular ϕ -ish portions of reality. Even though we know there are chairish portions of reality (not that we would use those words), we are disposed to reject “something is a chair”.²⁴ And this fact is incompatible with the strong hypothesis if, as I will argue below, *being a chair* entails *being such that there exists a chair* only if every chair-ish portion of reality is such that something is a chair.

I have stated the argument of this section from the point of view of Organicese. But the argument could have been given just as well in Universalese, say. Indeed, the argument is easier to give in Universalese: since some things are chairs but are not such that $O(c)$, c doesn't entail $\text{Exp}(O(c))$. And as Universalese speakers, we can point out that the dispositions of speakers of Organicese to infer existentials from instances in enhanced languages doesn't support the hypothesis that O obeys \exists -intro, since those dispositions are restricted to cases involving singular terms that they regard as denoting objects. Indeed, we can say, their dispositions clash with the hypothesis: even when they have chairs right in front of their eyes, they reject ‘there is a chair’.

²⁴It's worth remembering the metasemantic importance that Hirsch attaches to denials of the existence of things. See, for instance, the first two sections of Hirsch (2002a).

7. A quantifier variantist-friendly conception of entailment

So: an argument can be given that c doesn't entail $\text{Exp}(O(c))$ and thus that O doesn't obey \exists -intro; and it can be shown that this does not clash with the logical dispositions of speakers of Organicese. To be sure, the argument presupposed quantifier variance—it simply assumed that 'There are chairs' is true in Universalese but not in Organicese. This isn't on its own inappropriate: one can rebut an objection by showing that the falsity of its premises is only to be expected given one's position. But a fuller and more objective picture of what is going on would be more satisfying. Instead of relying solely on assumptions about what sentences are true in the different languages, it would be nice to have a language-independent conception of concepts and entailment that would explain why c doesn't entail $\text{Exp}(O(c))$.

We have refrained from defining entailment in quantificational terms, in order to give the collapse argument its best chance of success. (We must similarly refrain from defining the operation of conjunction on concepts in terms of quantification, if entailment is defined in terms of that operation.) This is fine, but there is a danger of over-abstraction. Concepts and entailment (and conjunction) are normally introduced in terms of entities and quantification: a concept is a way for a thing to be, and one concept entails another iff anything with the first must have the second (and one concept is the conjunction of two others iff what it is for something to have the first is for it to have the second and third). Once quantifier variance is on the table, it is indeed attractive to broaden our outlook and not take these glosses in any particular language as definitive. But concepts and entailments (and conjunction) had better remain "world-facing" at their core, however formally elegant a purely algebraic treatment might be, if we are to maintain contact with our subject matter.

Thus, I would argue, the language-independent conception of concepts and entailment that we seek must include a language-independent conception of worldly constraints on entailment. The language-relative constraint (E) was considered in the previous section; now we seek a language-independent one.

According to the form of quantifier variance I have in mind in the present section, reality has a structure that makes it representable in any of a certain range of ontological languages. When "larger" languages (like Universalese) are adopted, the quantifiers are sensitive to more of that structure, and when "smaller" languages (like Organicese) are adopted, the quantifiers are sensitive to less. But (transcendent) entailment, I say (on behalf of the quantifier variantist), is sensitive to *all* of the relevant structure. And from the point of view of a

smaller language, some of this structure is trans-ontic. How should we think about this “trans-ontic” structure, for instance, the trans-ontic structure that rules out *being a non-organic sofa* entailing *being a non-organic table*? The natural thing to say uses the dodgy language I have been indulging in: some non-organic portions of reality are sofa-ish but not table-ish. c doesn’t entail $\text{Exp}(O(c))$ because some c -ish portions of reality are not such that $O(c)$ (some chair-ish portions of reality are not such that there-are-in-the-Organicese-sense-chairs). In general, entailment is subject to this constraint:

(P) Concept d entails concept d' only if every d -ish portion of reality is d' -ish

(a constraint that is strictly stronger—if we’re not speaking the “largest” language—than the quantificational constraint (E) mentioned earlier, namely that every d must be d').

Of course, this talk of “portions of reality” which are “chair-ish”, “sofa-ish”, “ d -ish”, and so on, really is dodgy. Taken at face value, a sentence like ‘Some portions of reality are chair-ish’ would seem to say that:

There is some x such that i) x is a portion of reality, and ii) x is chair-ish

This is fine if one is speaking a “large” language like Universalese, for then ‘portion of reality’ can be taken as a predicate that applies to everything and ‘is chair-ish’ can be taken to simply mean ‘is a chair’. But if one is speaking a “small” language like Organicese, the displayed sentence would seem to be false, since on any reasonable construal of ‘is chair-ish’, a speaker of Organicese will say that nothing satisfies it.

But even if a small language can’t describe this trans-ontic structure directly, it might be able to describe it indirectly. For instance, in the case of “there exists a chair-ish portion of reality”, a small language might include one of these sentences:

(i) There are some simples arranged chair-wise

(ii) If composition had been unrestricted, there would have been a chair

(iii) There exist x_1, \dots, x_n such that $\phi(x_1, \dots, x_n)$

(i) relies on the presence of plural quantifiers, and a certain locution “arranged ___-wise”. (Even without a general locution of this sort, attachable even to concept-variables, certain one-off uses of it might be regarded as well-understood.) (ii) relies on counterpossible conditionals (following Dorr (2005)).

(iii) relies on the idea that some concepts, or at least certain “cases” of some concepts, are finitely definable. ϕ is to be a predicate that, intuitively, describes one particular way in which finitely many simples could be arranged chairwise.

Given these locutions, we can state trans-ontic constraints on entailment, which are inspired by the idea that that d entails d' only if “every d -ish portion of reality is d' -ish”:

Concept d entails concept d' only if..

- (P-i) ...any things that are arranged d -wise are arranged d' -wise
- (P-ii) ...if composition had been unrestricted, it would have been the case that every d is d'
- (P-iii) ...for all x_1, \dots, x_n , if $\phi(x_1, \dots, x_n)$ then $\psi(x_1, \dots, x_n)$

where in (P-iii), ϕ is a predicate such that any things satisfying it would, by universalist lights, compose a d , and ψ is a predicate such that any n things that would, by universalist lights, compose a d' would satisfy ψ .²⁵

And we can use strategies (i)–(iii) to recast, in a small language, the argument that c doesn’t entail $\text{Exp}(O(c))$ because “some chair-ish portions of reality are not such that there are chairs”:

²⁵Strategy (iii) isn’t applicable when d has no finitely stateable sufficient condition, or d' has no finitely-stateable necessary condition.

The counterpossible conditional in the glosses of ϕ and ψ isn’t meant to be load-bearing. I’m only trying to indicate the sorts of formulas I had in mind; the substance of the constraint is simply that for certain formulas ϕ and ψ , d entails d' only if any entities satisfying ϕ also satisfy ψ .

Here is an instance of strategy (iii) (with apologies for the toy physics). Pretend that protons, neutrons, and electrons are mereologically simple. To be a hydrogen nucleus is to consist of a proton and perhaps also a bonded neutron. The condition for being a deuterium nucleus is the same except that the presence of the neutron is no longer optional. Thus there are conditions on pairs of simples which, according to universalists, are necessary and sufficient for the existence of a hydrogen and deuterium nucleus, respectively, that is composed of the simples; and we can use those conditions in a small language to state this instance of constraint (P-iii):

being a hydrogen nucleus entails *being a deuterium nucleus* only if: for every x and y , if: a) x is a proton, and b) either $y = x$, or y is a neutron that is bonded to x , and c) neither x nor y is bonded to anything other than x or y , then: (d) x is a proton, and b) y is a neutron that is bonded to x , and c) neither x nor y is bonded to anything other than x or y

Since the constraint isn’t satisfied, we may conclude that *being a hydrogen nucleus* does not entail *being a deuterium nucleus*.

Strategy (i): There are some simples arranged chairwise, but which are not arranged “ $O(c)$ -wise”—i.e., are not such that $O(c)$ is true; so by constraint (P-i), c does not entail $\text{Exp}(O(c))$.

Strategy (iii): Let $\phi(x_1, \dots, x_n)$ be some formula, with variables x_1, \dots, x_n free, which is in fact true of some simples s_1, \dots, s_n , and which describes some particular arrangement that counts as being “arranged chairwise”. Then by a constraint of the form (P-iii), c entails $\text{Exp}(O(c))$ only if for any x_1, \dots, x_n , if $\phi(x_1, \dots, x_n)$ then $O(c)$. But $O(c)$ is false, and we stipulated that $\phi(s_1, \dots, s_n)$. Thus c doesn’t entail $\text{Exp}(O(c))$.²⁶

Applying the counterpossibles strategy (ii) is delicate. The straightforward application of the strategy would be to employ this constraint on entailment: “ c entails $\text{Exp}(O(c))$ only if: if composition had been unrestricted, everything that had c would have had $\text{Exp}(O(c))$ ”. But the consequent here is true, since if composition had been unrestricted, every chair would have been such that there was a chair. What we really want, intuitively, is to pick out chairish portions of reality inside the scope of the counterpossible, as things, x , that are chairs, but then say that any such x must, *outside* of the scope, have $\text{Exp}(O(c))$ —even though x doesn’t even exist outside the scope of the conditional (so to speak). Thus we must employ something like this variant on constraint (P-ii):

c entails $\text{Exp}(O(c))$ only if: if composition had been unrestricted, it would have been the case that for every x , if c applies to x then *actually*: $\text{Exp}(O(c))$ applies to x

And then we must claim that the consequent here is false (presumably on the grounds that if composition had been unrestricted, there would have been some chair that actually is not such that there are chairs).

The structure to which concepts and entailment are sensitive, then, can be described even from the point of view of “small” languages, although perhaps not in a fully general way (in the case of strategy (iii)) and perhaps only if certain locutions are available (such as plural quantification and ‘-wise’). The objective credentials of the structure are further bolstered by the fact (and I assume that it is a fact) that each language contains vocabulary for describing facts about physically ultimate entities—subatomic particles, let us suppose. For there would seem to be a sense in which the relevant structure is “nothing over and

²⁶As with earlier instances of strategy (iii), the phrase “arranged chairwise” isn’t load-bearing (in the way it is in argument (i)). All the present argument needs is that there is some $\phi(x_1, \dots, x_n)$ and some simples s_1, \dots, s_n such that if c entails $\text{Exp}(O(c))$ and $\phi(x_1, \dots, x_n)$ is true of s_1, \dots, s_n then $\text{Exp}(O(c))$ must be true.

above” arrangements of these physically ultimate entities; and each ontological language is capable of describing these arrangements. (No commitment to any particular way of cashing out “nothing over and above” is required here.) Whether there is a chair-ish portion of reality is ultimately just a matter of the global arrangement of subatomic particles. Indeed, this picture is central to one intuitive route to Hirschian quantifier variance: once the arrangements of physically ultimate particles are fixed, all the facts have been fixed, and there is only the question of how to map quantified language onto these facts.

Now, one might object that there ought to be some *uniquely best* way of articulating the objective structure under discussion, but that recognizing such a best way would contradict quantifier variance. For instance, one might use a “large” quantifier and define a “*c*-wise portion of reality” as “an entity that is *c*”, or one might use a “small” but plural quantifier and define a “*c*-wise portion of reality” as “some entities that are arranged *c*-wise”; and in either case, one might argue, for the description to be uniquely best would require the interpretation of the quantifiers used in the description to be privileged in a way that is incompatible with quantifier variance. I myself think that there is indeed a good objection to quantifier variance in this vicinity (Sider, 2011, section 9.6.2). But the assumption that there must be a uniquely best way to articulate the objective structure in question is one that a quantifier variantist might well reject. They might instead insist that although it is clear that there *is* objective structure that phrases like “portions of reality” gesture toward, and which is ultimately “nothing over and above” facts about physically ultimate entities, there nevertheless is no uniquely best way of articulating that structure, and there need be no one way of doing so that works in every language.²⁷ So let us set aside this concern here.

Thus there is available to the quantifier variantist a conception of reality’s objective structure, and a conception of transcendent entailment in terms of that structure, that undermines the collapse argument. On this conception, the world can be objectively (though informally) conceived as consisting of propertyed “portions of reality”, which quantifier meanings “divide into entities” in different ways. Any demand to give a “canonical” or “most fundamental” description of this structure is to be rejected. Rather, we can say things like this:

The structure is such as to be supported by the configurations of fundamental physical entities.

²⁷Compare the discussion of “quotienting” in Sider (2020), especially section 5.6.2.

The structure is such as to be fully represented in Universalese by statements about entities and the concepts they satisfy.

The structure is such as to be represented in other languages, to varying degrees of completeness, in part directly, with statements about entities and the concepts they satisfy; and in part indirectly, using strategies (i)–(iii). For example, in “small” languages, some trans-ontic aspects of the structure could be described using plural quantifiers or counterpossible conditionals.

Entailment is sensitive to this structure in that concept d entails concept d' only if every d -ish portion of reality is d' -ish. As a result, the meaning O of the existential quantifier in Organicese fails to obey \exists -intro. But this does not conflict with the logical aspects of how Organicese speakers use ‘something’, since that usage is sentence-level and thus concerns only ontic structure whereas the failure of O to obey \exists -intro essentially involves trans-ontic structure.

8. A distinguished quantifier?

Hirsch’s brand of quantifier variance is meant to have a deflationary upshot. To have this, it must be “egalitarian”, in a certain sense. Ontological languages must all be “metaphysically on a par”, so that the only sensible question to debate is which language is *ours*—a question of conceptual analysis, not inflationary metaphysics.

But according to the response to the collapse argument that I have recommended to the quantifier variance, one language would seem to be privileged after all. I have granted a transcendent notion of concepts and a transcendent notion of entailment. Thus there is a single notion of “obeying \exists -intro and \exists -elim”, shared by each language.²⁸ Given the collapse argument, there can be *at most* one quantifier meaning with this property. Although this leaves open that none of the quantifier-meanings have the property, in fact it would seem that, given my recommended conception of concept-entailment, at least one of them—and thus exactly one of them—*does* have the property: namely, U , the meaning of the existential quantifier in Universalese. U , intuitively, counts every portion of reality as an entity. And on my recommended conception of

²⁸I’m assuming that the transcendent conception of concepts includes, not only the claim that ‘concept’ means the same thing in each language, but also the claim that quantifiers over concepts, and over propositions, mean the same thing in each language.

entailment, it is natural to think of it, informally, as being governed by the biconditional: d entails d' iff “every d -ish portion of reality is d' -ish”. Then U obeys \exists -intro: if some portion, ρ , of reality is d -ish, then U counts ρ as an object, and so $U(d)$ is true, and so ρ is such that $U(d)$ is true, and so ρ is $\text{Exp}(U(d))$ -ish; thus, given the biconditional, d entails $\text{Exp}(U(d))$. And it obeys \exists -elim: suppose d entails $\text{Exp}(p)$, and suppose that $U(d)$ is true. Since $U(d)$ is true, there is some d -ish portion of reality; since d entails $\text{Exp}(p)$, that portion of reality is $\text{Exp}(p)$ -ish, and so p is true; thus $U(d)$ entails p .

This argument must be taken with a grain of salt, given its reliance on talk of “portions of reality”. I do think that such talk gets at the intuitive core of the conception of transcendent entailment described in section 7, and that we may bank on conclusions about that conception that we draw using such language. Alternatively, one could increase rigor by giving the argument in *Universalese*. The argument would then be that the proposed conception of entailment requires the biconditional “ d entails d' iff every d is a d' ” to be true in *Universalese*; and the argument that U obeys \exists -elim and \exists -intro would proceed as above, except the dodgy talk of portions of reality would be replaced by straightforward quantification. The gain in increased rigor is accompanied by an apparent loss of objectivity: why think that a notion of entailment that is correlated with the *Universalese* quantifier in this way is objective? The concern can, in fact, be answered, but only by reverting to talk of portions of reality: the reason that only the *Universalese* quantifier can be used to give necessary and sufficient conditions on transcendent entailment is that, since d transcendentally entails d' iff every d -ish portion of reality is d' -ish, only if we are speaking *Universalese* will a case of a d -ish but not d' -ish portion of reality be witnessed by the existence of an entity that is d but not d' .

Thus the quantifier variantist following my suggested response to the collapse argument should concede that one language is privileged as the unique language whose existential quantifier meaning obeys \exists -intro and \exists -elim in a transcendent sense. (We might say that the meaning of ‘there is’ in this language is the only one that truly counts as a “quantifier-meaning” in a transcendent sense; the meanings of ‘there is’ in other languages are “quantifier meanings” only in an immanent sense, since they obey \exists -intro and \exists -elim only in weakened senses that vary from language to language; recall section 6.²⁹) But contrary to appearances, this is not in tension with the egalitarian spirit of Hirsch’s quantifier variance.

²⁹Thanks to Ezra Rubenstein here.

Egalitarian quantifier variance is opposed to *inegalitarian* forms of quantifier variance, such as that defended by Dorr himself in earlier writings (Dorr, 2005), and later by me (Sider, 2013).³⁰ According to this view, ontological disputes like that between universalists and organicists are legitimate and substantive, because they concern what there is in a distinguished sense of the existential quantifier—they take place in the language of “Ontologese”. Nevertheless, recognizing a distinguished sort of quantification is compatible with recognizing languages in which quantifiers have other meanings. For instance, according to both Dorr (back then) and me (now), what exists in the distinguished sense of the quantifiers is radically minimal. Mereological nihilism is true; there are no entities with proper parts. Nevertheless we agree with Hirsch that it would be bad metasemantics to regard ordinary speakers as speaking falsely when they say things like “there are chairs”; and we conclude that on the correct interpretation of ordinary speakers, their quantifiers have a “larger” meaning, not the distinguished meaning.³¹ Ordinary language is not Ontologese.

Hirsch must reject the idea that one language enjoys a privilege *of the inegalitarian sort*. But there is no reason for him to reject the idea that one language enjoys a different sort of privilege, namely, being the unique one whose quantifier-meaning obeys \exists -intro and \exists -elim. For *this* privilege is merely that of having a “maximally sensitive” quantifier meaning, a quantifier meaning that is sensitive to all relevant aspects of the worldly structure described in section 7. (For similar reasons, inegalitarian quantifier variantists need not identify the language in which \exists -intro and \exists -elim are obeyed with Ontologese. The sort of privilege enjoyed by the quantifier of Ontologese is that of *fundamentality*, which needn’t be identified with maximal sensitivity.)

Even before the new collapse argument was on the table, it was clear that there is *a* privilege enjoyed by Universalese. Amongst all the languages here under consideration, only Universalese has an existential quantifier that recognizes “as many entities as reality supports”. For the languages are distinguished by how many fusions they accept—how many collections of *ultimate entities* (subatomic particles, we are assuming) are recognized as having fusions; and

³⁰See also Hirsch and Warren’s (2019) contrast between modest and strong quantifier variance.

³¹Inegalitarian quantifier variance is particularly compelling to parents of young children, for whom the ontological extravagance of natural language is vivid. We induct our children into the practice of nouncing with a clear conscience. “Daddy, what is an agreement?”—“An agreement is what you make when you agree with someone.” Natural-language speakers make these transitions all the time.

there is a natural upper limit to this: a language that recognizes *all* of the collections as having fusions. Any language other than Universalese will be ignoring some of the structure that is available for interpreting entity-theoretic language. Hirsch was already committed to thinking that this does not render Universalese “metaphysically privileged” in a way that contradicts his ontological deflationism. (Similarly, Hirsch might well think that reality’s structure includes an absolute *minimum* of ontological structure: perhaps every language must at least recognize the existence of subatomic particles. But he wouldn’t take this as bestowing the requisite metaphysical privilege to “Nihilese”.)

Given this, it was already clear that a certain kind of challenge could be raised to quantifier variance’s egalitarianism: should we not recognize the quantifiers in “smaller” languages as being “mere restrictions” of the Universalese quantifier, and does this not grant a sort of privilege to the Universalese quantifier? The challenge is going to have to be answered in some way, the core of which will be insistence that this privilege—making maximal use of a certain kind of structure—is distinct from the kind of privilege that inegalitarians posit.³²

At the beginning of section 6.3 of his paper, Dorr assumes that egalitarian quantifier variantists will not want to recognize a unique language in which the existential quantifier obeys \exists -intro and \exists -elim, understood transcendentally.³³

³²One could use naturalness to distinguish “smaller, unrestricted” quantifiers from restrictions on “larger” quantifiers: the meaning of ‘Some organic thing’ in Universalese is less natural than the meaning ‘There is’ in Organicese. But there are reasons to be wary of heavy reliance on degrees of naturalness; and the framework of naturalness itself might be seen as in tension with quantifier variance. Note that Dorr’s very interesting way of defining what it means to be an unrestricted existential quantifier, namely, as one that obeys \exists -intro, given one’s own language’s notions of concepts and entailment (p. 552), is unavailable given the current conception of concepts and entailment. Verónica Gómez pointed out another possibility: use an ontology of propositions, or quantification into sentence position, to deny that propositions expressed using unrestricted “smaller” quantifiers are identical to propositions expressed using restricted “larger” quantifiers.

³³Dorr puts this differently, though I take it to amount to the same thing. What he assumes is that egalitarian quantifier variantists cannot accept the existence of a unique language that is “self-vindicating”, in that only in that language does ‘the meaning of “ \exists ” obeys \exists -intro and \exists -elim’ come out true (2014, pp. ??). Dorr concludes that egalitarian quantifier variantists should instead reject the transcendent conception of entailment.

At the beginning of his section 6.3, Dorr considers the idea that inegalitarian quantifier variantists should pick out the Ontologese quantifier meaning as the unique quantifier-meaning O that obeys transcendent \exists -intro and \exists -elim, but argues that this won’t do, unless O is the weakest, i.e., most inclusive, quantifier-meaning—that is, unless $O = U$. For if O isn’t U , Dorr

The upshot of the present section is that given the conception of transcendent entailment that I have recommended, recognizing a language that is inferentially privileged in this way is in fact unproblematic for egalitarian quantifier variantists.

9. Varieties of quantifier variance

I have argued that quantifier variantists can reply to the collapse argument even if they grant the transcendent conception of concepts and entailment, by embracing a conception of objective worldly structure to which transcendent concepts and entailment are sensitive. But there are multiple varieties of quantifier variance, and under some, the transcendent conception of concepts and entailment should not be granted. (In reply to the collapse argument, these other quantifier variantists should revert to the reply that quantifier-meanings from one language are never defined on concepts from another (Sider 2007, section 2.7; 2011, section 9.6.1).

Consider, for instance, the kind of quantifier variance defended by Kit Fine (2007). Now, Fine doesn't use the phrase "quantifier variance". What he defends is a "postulational" account of the existence of mathematical ob-

argues, then in smaller languages we will need to accept absurdities like this: "To be a chair is to be a chair and such that there is, in the fundamental sense, a chair; and there are chairs; but there does not exist in the fundamental sense a chair". (The argument uses another of Dorr's nonquantificational definitions of entailment.) Given what I have argued in the text, my conclusions are these. (i) The quantifier-meaning that obeys transcendent \exists -intro and \exists -elim is indeed U ; thus, no such absurdity results. (ii) But we should not pick out the Ontologese quantifier as the unique one obeying transcendent \exists -intro and \exists -elim. (This meshes with Dorr's conclusion at the end of the section, that we cannot parlay an objective understanding of 'entails' or 'to be' into an introduction of the Ontologese quantifier.) (iii) Suppose the Ontologese quantifier is "nihilist", so that we can say using it that "Only subatomic particles exist". Dorr's absurd conclusion is avoided because the Ontologese quantifier does not obey \exists -intro. There are chair-ish portions of reality, but those portions are not such that there exists, in the fundamental sense, a chair.

One final related point. In section 6.2, Dorr defines an operation E that maps any concept, d , to the proposition that *every proposition whose expansion is entailed by d is true*, and argues that even quantifier variantists would need to recognize open, substantive metaphysical questions about which concepts d are such that $E(d)$ is true. But given the current understanding of transcendent entailment, such questions are not open; they have easy answers. $E(\textit{being a trout-turkey})$, for instance, is obviously true. For suppose $\text{Exp}(p)$ is entailed by being a trout-turkey; then every trout-turkey-ish portion of reality is such that p ; but there are obviously trout-turkey-ish portions of reality, and so p is true.

jects, that is meant to underwrite both the common mathematical practice of freely postulating new mathematical objects and also an indefinite-extensibility solution to the set-theoretic paradoxes. However, his view can be seen as a form of quantifier variance, since his conception of indefinite extensibility is that no matter how the quantifiers are currently being understood, we could always understand them more broadly, to include further entities, namely sets containing entities that were in the range of the initial understanding of the quantifiers. And in fact, Jared Warren (2017) has developed an account of indefinite extensibility that is explicitly premised on quantifier variance. Now, although the matter needs further careful investigation, it seems intuitively clear that any view of this sort could not be combined with a transcendent conception of concepts, since if quantifiers can recognize “arbitrarily many entities”, there presumably can be arbitrarily many concepts, and thus there could not be a single, language-independent, conception of a concept. The domain of concepts itself would be indefinitely extensible.

Another interesting case is a kind of quantifier variance that is coupled with a certain sort of permissivism about ontology. Ordinary talk is, on the surface anyway, full of apparent ontological commitment to all sorts of nonphysical entities. The previous sentence, for example, seems to quantify over or name “ordinary talk”, “surfaces”, “apparent ontological commitment”, and “sorts”. Perhaps some of this is somehow marked by natural language as not being genuinely quantificational, but surely a healthy residue remains. Regarding the residue, one might take the following view. There really do exist such entities as sorts and surfaces—and agreements, marriages, visages, ways to change the oil or win a chess match, states of panic (Thomasson, 2015, p. 102), and so on. So long as a practice of using quantificational language is inferentially appropriate, its existential sentences are true. This is because speaking such a language amounts to selecting a meaning for the quantifiers that makes the sentences true; speaking different such languages results in different quantifier meanings.

A certain form of the neoFregean approach to mathematical ontology is closely akin. Suppose we begin by speaking of lines in physical space. According to neoFregeans, we may then introduce further entities, the *directions* of these lines, by stipulating this principle as a definition: “The direction of one line is identical to the direction of another line if and only if the lines are parallel”. (The idea isn’t to identify directions with equivalence classes of lines; the putative definition of directions is not supposed to rely on a prior acceptance of classes.) Similarly, “Hume’s Principle”, according to which the number of one concept is identical to the number of another concept iff the concepts

are equinumerous, is seen as a definition of number, capable of serving as the foundation for arithmetic. But what guarantee is there that such “abstraction principles” can always be stipulated? After all, they imply the existence of new entities (directions, numbers). A natural answer relies on quantifier variance. There is a range of possible quantifier meanings; laying down an abstraction principle is selecting one of them (or a class of them) under which the principle comes out true. Thus Hume’s principle, for instance, is an implicit definition both of ‘number of’ and also the quantifiers (both first- and second-order) that it contains. This outlook, notice, yields a solution to the problem of individually consistent but jointly inconsistent abstraction principles: the principles are true under distinct quantifier-meanings. It also yields a solution to the “Caesar problem”: since abstraction principles do not settle whether, e.g., Julius Caesar is identical to the number 3, it is at least open to say that our use of number vocabulary and quantifiers does not settle this and other “cross-categorial” identities (compare “the way to change the oil in one’s car is identical to the ontological commitment on the surface of natural language”), and that their truth values are therefore semantically indeterminate.³⁴

³⁴See Sider (2007) for this conception of neoFregeanism. NeoFregeanism’s chief proponents have, I am afraid, emphatically rejected it (Hale 2007; Hale and Wright 2009; though note that one of the main reasons for rejection in the latter paper is the collapse argument). See Hawley (2007) for more criticism, and Warren (2020, chapter 9) in support—indeed, in defense of the more general claim that a wide range of “deflationary” approaches to ontology rely on quantifier variance.

The chief proponent of the permissive view of ontology, namely Amie Thomasson (1998; 2007; 2015), has also emphatically rejected the quantifier variance understanding of that position. But it seems to me that the core of her argument, in Thomasson (2015, chapter 1) anyway, is that her approach does not *rely* on quantifier variance. Her explanation of why ontology is “easy” makes no reference to quantifier variance, but rather relies on the view that the truth conditions for quantificational sentences are wholly determined by certain aspects of their use, namely the “application” and “co-application” conditions associated with them. But even if quantifier variance does not play an explanatory role in Thomasson’s permissivism, I still think her view *implies* quantifier variance, since sentences about how many things there are, which contain only quantifiers, identity, and sentential connectives, could vary in truth value given appropriate variation in what application and co-application conditions are adopted. The quantifier variance would be “induced rather than caused” by the variance in application- and co-application conditions.

(I am not positive whether I’ve got the relationship between Thomasson’s view and quantifier variance correct. On one hand, in a discussion of Carnap—whose metaontological view is relevantly similar to hers—she says:

Of course as a result of accepting the material terms of the new framework the Platonist will (having introduced variables for which number terms can be substituted) have a different domain of

There is a significant difference between each of these last two varieties of quantifier variance (neoFregean and permissivist) and the variety we have been mostly discussing in this paper, which is a matter of which collections of particles compose further entities. The latter is what we might call a “domain-recarving” variety of quantifier variance; the quantifier meanings differ over which portions of reality count as objects, where talk of portions of reality, though admittedly in need of sharpening, gets at something objective—something that all languages

quantification than the nominalist, but this is not naturally thought of as a change in the meaning of the quantifier, and is a result of a more fundamental difference in whether the disputants accept the terms and concepts of the new framework. (Thomasson, 2015, p. 72)

“A more fundamental difference” meshes with the claim that quantifier variance is implied but nonexplanatory; and although she denies that the variance is “naturally thought of as a change in the meaning of the quantifier”, that may be a merely verbal disagreement, since by the ‘meaning’ of quantifiers Thomasson intends only their core formal role (which is indeed constant across the languages), whereas I include other contributions to truth conditions—as does Hirsch. On the other hand, later in the same discussion Thomasson argues that Carnap would not accept linguistic frameworks corresponding to Hirschean languages:

[Carnap] would be able to make no sense of the idea that those who [speak a language that denies mereological sums, such as Organicese] would both use the term ‘mereological sum’ and yet deny that such a sum exists. So he wouldn’t say that each of the competitors is saying something true given her own use of the quantifier. Instead, he would deny that the [speakers of such a language] are making a coherent object-language (theoretical) claim at all (instead, they are at best implicitly rejecting the vocabulary). (Thomasson, 2015, p. 76–7)

But I don’t think that Carnap’s outlook is so deeply opposed to Hirsch’s. Thomasson’s reason for thinking that Carnap would regard Organicese speakers as not coherently following their own language’s rules is based on the assumption that the existence of arbitrary mereological sums is built into the meaning of the sortal term ‘mereological sum’ in all languages, including Organicese. But that’s not how Hirsch intends Organicese. Translated into Thomasson’s sortal-centric vocabulary, what Hirsch stipulates about Organicese is that it’s a language in which ‘mereological sum’ has a different application condition from what it has in Univeralese; in Organicese, ‘mereological sum’ is to be applied only when there are things in an organic arrangement. Thomasson would argue that this means that ‘mereological sum’ means something different in the two languages, but resisting this thought isn’t particularly important to Hirsch’s outlook—although he would point out that the differences in truth conditions would radiate to sentences that don’t contain any sortal terms at all.)

(One final point about Thomasson and permissivism: although her permissivism is coupled with a rejection of “substantive” ontology—indeed, Thomasson is, along with Hirsch, the most prominent opponent of substantive ontology—permissivism itself doesn’t require this rejection, since it can be paired with inegalitarian quantifier variance. If the current reading of the relationship between Thomasson’s view and quantifier variance is correct, there is then a question of whether defenses of substantive ontology that proceed by means of attacking quantifier variance succeed as defenses against Thomasson—they might not, if the attack assumes that quantifier variance plays an explanatory role of the sort Thomasson rejects.)

can agree on. But this picture is entirely inappropriate for the former. The differences between neoFregean languages that recognize directions, or numbers, or other such abstractions, or between permissive languages that differ over whether to accept talk of states of panic, marriages, surfaces of ordinary talk, and the like, are not a matter of which “portions of reality” they count as objects; indeed, there does not seem to be any common notion of a portion of reality that is shared by all such languages. It does not, for instance, seem to make sense to ask whether the portion of reality that one language identifies with a certain direction is the same or different from the portion of reality that another language identifies with a certain number, or with the portion of reality that yet another language identifies with a surface of ordinary talk, or with the portion of reality that still another language identifies with the proposition that snow is white (where propositions are introduced by an abstraction principle saying that synonymous sentences are associated with the same proposition, as in Schiffer (2003)). Languages based on these differences in the use of ontological language do not share a common conception of “portions of reality”—not in any intuitive sense, anyway; and none of the strategies for making “portions of reality” rigorous apply.

Here is another way of bringing out the contrast. A domain-recarving quantifier variantist would be free to introduce an objective notion of natural kinds: an objective contrast between, for instance, natural kinds like green and blue, on one hand, and unnatural kinds like Goodman’s (1955) grue and bleen, on the other. The status of being a natural kind could be seen as attaching to concepts in the transcendent sense: the concepts of *being green* and *being blue* are natural kinds; the concepts of *being grue* and *being bleen* are not natural kinds. This contrast between green/blue and grue/bleen would manifest itself differently in different ontological languages: in Universalese we could say that a blue object instantiates some natural kind, whereas in Organicese we might get at the same fact by saying that some objects that are arranged blue-wise collectively instantiate a plural natural kind. But there is no corresponding sense in which natural groupings of the numbers would somehow manifest itself in the language of directions, or the language of states of panic. And this isn’t simply a matter of these languages talking about different *parts* of the world (except perhaps in some very abstract sense). Natural groupings recognized in different neoFregean or permissivist languages are “incommensurable” in a way that the domain-recarving ones aren’t.³⁵

³⁵To be sure, one could introduce a combined directions-cum-numbers language; but the

Yet another way of bringing out the contrast—and of directly arguing that neoFregean quantifier variance should not be combined with the transcendent conception of concept entailment—has to do the Caesar problem.³⁶ Although typical neoFregeans attempt to solve the problem by supplementing Hume’s principle with some further constraint on arithmetic language, thus providing grounds for saying that the number 3 is *not* identical to Caesar, as mentioned above, the quantifier-variance approach is to say instead that there are no further constraints, that mathematical practice leaves such matters open, that there are multiple acceptable assignments of meaning to quantifiers over numbers, some of which render ‘3 = Caesar’ true and others of which render it false. Similarly, the approach says (or allows one to say) that there is no fact of the matter whether the natural number $3_{\mathbb{N}}$ is identical to the real number $3_{\mathbb{R}}$ —no fact of the matter whether the naturals are a substructure of the reals or merely isomorphic to a substructure. (Thus the approach is more structuralist than typical neoFregeanism.)

With this in mind, consider two neoFregean languages, one in which Hume’s principle has been stipulated and another in which the directions principle has been stipulated, and suppose someone asks whether the numbers that are discussed in the first language are the same as the directions that are discussed in the second. Given the present approach to the Caesar problem, we will want to regard such questions as misguided. Now, “is any direction identical to any number?” is misguided for a surface reason: it employs a quantifier that isn’t that of either of the two languages. However, if ‘the number of’ in the first language and ‘the direction of’ in the second signify two of a common stock of concepts, over which there is a transcendent notion of entailment, then at a deeper level the question isn’t misguided at all. For then, there would presumably be an objective answer to the question of whether the concept *number-of* that is expressed by ‘number of’ in the first language entails the negation of the concept *direction-of* that is expressed by ‘direction of’ in the second language; and this question is a sort of concept-theoretic counterpart to the question of whether a number could be a direction. If the entailment holds, we could not introduce a third language in which ‘number of’ and ‘direction of’ mean what they mean in the first two languages, respectively, and in which some sentence of the form “the number of concept c is identical to the direction of line l ” is true.

natural groupings introduced in this language shouldn’t be in any sense identified with the ones introduced in either the pure directions language or the pure numbers language.

³⁶See MacBride (2003, section 6) for an overview.

But if the entailment doesn't hold, then there is no barrier to introducing such a language. Thus there is an objective fact of the matter on which the possibility of introducing such a language turns. Similarly, if permissivist languages draw from a common stock of transcendent concepts governed by a transcendent notion of entailment, then there will be objective answers as to whether the concept *magisterial demeanor* from one language entails the negation of the concept *stern visage* from another, and thus there is an objective fact of the matter whether one can introduce a language that, so to speak, identifies some demeanors in the sense of the first language with some visages in the sense of the second. Admitting objective facts of the matter of this sort clashes with the broadly "structuralist" spirit of neoFregean quantifier variance, and is (at the least) completely unexpected for the permissivist quantifier variantist.

Here is a related way of bringing out the conflict between neoFregean and permissivist quantifier variance and transcendent concepts, which does not involve the possibility of introducing further languages. Just as (as I argued earlier) it is natural to combine the transcendent conception of concepts with a transcendent conception of entailment, it is also natural to combine it with a transcendent (or objective) notion of *inclusion*, which is what entailment demands of a given possible world. Intuitively, concept *c* includes concept *d* iff *in fact* every *c*-ish portion of reality is *d*-ish. To illustrate, suppose first that we are speaking Universalese. We can then say: although it would have been possible for there to be humans that are at least nine feet tall, as it happens, all humans are less than nine feet tall. Given this, the concept *being a human* includes the concept *being less than nine feet tall*. But now shift to speaking Organicese. We can still say "the concept *being a human* includes the concept *being less than nine feet tall*", and express the same proposition by it as the speaker of Universalese did, though we will no longer take this proposition to also be expressed by "every human is less than nine feet tall", but rather by "every human-ish portion of reality is (less than nine feet)-ish". Thus inclusion is a transcendent notion. (It is natural to view it as a contingent counterpart of the transcendent notion of entailment. Indeed, one might naturally think that concept *c* entails concept *d* iff necessarily, *c* includes *d*. Also, inclusion can naturally be represented in the model: *c* includes *d* at ω iff $c(\omega) \subseteq d(\omega)$.)³⁷

Given the transcendent notion of inclusion, we can now argue as follows. If distinct neoFregean or permissivist languages shared a common notion of

³⁷It would be similarly natural to recognize transcendent relations of overlap, exclusion, and so forth.

concept, they ought also to share a common notion of inclusion. Thus there should be an objective fact of the matter whether, for instance, *number-of* from one neoFregean language includes the concept *direction-of* from another, or whether *demeanor* from one permissivist language includes *visage* from another. But neoFregeans will surely not want to recognize such facts of the matter, for they would in essence be facts about whether numbers “really are” directions, or whether demeanors “really are” visages.

We should not, then, regard different neoFregean or permissivist languages as operating on a common domain of concepts, because there is no single conception of “worldly structure” (analogous to the “portions of reality” conception) to which the concepts can be seen as sensitive.³⁸ Rather, we should see each language as having a distinctive set of concepts; the immanent conception of both concepts and entailment is appropriate here.

In my view, Hirsch’s core texts can be read, in the first instance, as a defense of domain-recarving quantifier variance. (I don’t know whether Hirsch would also embrace the permissivist or neoFregean sorts.) Now, this might seem to conflict with the fact that Hirsch has long emphasized the primacy of full sentences in radical interpretation, as against sub-sentential constituents like names and quantifiers. Indeed, he has recently, along with co-author Warren, used the phrase “top down” (i.e., sentences-before-subsentences) to emphasize this meaning-as-use aspect of his view (Hirsch and Warren, 2019, p. 349). But we should distinguish an interpretational (or metasemantic) top-down/bottom-up contrast from a metaphysical one.³⁹ My contrast between domain-recarving versus neoFregean/permissivist quantifier variance is indeed a bottom-up versus top-down contrast, but it is intended to be a metaphysical one: does the objective world have relevant sub-propositional structure on which all languages agree? One can combine an affirmative answer to that question, thus accepting domain-recarving quantifier variance, while still accepting a top-down approach to metasemantics, and holding that the interpretation of quantifiers and singular terms is ultimately derived from how we use entire sentences.⁴⁰

³⁸Similar remarks apply to inegalitarian forms of quantifier variance as applied to ordinary-language ontological language that is less closely tied to particular bits of the material world, such as the quantification over ways and moves in “Every way to win this chess match would take more than ten moves”.

³⁹Thanks to Jared Warren here.

⁴⁰Though my own view is that objective worldly sub-propositional structure, once recognized, should also be seen as playing a metasemantic role, alongside the role for whole sentences on which the meaning-as-use approach relies. Note that Lewis’s own version of reference

So I think it is at least open to Hirsch to accept the domain-recarving variety of quantifier variance. (Though presumably not Warren, whose quantifier variance is more of the neoFregean variety.)⁴¹

So far we have seen just one example of domain-recarving quantifier variance: the one whose languages differ solely over which pluralities of fundamental objects are represented as having fusions. But in addition to this “compositional” dimension of the space of ontological languages, we could also consider a “decompositional” dimension. For instance, Hirsch thinks of disputes over whether things have temporal parts as also being nonsubstantive (Hirsch, 2005). Assuming that statements about subatomic particles persisting over time are objective, common to all languages, then some Hirschian quantifiers result, not from closing a quantifier over fundamental objects under certain operations of composition, but rather, from closing under certain operations of *decomposition*, such as an operation of arbitrary temporal decomposition. This sort of quantifier-variance can also, I think, be seen as being of the domain-recarving variety. For concepts still seem to be “locally anchored” to “portions of reality”, in a way that they are not given permissivist or neoFregean quantifier variance. However, there may not be a sharp line here. Perhaps there are intermediate forms of quantifier variance, where it would be unclear whether concepts are locally anchored, and as a result, unclear whether the transcendent conception of concepts is appropriate. Another interesting—and connected—possibility is that we might recognize a certain range of languages with a shared notion of entailment, and might view that notion as thereby being objective, while also recognizing that there is no privileged way of drawing a line around that range of languages. We might have a transcendent/objective notion of a concept, but not a transcendent/objective notion of the concept of being a transcendent/objective notion of a concept.⁴²

10. Quantifier variance as substantive metaphysics

My defense of quantifier variance against the collapse argument has relied on a particular “conception” of transcendent concepts and transcendent entailment, by which I mean a substantive set of assumptions about their nature. When I argued, for instance, that there are chair-ish portions of reality, but

magnetism is exactly of this mixed sort (Lewis, 1984).

⁴¹Accepting both sorts is also open.

⁴²The ideas in this section could use a fuller and more careful investigation.

no $\text{Exp}(O(\textit{chair}))$ -ish portions of reality (i.e., no portions that are such that there-are-in-the-Organicese-sense-chairs), and thus that the meaning O of ‘there is’ in Organicese doesn’t obey \exists -intro, I relied on the assumption that the concept of being a chair is “fine-grained” enough to be sensitive to the structure of “portions of reality”—structure that is “trans-ontic” from the point of view of Organicese. This is a substantive assumption about transcendent concepts; it would be false, for instance, if transcendent concepts were sensitive only to what counts as “ontic” structure from the point of view of Organicese. Given competing assumptions, various components of my defense might fail. Perhaps the most natural semantic hypothesis, given logical dispositions of speakers of Organicese, is that their meaning of ‘something’ obeys \exists -intro after all. Or perhaps the existence of a unique language whose quantifier meaning obeys both \exists -intro and \exists -elim really would violate the egalitarian spirit of quantifier variance after all. Or perhaps substantive ontological questions would be re-introduced. Given my assumptions about concepts and entailment, it is obvious that *being a nonorganic chair* does not entail *being such that $2 + 2 = 5$* (since some portions of reality are non-organic-ish and chair-ish but none are such that $2 + 2 = 5$); but if those assumptions are denied, there might be a substantive, open question whether the entailment holds. Hirsch would, I expect, be just as opposed to this as to the existence of a substantive question of whether there are any non-organic chairs.⁴³

But reliance on substantive assumptions of this sort should not be seen as compromising the spirit of quantifier variance. For after all, I would argue, quantifier variance is itself a substantive metaphysical assumption. Quantifier variantists are, at the very least, committed to *opposing* metaphysical pictures that would support substantive ontology;⁴⁴ the commitment to opposing con-

⁴³ Compare Dorr (2014, pp. 556–7).

⁴⁴ In this vein see Sider (2007, section III; 2009, pp. 419–20; 2011, section 9.6.3), though see Thomasson (2015, section 10.3) for an objection to this style of argument. (Aside: I agree with Thomasson’s claim that deflationary metaphysicians are not committed to *accepting the negation of* claims involving inflationary ideology (such as “carves at the joints”), but I do think they are committed to *rejecting* them (compare an intuitionist’s rejection of instances of the law of the excluded middle). On my view, this rejection is a substantive metaphysical stance. However, this could be disputed. Thomasson gives a nice example in which a two-year old, after being told that we can’t see the elephant now, we’ll need to see it after, says: “The after! I want to see that after! Pick me up now so I can see the after!” (Thomasson, 2015, p. 307). Our rejection of the child’s assumption that there is such a thing as an after isn’t a substantive negative biological stance; it is merely a matter of grammar. I don’t think the rejection of inflationary metaphysics is analogous, but there is a difficult question here. In any case, the issue in the present paper

ceptions of transcendent entailment that would undermine quantifier variance is akin. Quantifier variance is deflationary *metaphysics*: it is a substantive metaphysical outlook that, if true, blocks the existence of certain further substantive metaphysical questions.

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isn’t directly parallel, since it involves no disputed ideology.)

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