

Against Vague Existence*

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In my book *Four-dimensionalism* (chapter 4, section 9), I argued that four-dimensionalism – the doctrine of temporal parts – follows from several other premises, chief among which is the premise that existence is never vague. Kathrin Koslicki (preceding article) claims that the argument fails since its crucial premise is unsupported, and is dialectically inappropriate to assume in the context of arguing for four-dimensionalism.

Since the relationship between four-dimensionalism and the non-vagueness of existence is not perfectly transparent, I think the argument would retain some interest even if the premise were wholly unsupported; it would show that anyone who accepts that premise (which seems reasonable enough to me though perhaps not to others) must accept four-dimensionalism. Still, Koslicki is right that my defense of the premise was thin. So I will now try to do better. The new defense will have further premises, which could ultimately be rejected by opponents of four-dimensionalism, and so the argument retains the form: anyone who thinks certain things (which seem reasonable enough to me though perhaps not to others) must believe four-dimensionalism. But that's metaphysics for you.

I should also say that, in addition to the material on vague existence, there is more in Koslicki's excellent paper which I cannot discuss here. I agree with much of it;¹ and where we disagree there are formidable challenges, some of which I hope to address in the future.

*This paper began as a reply to Kathrin Koslicki's paper "The Crooked Path from Vagueness to Four-Dimensionalism" at the third annual Bellingham Summer Philosophy Conference. I thank John Hawthorne, Eli Hirsch, Kathrin Koslicki, Ned Markosian, Ryan Wasserman and Dean Zimmerman for helpful comments.

¹In particular I agree with the claim in the final two sections that four-dimensionalism in some sense cheapens questions about the persistence of ordinary objects, makes them less strictly ontological. My belief is that this is, in the end, the correct view of the matter, but Koslicki is right to draw attention to its conflict with ordinary belief.

1. The argument for four-dimensionalism from vagueness

The argument begins with the following question concerning the notion of fusion, or composition:² given some chosen sets of objects S_1, S_2, \dots at times t_1, t_2, \dots , under what conditions is there some one object, x , such that i) x is composed of S_1 at t_1 , x is composed of S_2 at t_2 , and so on, and ii) x exists *only* at the chosen times t_i ? Call such an x a “minimal diachronic fusion” of the S_i s at the t_i s. Our question – under what conditions do minimal diachronic fusions exist? – can be thought of as the question “under what conditions do objects go into and out of existence?”

The main portion of my argument concludes that the answer to this question is: *always*. Any chosen S_i s and t_i s have a minimal diachronic fusion. Then the final stage of the argument proceeds from this universal answer – call it (U) – to four-dimensionalism.

(Koslicki – and a number of others in conversation – have questioned this final stage of the argument.³ Take any x at time t . Given (U), it follows that $\{x\}, t$ has a minimal diachronic fusion – i.e., that there exists an object, y , that i) is a fusion of $\{x\}$ at t , and ii) exists *only* at t . Unpacking i) using the definition of ‘fusion’ yields this: x is part of y at t and every part of y at t overlaps x at t . The final stage then tries to show that y counts as a temporal part of x at t (and hence, since x and t were arbitrarily chosen, temporal parts generally exist). It does so by a) assuming a certain definition of ‘temporal part’, and b) arguing that given certain plausible principles of temporal mereology⁴, y satisfies this definition. Each of these two steps can be challenged in ways that are worthy of individual discussion, but let me here say just this: *most* opponents of four-dimensionalism should *already* be unhappy with the intermediate conclusion that minimal diachronic fusions always exist, for that immediately implies, among other things, that at any

² x is a *fusion* of S at t , that is, is *composed* of S at t , iff: every member of S is part of x at t , and each part of x at t overlaps at t some member of S .

³Koslicki doubts the argument because, she says, (U) “is only the temporalized version of” the principle of unrestricted composition, whereas, as she correctly points out, several three-dimensionalists have accepted temporalized versions of that principle. But the temporalized principle accepted by the three-dimensionalists (for example Thomson (1983, p. 217)) says that what I call “diachronic fusions” (not necessarily minimal ones) always exist. The claim that *minimal* diachronic fusions always exist implies the existence of instantaneous objects, which three-dimensionalists like Thomson reject.

⁴The principles are needed to move from “every part of y at t overlaps x at t ” to “ y is part of x at t ”.

moment, for each object there exists an instantaneous object containing it as a part. Even if these instantaneous objects do not count as *temporal parts*, most opponents of four-dimensionalism would already be challenged. Indeed, I suspect that most would react thus: “if I needed to accept *that* (ubiquitous instantaneous objects), I might as well concede any remaining differences and accept four-dimensionalism”.⁵)

But the challenge of Koslicki’s I want to consider here concerns the main portion of the argument. That portion runs, in compressed form, as follows. Suppose for reductio that minimal diachronic fusions do not always exist. Then we can construct a sorites series connecting a case where no minimal diachronic fusion exists to a case where one does. And now, suppose further that

(*) it is never vague whether a minimal diachronic fusion exists

Then there must be a *sharp cutoff* in that sorites series: a pair of cases nearly exactly alike in all relevant features, but such that in one, a minimal diachronic fusion definitely exists, whereas in the other it is definitely the case that no minimal diachronic fusion exists. Since that is implausible (I said), the reductio is completed – modulo the defense of (*).

I defended (*) by arguing that if it can be vague whether minimal diachronic fusion takes place, then it can be vague how many objects exist in a world with only finitely many objects. (For details see Sider (2001, 136–137).) But for any finite n , there is a sentence of *pure* first-order logic with identity (i.e., containing no non-logical symbols) that says that there exist exactly n things.⁶ (The sentence for $n=2$ is ‘ $\exists x \exists y (x \neq y \ \& \ \forall z (z = x \vee z = y))$ ’.) So vagueness in how many objects exist in a finite world would imply vagueness in one of the symbols of pure first-order logic with identity. I claimed that no such symbol is subject to vagueness, thus completing the argument for (*).

Koslicki challenges this argument at the final step, in particular the assumption that (unrestricted) quantifiers are precise. (Clearly, *restricted* quantifiers can be vague, but it is *unrestricted* quantifiers that are at issue since four-dimensionalism is the claim that there are, unrestrictedly, temporal parts.) I agree that this is where the action is.

So: can quantifiers be vague? I say *no*, and offer two arguments.

⁵John Hawthorne (2007) and Ernest Sosa (1987, sections H and I) may be exceptions.

⁶Let us here ignore the wrinkle about “concreteness”.

2. First argument against vague existence⁷

The first argument seeks only to show that vague quantifiers would be radically unlike familiar cases of vagueness. Vague quantifiers may yet be possible, but such vagueness would require an entirely different model from the usual one.

My argument requires the following assumption about what “the usual model of vagueness” is like: *vagueness requires precisifications*. Wherever there is vagueness (of the type relevant to the argument, anyway), there must be different non-vague candidate meanings “in the neighborhood of” the vague term. This is consistent with lots of views of vagueness: supervaluationism; the view I prefer, that no sentence containing a vague term is either true or false; and even epistemicism. (Perhaps it is inconsistent with the view that vagueness is “ontological”, or “in the world rather than in language or thought”.) *Supervaluationists* obviously base their account on precisifications. *Epistemicists*, at least Timothy Williamson, do too: the type of ignorance that constitutes vagueness is explained by appeal to precisifications. (Williamson (1994) argues that our ignorance in cases of vagueness is due to semantic ignorance of which of the many precisifications of a vague term is its *unique* meaning.) And on the *nihilist* view defended by David Braun and me (2007), vagueness is the result of semantic indecision over precisifications. Like supervaluationists, we reject Williamson’s claim that one precisification is *the* semantic value of a given vague expression, but unlike supervaluationists we say that neither truth nor falsity can be achieved if any vague expressions are left unprecisified.

Let’s take a concrete example. Suppose S is a borderline bald person – the sentence ‘S is bald’ is neither definitely true nor definitely false. To what is this indeterminacy due? The usual answer runs thus:

A subject-predicate sentence ‘ α is F ’ is true if the referent of α is a member of the extension of F . So ‘S is bald’ is true iff the referent of ‘S’ is a member of the extension of ‘bald’. But it is not determinate what set is the extension of the predicate ‘bald’. There is the set of all those with at least 100 hairs on their heads, the set of all those with at least 101 hairs on their heads, and so on. No one of these sets is determinately the extension of ‘is bald’. Moreover, the referent of ‘S’ is a member of some of these sets, but not of all of them. So ‘S is bald’ is neither definitely true nor definitely false.⁸

⁷A distant predecessor of this argument appears in Sider (2001, 128–130).

⁸Even an epistemicist could make this speech, though of course he would interpret ‘indeterminate’ epistemically.

Let me harp on this a bit. When confronted with vagueness, I retreated to a relatively precise *background language* to describe the relevant facts. In this background language I quantified over the various sets containing persons with different numbers of hairs, and said that the referent of S was in some but not all of these sets. Given the vagueness in ‘person’, ‘hair’, and ‘S’, this language is not perfectly precise, but the vagueness is irrelevant to the case being considered since it is not vague which of these sets S belongs to. Moreover, in principle one could describe the sets with perfect precision by retreating to a background language employing only the vocabulary of fundamental physics. In sum, in paradigm cases of vagueness one can describe the multiple precisifications that give rise to the vagueness using a relatively precise background language. (Think of the aphorism “vagueness is in language or thought, not in the world itself”.)

This, then, is the usual picture of paradigm cases of vagueness. But the picture breaks down if applied to quantifiers. Suppose it is definitely the case that there exists one and only one F , and that there exists one and only one G , but it is indeterminate whether the following is true:

(E) $\exists x$ (x is composed of the F and the G).

Moreover, suppose this to be due to vagueness in the quantifiers, not vagueness in ‘ F ’, ‘ G ’, or ‘composed’.⁹ Imagine now someone attempting to apply the familiar model with the following speech:

‘ \exists ’ has at least two precisifications, call them \exists_1 and \exists_2 . There is an object, x , that is in \exists_1 ’s domain but not in \exists_2 ’s domain, and which is composed of the F and the G .¹⁰ Thus, (E) is neither definitely true nor definitely false.

The problem is in the claim that *there is* an object x in \exists_1 ’s domain but not in \exists_2 ’s domain. This use of ‘there is’ renders the background language vague at exactly the point at issue: the existence of something composed of the F and the G . The defender of vague existence thinks that it is not definitely true that there is something composed of the F and the G , and so therefore does not

⁹This assumption is harmless, since the case can be spelled out in such a way that all participants to the dispute will grant that everything is such that: either it is definitely composed of the F and the G , or it is definitely not composed of the F and the G .

¹⁰We could rephrase thus: “there is something that one ranges over but the other does not” to avoid presupposing the existence of an entity that is the domain of an unrestricted quantifier.

think that it is definitely true that there is something in the domain of \exists_1 but not of \exists_2 that is composed of the F and the G . She will therefore not make this speech.

As we saw with ‘bald’, the candidate extensions of a *predicate* may be non-vaguely described using a background language containing quantifiers. One could similarly describe candidate extensions for vague expressions in a number of other grammatical categories. But this all presupposes that the quantifiers used in this background language are non-vague (or at least not relevantly vague). Assuming *one* bit of language – the quantificational bit – to be non-vague, one can give non-vague descriptions of precisifications of the *rest* of the language, which *can* be taken to be vague. But once the precision of the quantificational portion of language is challenged, this neat picture breaks down. No refuge from vagueness remains in which to characterize precisifications.¹¹

The defender of vague existence has a few options at this point; I’ll sketch three. A first option is to *reject the need to non-vaguely describe precisifications*. The defender would thus be claiming that ‘ \exists ’ does indeed have precisifications, and that those generate different truth values for quantified claims; but he would have nothing to say about what the precisifications are like or how they generate the different truth values. This is an unattractively quietist position. We would be claiming that quantifiers are vague while admitting we can say nothing at all to make this vagueness intelligible.

A second option is to *use vague quantifiers to non-vaguely describe precisifications*. Despite initial appearances, this is a coherent option, and merits detailed discussion. Even if quantifiers are vague, not every sentence containing them need be vague. Such sentences might concern cases that are not borderline, and might be used to non-vaguely describe precisifications of quantifiers.

Recall the misguided attempt to apply the familiar model of vagueness to sentence (E). The problem, it might be thought, came from assuming that \exists_1 and \exists_2 differ by having different objects in their domains. Here is an alternate picture of \exists_1 and \exists_2 .¹²

¹¹Not only does our existing language seem not to contain an adequate fragment in which to describe precisifications of ‘ \exists ’, there seems to be no obvious way to enrich our language to describe these precisifications.

¹²The picture is inspired by Hirsch (2002, 54), but it should not be assumed he would accept it. Also, I am not suggesting that a realistic account of vagueness in the quantifiers would count (E₁) and (E₂) as all and only the precisifications of (E). There probably ought to be many more precisifications; and perhaps one or both is not a plausible precisification. The example nevertheless illustrates the challenge that any such approach faces.

\exists_1 is to be a precisification according to which *any* two objects have a mereological sum. The truth condition it assigns to (E) is the following:

$$(E_1) \exists x(x=\text{the } F) \ \& \ \exists x(x=\text{the } G)$$

Since all pairs of objects have fusions according to \exists_1 , all \exists_1 requires for (E) to be true is that the *F* and the *G* exist. Now, on the view in question, the existential quantifier ‘ \exists ’ contained in (E_1) is vague. Nevertheless, since by hypothesis the *F* and the *G* definitely exist, (E_1) is definitely true¹³ – the vagueness in ‘ \exists ’ is irrelevant in this case.

\exists_2 , on the other hand, is to be a precisification on which only suitably related objects have a mereological sum. Let *R* be a certain multigrade relation that makes “suitably related” precise in some chosen way; we then have the following as the truth condition for (E):

$$(E_2) \exists x (x\text{'s parts stand in } R \ \& \ x \text{ is composed of the } F\text{-thing and the } G\text{-thing})$$

Let us stipulate that the *F* and the *G* are so constituted and arranged that any object composed of them would definitely be such that its parts do not stand in *R*. (E_2) is then definitely false, despite vagueness in ‘ \exists ’. Again, we have used the vague term ‘ \exists ’ in the description of this precisification, but we have done so using sentences that do not concern its borderline cases.

This approach succeeds only if (E_1) and (E_2) count as acceptable precisifications of (E). But (E_1) seems clearly not to. (E) is a *quantified* claim. Its major connective is the existential quantifier ‘ \exists ’; it says that *there is* a thing of a certain sort. (E_2) , in contrast, is not a quantified claim. Its major connective is the ‘&’; it is the conjunction of two genuinely quantified claims, not a quantified claim itself. It does *not* say that there exists a (single) thing of a certain sort; it says that there exist two things, but says nothing about the existence of a third thing made up of them. So why should we accept that (E_1) is a way of making (E) precise? (E_1) is nothing like a *genuinely quantified claim*, which it must be if it is to be a precisification of (E). I do not mean to suggest that any discrepancy in logical form between a vague expression and a candidate precisification disqualifies that precisification, but inspection of this case yields an intuitive verdict. “The *F* and the *G* exist” seems clearly not to be a way of

¹³Nihilists like Braun and I will disagree, but will say something related.

making precise the idea that “The F and the G exist, *and in addition there exists something made up of the F and the G*”, which is what (E) says.

This problem threatens all proposals of this sort. Only descriptions of precisifications of ‘ \exists ’ that say what objects are in their domains allow those precisifications to be genuinely quantificational. But as we saw at the beginning of this section, such descriptions of precisifications of ‘ \exists ’ are unavailable if the quantifiers are vague. The current option is, in essence, to keep the descriptions non-vague by keeping any existential quantifiers away from the main connective position. But then the precisifications seem not to be genuinely quantificational.

A second problem is that we have not been given a *general* procedure for constructing \exists_1 ’s precisifications of English sentences containing ‘ \exists ’. ‘ \exists ’ can appear in all sorts of contexts, and there is no obvious way to generalize the strategy employed in precisifying (E) as (E₁).¹⁴

The defender of this approach may attempt to meet the second objection by searching for a more general procedure for precisifying sentences containing ‘ \exists ’, and attempt to meet the first objection by claiming that the proposed precisifications have, to some degree, the right *inferential role* to be precisifications of genuinely quantified claims. Evaluation of these moves must await a specific proposal.¹⁵

A third and final option is to *find non-quantificational non-vague language to describe precisifications*. I have in mind appealing to a “stuff language”, or to Carnapian linguistic frameworks, or to some other such deviant approach to ontology. There is no master argument to rule out all such possibilities, but I have never seen anything of this sort carried out in convincing detail. Consider the stuff approach, for example. The stuff theorist must supply a non-vague stuff language adequate to a complete description of the world, in which precisifications of the ordinary quantifiers may be constructed. If the language is to be adequate to describing the world, *something* like the quantifiers must be introduced, call them stuff-quantifiers; likewise, stuff-predicates analogous to ‘part of’ and ‘exists at time *t*’ will surely be needed as well. But then won’t we be back where we started? A stuff-theoretic version of four-dimensionalism may now be formulated using stuff-quantifiers and stuff-predicates, and an analog of the argument from vagueness may be run in its favor. I doubt the three-dimensionalist will concede four-dimensionalism for stuff. Indeed, once

¹⁴See the end of Sider (2006).

¹⁵Against such moves I would advance the argument of the introduction to Sider (2001); the argument at this point begins to merge with that of the next section of the present paper.

the stuff-language includes analogs for all the usual bits of the thing-language, one wonders whether there is any real difference between the languages. At any rate, the argument here is more volley than smash: let's see the stuff (or Carnapian) alternative laid out in sufficient detail, and then we'll talk.

3. Second argument against vague existence

The argument here attempts to be more demonstrative, but requires some heavy-duty metaphysics. It may be summarized thus:

1. Vagueness requires multiple precisifications
2. Wherever there is a unique natural kind, there are no multiple precisifications
3. (Unrestricted) existence is a unique natural kind¹⁶

Therefore, 'exists' and '∃' are not vague

The first premise I will not defend; as with the argument of the previous section this conception of vagueness remains a presupposition.

In defense of the second premise I assume a conception of meaning-determination defended by David Lewis (1983, 1984): meaning is secured by use plus eligibility. I discuss this in more detail in the introduction to Sider (2001), but in brief: *use* is *our* contribution to meaning-determination, whether by social convention, individual mental states, or biology. *Eligibility* is the intrinsic suitability of a candidate meaning to be meant. Eligible meanings are natural kinds; they carve nature at its joints. When candidate meanings fit our use of a term equally well but one is more eligible/natural than the rest, then that candidate is the meaning of the term. This conception of meaning is attractive because it provides the most powerful response to the meaning-skepticism of Hilary Putnam (1981, 1980, 1978, Part IV) and Kripkenstein (Kripke, 1982).

Given the Lewisian picture of meaning-determination, a natural view – for non-epistemicists anyway – is that precisifications are candidate meanings for a term, T, no one of which is more natural than any of the rest, no one of which fits use of T better than any of the rest. Precisifications are tied with respect to both use and eligibility. No single one of those precisifications is then the unique semantic value, and we have vagueness. But when one candidate is far more eligible or natural than the rest, the tie is broken, and there are no precisifications, and so no vagueness. In premise 2, by “unique natural kind”

for a term T, I mean a highly eligible meaning that fits the use of T quite well, and is such that no other eligible meaning fits the use of T to any significant degree. Thus understood, premise 2 follows.

An epistemicist will say something slightly different: precisifications are equally eligible candidate meanings that, *for all we can know*, fit use as well as the rest. They are tied with respect to eligibility, and differences with respect to use are unknowable. One of these candidates is in fact the unique meaning, but we cannot know which one that is, because we cannot know which fits use the best. But when there is a unique natural kind, the unique semantic value has been selected in a very different way, a way that, intuitively, does not count as vagueness. Here there are no precisifications and so no vagueness.

Finally we have the third premise: existence is the one and only highly eligible meaning that fits our use of (unrestricted) quantificational expressions. The premise is a natural one, and gels with a nice picture of the ready-made world as consisting of a domain of objects and their natural properties and relations, but that's no argument. Indeed, I have no further argument for the premise. I do, however, note convergence with related issues: as I argue in the introduction to my book, existence being a natural kind is crucial to the rebuttal of Carnapian ontological relativity and hence to the whole enterprise of ontology.

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