Argument from Vagueness for 
Modal Parts

Abstract. It has been argued by some that the argument from vagueness is one of the strongest arguments in favor of the theory of temporal parts. I will neither support nor dispute this claim here. Rather, I will present a version of the argument from vagueness, which—if successful—commits one to the existence of modal parts. I argue that a commitment to the soundness of the argument from vagueness for temporal parts compels one to commit to the soundness of the argument from vagueness for modal parts. This would be a significant conclusion, if true, since there are far fewer (if any) who currently commit themselves to modal parts than the many who currently commit themselves to temporal parts (and who do so in part because of the argument from vagueness).

1. Introduction

One of the more controversial arguments for the theory of temporal parts is the Argument from Vagueness. The controversy primarily comes from disagreement over its effectiveness: proponents think it wields a heavy hand in favor the theory of temporal parts, while critics think the argument is obviously flawed.¹ My interest in this paper is not to determine whether the proponents or opponents are right, but to present a version of the argument from vagueness, which—if successful—commits one to the existence of modal parts. I maintain that those who endorse the argument from vagueness for temporal parts now face the burden (or benefit, depending on your metaphysical inclinations) of adopting a parallel argument for modal parts. In what follows, I will (i) briefly summarize Sider’s argument from vagueness for temporal parts, (ii) present a parallel argument from vagueness for modal parts, and (iii) consider (and reject) some of the ways a proponent of the argument discussed in (i) might try to resist the argument I present in (ii).²

I will assume in the pages that follow that the argument from vagueness for temporal parts is successful. Those who reject this argument (for whatever reason) might nonetheless find the


² To my knowledge, the argument from vagueness as applied modal parts is not discussed anywhere in current philosophical literature. Brian Weatherson, in a blog discussion in 2003, discusses the topic briefly. He expresses skepticism of the project and (admittedly) doesn’t develop the view in much detail. What follows is my attempt to pick up where Weatherson left off.
following discussion beneficial since it lends itself to a modus tollens against the argument for temporal parts: if the success of the argument for temporal parts entails the success of a modal version of the argument, then this would commit proponent of the argument for temporal parts to modal parts as well, which (some may argue) is untenable. So: we should reject the assumption that the argument from vagueness for temporal parts is successful. Of course, whether or not a commitment to modal parts is untenable would have to be established. But certainly there far fewer (if any) who currently commit themselves to modal parts than the many who currently commit themselves to temporal parts. It would be significant, then, both to friends and foes of the argument from vagueness, to show that an endorsement of the one argument compels an endorsement of the other.

2. Sider’s Argument from Vagueness for Temporal Parts

Most of us grant that there are ordinary objects—e.g., rocks, trees, tables, and chairs. We also grant that these objects did not always exist, nor will they always exist. The chair you are sitting on now, for example, was not around at the beginning of time. Now it is. Later it won’t be. This may lead us to wonder: under what conditions does the chair go into and out of existence over time? Under what conditions do objects in general come into and go out of existence over time?

Let us grant that there are lots of different times—yesterday, today, tomorrow at noon, etc.—and let us grant that there are lots of different objects that exist at those times—the collection of molecules in your chair yesterday, the collection of molecules in your chair right now, the collection of molecules in your chair tomorrow at noon, etc. Given these, when do we think that

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3 My summary of Sider’s Argument from Vagueness is borrowed in large part from Varzi’s clear presentation of the argument in Varzi (2005).

4 Assuming that there are times other than now (or worlds other than the actual one, as we’ll see in the case of the modal argument from vagueness) is an assumption some might have difficulty accepting (e.g., presentists and other A-
there is an object that is composed of these various different objects at various different times? Sider calls this the *Diachronic Composition Question*:\(^5\)\(^6\)

**Diachronic Composition Question (DCQ):** given various times and various objects corresponding to each, under what conditions will there be some object that is composed of all and only those objects at those times?

There are three logically exhaustive and exclusive answers to DCQ: (i) under no conditions (never), (ii) under some conditions (sometimes), and (iii) under all conditions (always). The argument from vagueness begins with these options and proceeds as follows:

1. There are three answers to DCQ: (i) never, (ii) sometimes, (iii) always.
2. If (i), then we are nihilists about composition.
3. But nihilism is false; objects do have parts.
4. So not (i).
5. If (ii), then we can construct a sorites series (of composition).
6. If we can construct a sorites series (of composition), then there is vagueness involved in statements about composition.
7. If there is vagueness involved in statements about composition, then the vagueness is either in our language or in the world.
   - But statements settling the question of whether composition occurs (or not) can be rephrased as count statements.
   - And count statements involve only logical terms, which cannot be vague.
   - So statements involving composition do not contain any vague terms.
   - So it cannot be that the vagueness involved in the composition sorites series is due to vagueness in our language.
   - So, it must be that the vagueness is in the world.
   - But this is absurd.\(^7\)

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\(^5\) This question is the diachronic version of Van Inwagen’s Special Composition Question. See Van Inwagen (1990).

\(^6\) More precisely, Sider presents us with several definitions:
- \(f\) is an assignment: \(f\) is a function that takes one or more times as arguments and assigns non-empty classes of objects that exist at those times as values.
- Diachronic fusion (D-fusion): \(x\) is a diachronic fusion of an assignment \(f\) if for every \(t\) in \(f\)’s domain, \(x\) is a fusion-at-\(t\) of \(f(t)\).
- Minimal D-fusion: \(x\) is a minimal D-fusion of an assignment \(f\) if (i) \(x\) is a D-fusion and (ii) \(x\) exists only at those times in the domain of \(f\).

The DCQ then becomes: when does a given assignment have a minimal D-fusion?

\(^7\) This is assuming the Linguistic Theory of Vagueness, which I won’t defend here. See Lewis (1981), Sider (1997), (2001), etc., for discussion.
(8) So it must not be the case that, as far as composition goes, there is either vagueness in our language or in the world.
(9) So there must not be vagueness involved in statement about composition.
(10) So we must not be able to construct a sorites series (of composition).
(11) So it is not the case that the answer to DCQ is (ii).
(12) So, by elimination, the answer to DCQ is (iii).
(13) The only metaphysical view that can adequately maintain (iii) is one that committed to temporal parts.
(14) So there must be temporal parts.

As I mentioned at the outset, I will not defend the soundness of the above argument. I will assume that it is valid and that the premises are plausible. I am interested in determining whether a commitment to the soundness of the above argument for temporal parts compels one to commit to the soundness of a parallel argument for modal parts. In the next section I present the argument from vagueness for modal parts, followed by objections and replies.

3. The Argument from Vagueness for Modal Parts

Let me mention a couple of points before I present the modal argument. First, the argument from vagueness for temporal parts assumes that there are times. Likewise, the modal argument will assume that there are possible worlds. I will discuss the controversy of this assumption in section 4. Second, neither argument need take a stand on whether these times or worlds, or the individuals in these times and worlds, are abstract or concrete. Admittedly, this issue is more poignant in the case of possible worlds than with times, since a commitment to concrete possible worlds (but not concrete times) is often met with outrage and incredulity. I will also discuss this further in section 4. Third, I intend for any view that is committed to modal parts to be parallel in structure to a view that is committed to temporal parts. One way to do this would be to claim that individuals are trans-

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8 Lewis (1986: 133-135)
world (and trans-spatio-temporal) sums or lumps; individuals are mereological sums of (at least) world parts. According to (at least one kind of) temporal parts theory, what makes it the case that you used to be 3ft. tall is that you—an extended, four-dimensional object (worm)—have a temporal part that is 3 ft. tall. Similarly, according to (at least one kind of) modal parts theory, what makes it the case that you could have been president is that you—an extended, trans-world object—have a modal (or world) part that is president. One would take the ‘part’ part of ‘counterpart’ seriously; things are possible or impossible for you because your world parts are doing (or not doing) various things in various possible worlds. The details of such an account may vary (just as the details of a temporal parts view may vary), but I intend modal parts to be analogous to temporal parts in the appropriate ways.

Once we’ve granted that there are possible worlds (and individuals in them), there is a question parallel to DCQ—namely, a question concerning dia-cosmic (or trans-world) objects. We typically do not ask about these sorts of trans-world objects, but this seems metaphysically irresponsible. If we quantify over possible worlds and individuals in these possible worlds (either abstract or concrete), then we should have an answer to the following question: given various possible worlds and various individuals in these worlds, under what conditions is an object composed of all and only those objects at those worlds? This is the possible worlds analog to Van

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9 Weatherson dubs these trans-world objects “lumps” in Weatherson (ms). I adopt the terminology here as well.

10 Interestingly, similar to a temporal parts theory, adopting modal parts has the advantage of solving traditional metaphysical puzzles. Indeed, a commitment to modal parts yields a more unified solution to these puzzles than just adopting temporal parts (i.e., a worm theorist), since one would not have to appeal to other theoretical machinery to answer puzzles about co-located objects that have completely overlapping temporal careers (e.g., Goliath and Lump1). Sider (2001), for example, provides the worm theorist with a different answer to puzzles involving spatio-temporally co-located objects than with puzzles involving merely spatially (but non-temporally) co-located ones. (This advantage is not had over the stage theorist, however, since as Sider himself explains, “a stage theorist need not switch gears when moving to the modal case.” ibid, 206) I will not elaborate on this point here, but mention it to suggest that a modal parts theory has more arguments in its favor than merely the argument from vagueness; it would provide an elegant, unified solution to numerous co-location puzzles.
Inwagen’s Special Composition Question (SCQ) and Sider’s Diachronic Composition Question (DCQ). Let us call this the Dia-cosmic Composition Question (CCQ)\textsuperscript{11}:

**Dia-cosmic Composition Question (CCQ):** given various worlds and various objects corresponding to each world, under what conditions will there be some object that is composed of all and only those objects at those worlds?

Parallel to DCQ, there are three logically exhaustive and exclusive answers to CCQ: (i) under no conditions (never), (ii) under some conditions (sometimes), and (iii) under all conditions (always).

The argument for the existence of modal parts begins with this choice and proceeds in a parallel fashion:

(1*) There are three answers to CCQ: (i) never, (ii) sometimes, (iii) always.
(2*) If (i), then we are nihilists about composition.
(3*) But nihilism is false; objects do have parts.
(4*) So not (i).
(5*) If (ii), then we can construct a sorites series (of composition).
(6*) If we can construct a sorites series (of composition), then there is vagueness involved in statements about composition.
(7*) If there is vagueness involved in statements about composition, then the vagueness is either in our language or in the world(s).
(7.1*) But statements settling the question of whether composition occurs (or not) an be rephrased as count statements.
(7.2*) And count statements involve only logical terms, which cannot be vague.
(7.3*) So statements involving composition do not contain any vague terms.
(7.4*) So it cannot be that the vagueness involved in the composition sorities series is due to vagueness in our language.
(7.5*) So, it must be that the vagueness is in the world(s).
(7.6*) But this is absurd.
(8*) So it must not be the case that, as far as composition goes, there is either vagueness in our language or in the world(s).
(9*) So there must not be vagueness involved in statements about composition.

\textsuperscript{11} We could even modify Sider’s definitions as follows:

- *f* is an assignment: *f* is a function that takes one or more worlds as arguments and assigns non-empty classes of objects that exist in those worlds as values.
- Dia-Cosmic fusion (C-fusion): *x* is a dia-cosmic fusion of an assignment *f* if, for every world, *w*, in *f*’s domain, *x* is a fusion-in-*w* of *f*(*w*).
- Minimal C-fusion: *x* is a minimal C-fusion of an assignment *f* if (i) *x* is a C-fusion and (ii) *x* exists only in those worlds in the domain of *f*.
- The CCQ then becomes: when does a given assignment have a minimal C-fusion?
(10*) So we must not be able to construct a sorites series (of composition).
(11*) So it is not the case that the answer to CCQ is (ii).
(12*) So, by elimination, the answer to CCQ is (iii).
(13*) The only metaphysical view that can adequately maintain (iii) is one that committed to modal parts.
(14*) So there must be modal parts.

Let me say a bit in favor of the above premises; in the next section I will address objections.

Premises (1*)-(3*) are true for the same reasons premises (1)-(3) are (if they are). Once we’ve quantified over worlds and individuals in those worlds, then we think that these things compose other objects: never, sometimes, or always. If we say never, then we presumably have a principled reason for thinking so—either we think that it is never the case that composition occurs, or we think that it does, but only intra-worlds not inter-worlds. In the first case we are eschewing common sense and contemporary science, and in the second we are in need of a non-ad-hoc explanation as to why composition is world-bound, which will not be easy to do. Moreover, as I argue below, if you take the second option, you slide into the ‘sometimes’ category, which will land you directly into vagueness.12

(4*) follows from (1*)-(3*).

As for (5*): we can construct a sorites series of composition dia-cosmically just as easily as we can construct a sorites series of composition diachronically. Indeed, Chisholm’s (1967) Adam and Noah example is just such a sorites series—even though he uses this example to prove a different point. And while this example is not explicitly a sorites series of composition, we could easily make it one. Chisholm asks to imagine a series of possible worlds, each one differing only slightly from the preceding one, and only with respect to certain properties of Adam and Noah (or Adam and Noah candidates13). We are then to ask ourselves, after a succession of so many of these worlds, whether

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12 See below section 4.

13 I say ‘candidates’ since whether the relevant individuals in any particular world are indeed Adam or Noah is the very question under consideration.
either Adam or Noah have survived. It is a trans-world version of a puzzle of identity (or change) over time. In Chisholm’s version, however, the concentration is on properties such as being 930 years old, being named ‘Adam’, etc. But we could alter the puzzle so that it (explicitly) involves parts. Imagine that in W₁ Adam is composed of parts A₁, …, Aₙ and Noah is composed of parts N₁, …, Nₙ. And imagine that W₂ is just like W₁ except that in W₂ the Adam candidate is composed of parts N₁, A₂, …Aₙ and the Noah candidate is composed of parts A₁, N₂, …, Nₙ. And so on. We can imagine a continuous series of such worlds, each one differing only slightly from the preceding one, and only with respect to the parts composing the Adam and Noah candidates. Then we can ask: in which worlds along this series does Adam stop existing (or begin)? Or Noah? Etc. In this way, we have a trans-world sorites series of composition, which would mirror a trans-temporal sorites series of composition (e.g., the Ship of Theseus); we have a dia-cosmic sorites series that parallels a diachronic sorites series. So (5*) is true if (5) is.

(6*) is true if (6) is.

(7*), (7.6*): If we think that there is no ontic vagueness (in the world), we presumably think that this is a metaphysically necessary fact. It’s not just that the actual world happens to be such that there is no ontic vagueness in it. Rather, there is something metaphysically necessary about the prohibition of ontic vagueness. And so, in no metaphysically possible world is there ontic vagueness. And so in no metaphysically possible world is it vague how many objects there are. What’s more: take some object that is composed of all and only various different objects in (at) various different world, and take another such object, and another and another, etc. Take these objects and count them. It will never be the case that it is vague how many such objects there are. Vague cross-world counts inherit their vagueness from vague counts at-a-world; cross-world counts won’t be vague unless there is a count in a particular world that is vague—which there never is.¹⁴

¹⁴ Again, this is assuming the Linguistic Theory of Vagueness, which I won’t defend here.
(7.1*)-(7.5*): whether statements about composition can be recast as count statements, whether count statements contain only logical terms, and whether logical terms are non-vague are all matters that can be settled independently from issues of dia-cosmic or diachronic composition. So (7.1*)-(7.5*) are true if (7.1)-(7.5) are.

(8*)-(12*) follow from the truth of preceding premises. (13*) will be left undefended, but is true if (13) is. And (14) follows from preceding premises.

4. Objections, Replies

My aim in presenting the argument for modal parts is not necessarily to endorse it but rather to see if a commitment to the soundness of the temporal version compels one to commit to the soundness of the modal version. Suppose one wanted to commit to temporal parts because of the argument from vagueness. Could such a person then reject modal parts given the modal analog I’ve just presented? She could. But not without some duplicity. For whichever premise in the modal argument she might resist, she will have to admit, mutatis mutandis, that such a move is available in the temporal argument. In other words, finding a flaw in the modal argument will reveal a parallel flaw in the temporal argument, making it difficult to endorse one and reject the other. Below, I consider (and reject) several ways in which she might resist my charge. Each one, I will argue (briefly), is either implausible in its own right or is in tension with the endorsement of the soundness of the argument for temporal parts.

(i) “CCQ assumes that there are possible worlds, which I reject.”
If one denies that there are possible worlds, then one is left with the theoretical burden of accounting for our modal truths. One could take modal facts as brute, but it is not clear that having brute modal truths is any more theoretically elegant than positing possible worlds.\(^\text{15}\) While many philosophers will not commit to concrete possible worlds (e.g., Lewis’s hard core modal realism), most are inclined towards some kind of ersatzism—that possible worlds are abstract sorts of things, sets or classes, or some kind of linguistic entities, etc.\(^\text{16}\) But then the question isn’t whether you think a commitment to possible worlds is ontologically excessive, but whether you take a stand on the metaphysical nature of these worlds once you’ve already invited them into your ontology—and this is a different point (which I’ll get to below). So denying that there are possible worlds is not going to be an easy position to maintain in light of the wealth of theoretical benefits possible worlds afford.

Moreover, the relevant issue is not how the modal argument from vagueness fairs on its own, but rather how someone who endorses the temporal argument from vagueness could respond. And if it is admitted that one could simply deny that there are possible worlds in order to get out of the above argument, then one would have to admit that a parallel move could be made in the temporal case—that is, one could simply deny that there are times in order to get out of the argument from vagueness for temporal parts.

Now perhaps it is more plausible to deny the existence of possible worlds than it is to deny the existence of times. But this is shifting the focus away from the argument from vagueness and onto other debates, such as (in the temporal case) the debate between A-theorists and B-theorists.

\(^\text{15}\) One could also be a fictionalist about possible worlds, in which case one would get to use possible worlds talk without committing to them. But Modal Fictionalism has its fair share of burdens, which arguably outweigh the benefits of getting rid of worlds to begin with.

\(^\text{16}\) The temporal parallel would be those who commit to times, but think that times (except for the present, perhaps) are abstract.
And certainly such topics are lively enough not to consider it an uncontroversial matter whether times exist or not.17

(ii) “I deny (2*). I do not think that an answer of ‘never’ to CCQ entails that I am a nihilist about composition. I think that objects have parts, but these objects and their parts must be world-bound; I do not think that there are any trans-world objects.”

If you think that composition is world-bound, then you think that composition sometimes occurs (when it is intra-world) and sometimes does not (when it is inter-world). But then this is just to answer ‘sometimes’ to CCQ. But then we are off and running with premise (5*) and up, which will land us right into modal parts.

(iii) “I accept possible worlds, but deny that they are concrete. The modal argument needs to assume worlds are concrete in order to go through—in particular, premises (7.1*)-(7.3).”

Motivating this objection is sensitivity to Sider’s arguments for premises (7.1)-(7.3), which rely on counting concrete objects.18 But if we are quantifying over objects in our ontology—if we are counting or quantifying over are concrete or abstract. Consider statements of the form: ∃x∃y(Ax & Ay & x ≠ y & ∀z (Az → (z = x v z = y))), where we let “Ax” stand for “x is an abstract object.” This would leave us with a sentence that only contained logical terms. And it would be a determinate count statement about how many abstracta there are.

Perhaps one thinks this is implausible since the above schema is only helpful if we are considering finite entities. And one might think that if we allow in abstracta, then clearly we allow in

17 If you think that the debate about whether times (or worlds) exist is assumed to be settled prior to the argument from vagueness—that is, that the intended audience for the argument are those who are already committed to times—then you most likely think that the argument from vagueness for temporal parts is intended to settle the debate between 3Ders and 4Ders. Likewise, you might think that the argument for modal parts is intended to decide between the modal analog of 3Ders and 4Ders. See below for a (brief) discussion on this point.

18 The details of how and why this is will have to be left for another time.
ininitely—and importantly, uncountably many—abstracta. But if we can restrict the domain of discourse to talk about finitely many concrete objects, there seems to be no reason why we cannot restrict the domain of discourse (whenever and if we so pleased) to restrict the domain of discourse to finitely many abstracta. We might talk about the real numbers between one and ten, or we might want to count up all of the sets that have only me as a member, etc.

Perhaps one thinks that considerations of composition simply do not apply to abstracta. Our notion of composition, some might argue, only concerns concrete objects. But we do, in fact, use parthood talk when we discuss traditionally abstract objects. Lewis talks about trigonometry being part of mathematics, omniscience being part of god; the number three is part of the real numbers, etc. And we do not just talk about abstract entities (e.g., mathematics) having abstract parts (e.g., trigonometry). We think that concrete objects can have abstract parts—or at least, we talk as if they do. We talk about bowling balls having an axis of symmetry, the earth having an equator; Plato talks about the mathematical axis and circumference of a spinning top, Peter van Inwagen talks about the mathematical point of a knife, etc. I am taking our part talk as instructive and—following Lewis (1991)—being ecumenical about parthood. Thus, it seems unproblematic to allow abstract entities as parts.

Moreover, the primary point is whether we think that there can be borderline abstracta. Someone who is already committed to the Linguistic Theory of Vagueness will think not, since they think there is no vagueness in the world tout court. And so it won’t matter that we are not committed to concrete possible worlds—if we are committed to worlds at all, in any form, then the argument

20 Plato, Republic, Book IV.
21 Van Inwagen (1981)
22 [Acknowledgment removed for blind review.]
from vagueness for modal parts goes through (assuming Sider’s argument from vagueness for temporal parts does).

(iv) “I deny premise (7.6*); I do not think that there is anything metaphysically necessary about the fact that there is no vagueness in the world.”

I suppose one could say that there is nothing metaphysically necessary about the fact that there is no vagueness in the world. But this doesn’t seem to me to be the heart of the Linguistic Theory of Vagueness that Sider, Lewis, et. al. endorse. Their mantra of ‘no ontic vagueness’ is generated from a sense of necessity. Indeed, Lewis says that having vagueness in the world—or, at least, it being a vague matter about whether composition occurs—is “impossible.” But even if we allow someone to claim that there is nothing metaphysically necessary about the prohibition of ontic vagueness, then there is little reason to think that there is never—at some point—ontic vagueness in the actual world, which would infect the argument from vagueness for temporal parts. So: (iii) is an implausible position in its own right, and a denial of (7.6*) in this way seems to directly undermine any plausibility for (7.6).

Now perhaps someone is motivated to deny (7.6*) (or (7*)) not because he thinks that the Linguistic Theory of Vagueness is only contingently true, or because he thinks that there can be vague objects in other (metaphysically) possible worlds. But, rather, perhaps he thinks that there is indeterminacy or vagueness regarding modal profiles in general. So, for example, it may be vague whether you could have been a monkey (or: it is vague whether your DNA or your fingerprints could have varied in the teeniest little way, etc.). But we mustn’t confuse our tolerance for indeterminacy with respect to our modal profiles with the thesis that there is vagueness in any possible world. For let us grant that it is vague whether you could have been a monkey. In some cases, when the context is just so, your modal profiles include worlds where you (or your counterparts) are monkeys. In other cases, when the context has changed, your modal profiles do
not include such worlds. The ‘vagueness’ or indeterminacy here concerning whether you could or could not have been a monkey can be cashed out in terms of which worlds we accept as accessible from this one (the actual world), or which worlds include counterparts of you. But this is just an understated trans-world Problem of the Many. We understand that there are lots of different worlds that may or may not be included in any particular modal profile or other—just as there are many different (distinct) collections of water molecules that might be viable candidates for the one(!) cloud in the sky. But just because we grant that there is a trans-world problem of the many, this does not mean that there is vagueness in any of these worlds. One should not confuse the fact that our modal profiles are vague (if they are) with the claim that the linguistic theory of vagueness is contingent. So one should not deny (7.6*) on the grounds that our modal properties are vague, flexible or context-sensitive.

(v) “The temporal argument was intended to decide between 3Ders and 4 Ders—nothing more. There is no modal analog of this debate, so the argument is ineffective.”

The modal analog of 3D vs. 4D is the debate between those who think that individuals are wholly located in every possible world in which they exist (and they exist in more than one world) and those who think that individuals are extended across worlds (e.g., lump theorists). Plenty of philosophers have spilled ink over these issues, and the issue of trans-world identity. So it is mistake to think that there is no modal analog. Moreover, that we do not have ready names for these positions, or that many do not (yet!) take modal parts seriously is certainly no objection to the argument for modal parts.

23 Sometimes, even granting a particular context, there may be disagreement about which worlds to include or not. But this, I take it, would not be indeterminacy but a genuine, substantial disagreement.
References


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