The Determinable-Based Account of Metaphysical Indeterminacy and Vague Identity

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Abstract
This paper focuses on Jessica Wilson’s determinable-based account of metaphysical indeterminacy and its relationship to the concept of vague identity. The determinable-based account comprises a distinction between meta-level and object-level accounts of metaphysical indeterminacy. I first argue that the distinction cannot be clearly applied to some theories. In particular, I argue that even though Wilson categorizes the constitution account of metaphysical indeterminacy as a meta-level account, from one perspective it can be defensibly regarded as an object-level account, because it is bound to posit genuinely indeterminate states of affairs and provides an explanation of boundary indeterminacy that is structurally analogous to the explanation provided by Wilson’s object-level account. This interim conclusion is important, because it has been argued that the constitution account, when applied to some more complex types of boundary indeterminacy, cannot avoid commitment to vague identity, in spite of the declarations of some of its proponents. The ultimate goal of this paper is to argue that, contrary to Wilson’s claims, the determinable-based account must embrace vague identity too.

Keywords: metaphysical indeterminacy, determinable-based account, constitution account, vague identity, macro-object boundary

1 Introduction
This paper critically examines the determinable-based account of metaphysical indeterminacy (henceforth the DB account of MI) developed by Jessica Wilson. In her defence of the theory Wilson makes several claims and assumptions that call for clarification and more thorough justification. The claims that I wish to focus on here are 1) that the DB account is a novel account of MI, 2) that there is a clear distinction between what Wilson calls ‘object-level’ and ‘meta-level’ accounts of MI and, crucially,
3) that the DB account can avoid commitment to the problematic notion of vague identity. In response to these claims I will show that while the DB account is indeed a novel account of MI in its reduction of MI to the notions of determinable and determinate properties, in its application to macro-object boundary indeterminacy it is structurally similar to the constitution account of MI defended by Lynne Rudder Baker. The issue of novelty would, in itself, be trivial if it did not highlight other questions about the DB account. Wilson claims that the DB account is what she calls an object-level account while the constitution account is a meta-level account. Considering the partial structural similarity between the two accounts, that is a curious finding. There are other worries about the distinction between object-level and meta-level accounts. According to Wilson, the distinguishing criterion is whether a theory posits genuinely indeterminate states of affairs. I will argue that the constitution theory is bound to posit genuinely indeterminate states of affairs and, as a result, meets the criterion for being categorized as an object-level account. These worries lead me to question the status of the distinction. However, the important point is that Wilson’s account utilizes resources analogous to the resources of the constitution account in order to explain boundary indeterminacy present in objects such as Mt Everest. Although these resources enable the theory to neatly avoid commitment to indeterminate identity in this case, I will argue they are insufficient to explain some more complex cases of boundary indeterminacy without invoking indeterminate identity.

In what follows I will briefly recapitulate well-known facts about indeterminacy and the alleged commitment of MI to the notion of vague identity, because both of the examined accounts accept MI while denying the commitment. Next, I will present the DB account and the constitution account of MI. After that, I will assess the differences between the accounts and argue for their structural similarity in their application to macro-object boundary indeterminacy. In the final part I will argue that while the DB account handles simple cases of indeterminate boundaries well, it will struggle to avoid vague identity in certain more complex examples of spatial boundary indeterminacy.

2 The Nature of Indeterminacy and Vague Identity

It is a well-known fact that some sentences in natural language are indeterminate. For example, ‘A six-foot-tall person is tall’ is neither determinately true, nor determinately false, because ‘being tall’ is a vague
predicate whose meaning is not precisely delineated. In other cases a sentence may be indeterminate because it contains a vague singular term. Thus, ‘The South Base Camp is on Mt Everest’ is indeterminate because it is not determinate where the boundary of Mt Everest lies and whether the base camp is still within the boundary. The debate I focus on primarily turns on examples of the latter type.

There are three competing general strategies to account for such indeterminacy. **Semantic indecisionism** is the belief that all indeterminacy results from the fact that the terms we use to construct our sentences sometimes do not have precise meanings. As a result, there are always more candidates for the referent of such an indeterminate term. On such accounts, reality is considered perfectly precise, but it is sometimes indeterminate which precise entity or entities a term refers to. Just as there are multiple alternative sets of heights that we could assign to the predicate ‘tall’, there are multiple alternative regions of space that we could assign to the extension of ‘Mt Everest’. On some of these assignments the height of six feet will be included in the extension of ‘tall’ and the South Base Camp will be on Mt Everest, on other assignments they will not. Semantic indecisionists have termed the alternative assignments precisifications.³

**Epistemicism** is a theory according to which the indeterminacy of our sentences results from our inherent cognitive inability to come to know the meanings of our terms. Like semantic indecisionists, epistemicists believe that reality is perfectly precise. Epistemicists further believe that the meanings of our expressions are, in fact, precise too. It is just that it is impossible for us ever to discover which of the possible alternative precisifications are the correct ones.⁴ Both semantic indecisionism and epistemicism represent what have been called ‘linguistic’ accounts of indeterminacy.⁵

Adherents of **metaphysical indeterminacy** (or ontic vagueness, or de re vagueness) maintain that the reason our sentences are indeterminate is, at least sometimes, because reality itself is indeterminate. They do not deny that sometimes it is our terms that are imprecise. However, they maintain that sometimes our terms are precise in that they determinately refer to objects or properties, but it is the objects or properties that are vague. Thus, it might be claimed that ‘tallness’ determinately refers to a single property, but the property is metaphysically vague, and ‘Mt Everest’ determinately refers to a single mountain, but the mountain is a vague object with imprecise boundaries.⁶

The literature on indeterminacy suggests that, of these three ap-
proaches, adherence to MI is the least popular and most controversial. For various reasons, MI has been regarded as problematic [9, pp. 169–170]. In particular, Gareth Evans [5] argued that the idea that objects have indeterminate boundaries entails that the relation of identity might itself be vague, and that vague identity is an incoherent concept.

The reasoning behind Evans’s argument, briefly, goes as follows. Suppose that it is indeterminate whether a is identical to b. Then b has the property of being such that it is indeterminate whether it is identical to a. But, obviously, it is not indeterminate whether a is identical to a. So, a does not have the property of being such that it is indeterminate whether it is identical to a. Since a and b differ in their properties, by the contrapositive of Leibniz’s Law they are different and, moreover, determinately so. Thus, the assumption that it might be indeterminate whether a is identical to b leads to the conclusion that a and b are determinately different.

However, why suppose that adherents of MI must accept vague identity in the first place? This idea has been contested, but those who agree there is a conceptual link between MI and vague identity maintain that once you accept objects with vague boundaries, you must accept that it will be indeterminate whether they are identical to some ‘other’ objects. Take the Mt Everest case. The South Base Camp (SBC) is located at the foot of the mountain, but from a broader perspective it is actually on the mountain. Let us call the place where the SBC is located S and assume that Mt Everest is a metaphysically indeterminate object with vague boundaries. The fact that it is indeterminate whether S is part of the mountain enables us to distinguish between two objects in the vicinity of Mt Everest; one that includes all of the area of the mountain and S, let us call it $E_1^1$, and one that only includes the area of the mountain, but not S, let us call it $E_2^2$. Now, if it is indeterminate whether Mt Everest includes S or not, then, the reasoning goes, it is indeterminate whether Mt Everest is (that is, is identical to) $E_1^1$ and whether Mt Everest is (that is, is identical to) $E_2^2$. The relation of identity between Mt Everest and $E_1^1$ and $E_2^2$, respectively, is, in other words, vague.\(^7\)

So the adherence to MI seems to impose a burden. Anyone who accepts it must either explain how the postulation of objects with vague boundaries does not lead to the vagueness of the identity relation or show that Evans’s argument contains a flaw and that the assumption of vague identity does not lead to determinate non-identity.\(^8\) The constitution theory of MI, a meta-level account according to Wilson’s classification, develops the former project. I wish to show that the solution presented
by the DB account is structurally similar to the constitutional solution, which is curious in the light of the fact that the DB account is supposed to be an object-level account. But ultimately I want to show that the DB account will have difficulty avoiding vague identity.

Nevertheless, before I argue for this point it is necessary to familiarize ourselves with both accounts and see what the dichotomy ‘metalevel’–‘object-level’ refers to.

3 The Determinable-Based Account of Metaphysical Indeterminacy

In a series of papers, Jessica Wilson has developed and applied the determinable-based account of metaphysical indeterminacy [24, 25, 26]. The DB account employs the distinction between determinable and determinate properties to account for metaphysical indeterminacy. On this account, the primary entities affected by indeterminacy are states of affairs, typically consisting of an object instantiating a property. According to the DB account, there are genuinely indeterminate states of affairs. These consist of an object instantiating a determinable property, but no unique determinate of that determinable property. More precisely:

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\text{Determinable-based MI: What it is for a state of affairs } S \text{ to be metaphysically indeterminate at a time } t \text{ is for } S \text{ to constitutively involve an object (more generally, entity) } O \text{ such that (i) } O \text{ has a determinable property } P \text{ at } t, \text{ and (ii) } O \text{ does not have a unique determinate of } P \text{ at } t. \quad [25, \text{ p. 107}]^9
\]

According to Wilson, determinables are ‘distinctively unspecific properties which admit of specification by determinate properties’ [25, p. 107]. Thus, being shaped is a determinable property while being squared with the side length of 2m is a determinate of that property. MI then consists in there being a state of affairs consisting of an object that instantiates a determinable property, but there is no unique, single property that would determine that determinable property.

Wilson argues against the traditional supposition that in each state of affairs there is always one and only one determinate of a given determinable property (see [24, p. 366]). On her account, two other types of states of affairs are possible. The ‘glutty’ type involves a state of affairs in which there are too many candidate determinates of the determinable
and ‘it would be arbitrary, hence inappropriate, to pick one of the determinate properties of this determinable’ [25, p. 108]. Wilson illustrates this type using the example of an iridescent feather, which may instantiate multiple different determinate colour properties relative to perspective (see [24, pp. 367–370]; [25, pp. 107–108]). The ‘gappy’ type, in contrast, involves a state of affairs in which there is no determinate of a given determinable property. Wilson argues that this postulation makes the best sense of open future indeterminacy (see [24, pp. 379–381]) and the indeterminacy involved in quantum mechanics (see [26]).

Above, I have referred to Wilson’s distinction between object-level and meta-level accounts of MI several times. Wilson maintains that previous accounts of MI ‘have typically supposed that what it is for there to be MI is for it to be indeterminate which of various determinate (precise) states of affairs (SOAs), typically involving an object’s having some property, obtain’ [24, p. 360]. In contrast, she has developed a theory on which ‘what it is for there to be MI is for it to be determinate (or just plain true) that an indeterminate (imprecise) SOA obtains’ [24, p. 360]. The distinction ‘object’–’meta’ is meant to reflect ‘the structural difference in where MI is located’ [25, p. 106]. That is, if an account recognizes genuinely indeterminate states of affairs, it is termed ‘object-level’, while if it maintains that all states of affairs are precise and MI consists in it being indeterminate which precise state of affairs obtains, the account is a ‘meta-level’ account of MI. Proponents of meta-level theories of MI do not deny that the world is indeterminate. They only deny that there are indeterminate states of affairs. In their accounts, MI consists in the metaphysical indeterminacy concerning which determinate states of affairs obtain.

What is interesting about the above distinction is that it is orthogonal to the distinction between metaphysical and linguistic solutions to indeterminacy. Wilson [24, pp. 361–363] provides several examples of meta-level accounts of MI, but adds that ‘semantic and epistemic accounts also treat indeterminacy as a meta-level phenomenon’ [24, p. 363]. Here she cites Rosen and Smith’s remarks on the standard supervaluationist view. I mention the quotation because it will be important later in the argument. Rosen and Smith maintain:

Suppose ‘Bob is tall’ comes out true on some admissible precisifications of ‘tall’ and false on others. Then ‘Bob is tall’ is neither true nor false. But this does not mean that the property of tallness is vague. The point is rather that there is no unique property of tallness. There are many properties,
each [...] precise [...]. When we speak vaguely we fail to single out a unique such property. [24, pp. 363–364]

Another point worth mentioning is that Wilson categorizes Michael Morreau’s [12] account as a meta-level account. Morreau develops a constitution account of vague objects that is of the same type as Baker’s account, which will be the focus of the next part of the paper. I will argue that categorizing Baker’s account as a meta-level account is not properly justified. If successful, my arguments will also show that Morreau’s account might be categorized incorrectly.

3.1 The DB account and macro-object boundaries

However, before we proceed to the constitution account of MI, we need to look at how the DB account applies to the phenomenon of vague boundaries and how it purports to avoid commitment to vague identity. Wilson applies the account to a number of phenomena affected by indeterminacy. But her application to macro-object boundaries best reveals the similarities between and the shared problems of the DB account and the constitution account.

For Wilson, the MI involved in macro-object boundaries is the ‘glutty’ type of MI. Defining macro-object indeterminacy generally, Wilson states:

What it is for a macro-object $O$ to have an indeterminate boundary is for it to be determinately the case (or just plain true) that (i) $O$ has a determinable boundary property $P$, and (ii) [...] $O$ does not have a unique [...] determinate of $P$ at $t$. [24, p. 373]

Wilson further develops this general account in two ways, of which the first will be sufficient for our purposes. She accepts a commonly held assumption that a macro-object constitutively depends on micro-aggregates in the vicinity of the object and that these micro-aggregates have precise boundaries (see [24, p. 374]). As a result, macro-object boundary properties are realized by precise micro-boundary properties. The macro-object boundary properties are determinables while the micro-boundary properties are determinates. In the case of indeterminate boundaries there will be many such micro-boundary properties associated with a given determinable boundary property – the determinable boundary property will be multiply determined. (That is why this is the ‘glutty’ type.) Finally, Wilson maintains that it would be
arbitrary to choose one among the many determinate boundary properties as the one which is uniquely had by the macro-object. As a result, the macro-object has a determinable boundary property and it does not have a unique property that is a determinate of the determinable property (see [24, pp. 374–375]).

Applied to the Mt Everest example, Mt Everest is a vague object in that it exemplifies a determinable boundary property. In the vicinity of Mt Everest there are multiple precise micro-aggregates that exemplify micro-boundary properties. These micro-boundary properties are determinate properties. But since there are many such determinate properties and it would be arbitrary to single out one of them as the unique micro-boundary property, it is the case that Mt Everest instantiates a determinable macro-boundary property while not instantiating a unique determinate of the determinable property. This is what Mt Everest’s vagueness consists in.

Bracketing the property talk, we come to the simple idea that Mt Everest is a vague object in that it has an unspecified boundary, and the boundary is unspecified because there are too many candidate boundaries that could be Mt Everest’s boundary.

3.2 The DB account and vague identity

We saw above how the supposition of vague boundaries naturally leads to the idea that the relation of identity might itself be vague and why vague identity is a controversial notion. Wilson states that acceptance of vague identity is typical of the meta-level accounts of MI, although there are exceptions (see [24, p. 377]). The reasoning is that on such accounts ‘for object $a$ to have an indeterminate boundary involves its being indeterminate to which determinately boundaried object $a$ is identical’ [24, p. 377].

Wilson, however, declares that the DB account is not bound to accepting vague identity. On this account the macro-object’s indeterminate boundary consists in it having a determinable boundary but no unique determinate of that boundary. In contrast, the micro-aggregates in the vicinity of the macro-object all have a determinate boundary. As a result, ‘an indeterminately boundaried macro-object will be determinately non-identical to any object with such a determinate boundary’ [24, p. 377]. I take it that we can conclude that a vague object cannot be identical to a precise micro-aggregate simply because, unlike the micro-aggregate, it is intrinsically vague.
At this stage we know enough about the DB account to make the intended comparison with the constitution account. We have seen what MI consists in according to the DB account, how the account handles macro-object boundary indeterminacy, how it avoids commitment to vague identity and what the distinction between meta-level and object-level accounts involves. It is now time to turn to the constitution account. After a few general remarks on the notion of constitution, we will look at the constitution analysis of macro-object boundaries and at the way it avoids vague identity. After that we will look the differences between the two accounts and reconsider what the distinction between object-level and meta-level accounts amounts to.

4 The Constitution Account of MI

The theory of constitution is a general theory that has been designed to deal with certain problems and paradoxes of material composition.\textsuperscript{14} It has been invoked to account for objects’ persistence through change as well as the question of the relationship between a composite object and the material that it is made from, for example the relationship between a statue and a piece of marble. However, some scholars have also utilized the relation of constitution to account for metaphysical indeterminacy. Most notably, Morreau [12] and Baker [2, pp. 121–141] have shown that invoking the distinction between objects and aggregates of matter and the relation of constitution that links them can provide a plausible analysis of indeterminate boundaries.\textsuperscript{15} In what follows, I will primarily focus on Baker’s theory, because it is developed in greater detail.

Baker defines the relation of constitution as follows.

Let “$F^*x$” stand for “$x$ has $F$ as its primary kind property” and likewise for other predicate variables.

(C*) $x$ constitutes $y$ at $t = \text{df}$. There are distinct primary-kind properties $F$ and $G$ and $G$-favorable circumstances such that:

1. $F^*x \& G^*y \&$
2. $x$ and $y$ are spatially coincident at $t$, and $\forall z(z$ is spatially coincident with $x$ at $t$ and $G^*z \rightarrow z = y), \&$
3. $x$ is in $G$-favorable circumstances at $t; \&$
4. It is necessary that: $\forall z[(F^*zt \& z$ is in $G$-favorable circumstances at $t) \rightarrow \exists w(G^*wt \& z$ is spatially coincident with $w$ at $t)].$
(5) It is possible that: \( \exists t \{(x \text{ exists at } t \& \neg \exists w[G^*wt \& w \text{ is spatially coincident with } x \text{ at } t]\}; \& \\
(6) \text{If } x \text{ is of one basic kind of stuff, then } y \text{ is of the same basic kind of stuff. [2, p. 161]}

Let me illuminate the individual clauses of the definition using the example of a statue and a piece of clay. Primary kind properties are those that determine what a thing most fundamentally is. So a statue’s primary kind property is the property of being a statue, not the property of being a piece of clay or a paperweight. In contrast, the primary kind property of the piece of clay is the property of being a piece of clay. According to the definition, when a piece of clay constitutes a statue, the following is the case. (1) There is a piece of clay and a statue. (2) The two objects are spatially coincident and the piece of clay that in fact constitutes the statue cannot at the same time constitute another statue. (3) The piece of clay is in ‘statue-favourable circumstances’. (Generally, G-favourable circumstances are such circumstances that enable an object of the primary kind F to constitute an object of the primary kind G. A piece of clay can constitute a statue only if it is placed in a society that has art and culture, is shaped in a certain way, is displayed, etc.) Further, (4) if a piece of clay is placed in statue-favourable circumstances, then, necessarily, there will be a statue spatially coincident with the piece of clay. But (5) it is possible for the piece of clay to exist and not constitute a statue. Finally, (6) if the piece of clay is of a certain kind of stuff, the statue is of the same kind of stuff.

Baker applies the relation of constitution to the phenomenon of MI. She recognizes that MI can be located in objects’ spatial boundaries, temporal boundaries and the relation of constitution itself. Importantly, all three kinds can be described as types of vagueness of states of affairs, where it is indeterminate whether a state of affairs obtains iff it is indeterminate whether object \( x \) has property \( P \) at time \( t \) (see [2, p. 128]).

The relation of constitution can be indeterminate in two ways: a) it may be indeterminate whether the constitution relation obtains at all, and b) it may be determinate that the constitution relation obtains, but nonetheless indeterminate which constituter constitutes the object in question. What is important is that Baker reduces the indeterminacy of both spatial and temporal boundaries to the indeterminacy of constitution. Indeterminacy of temporal boundaries is explained as it being indeterminate whether anything constitutes a given object at time \( t \), and indeterminacy in spatial boundaries is explained as it being indetermi-
nate which constituter constitutes the given thing. I will focus solely on the second type of indeterminacy, the one involved in spatial boundaries.

To illustrate her solution to the MI involved in macro-object boundaries, Baker discusses the assertion of identity between Everest and Schmeeverest, where Schmeeverest is meant to be a mountain-shaped object that largely overlaps Everest but includes a bit more of the foothills. Baker claims that sentences of this kind generate controversy, because if we accept that Everest is Schmeeverest, we violate Leibniz’s Law, since Everest and Schmeeverest differ in their boundaries, while if we say they are distinct, we need to explain why ‘Everest’ refers to the smaller object, rather than the larger one (see [2, p. 133]).

On Baker’s view there are not two overlapping mountains. Rather, there is a single mountain that is intrinsically vague. Both ‘Everest’ and ‘Schmeeverest’ determinately refer to this mountain. But the vagueness of the mountain’s boundaries is a matter of ‘which aggregate constitutes Everest, the one and only mountain that we are talking about’ [2, p. 134]. And it is only if we use the names non-standardly that they refer to aggregates. In that case, however, it is not true that Everest is Schmeeverest, because the aggregates differ in their boundaries and are, therefore, determinately distinct.

Baker continues: ‘The vagueness arises, not from what “Everest” refers to, but from the availability of many candidates to be the aggregate that constitutes Everest. What is vague in reality is which of the many candidate aggregates is the constituter of (spatially vague) Everest’ [2, p. 134]. And she further adds: ‘So, on the Constitution View, there is no puzzle of identity. The puzzle putatively about identity arises from failure to distinguish the mountain from the aggregate that constitutes it. But reality includes the vague mountain as well as all the precise microphysical aggregates as genuine objects in the ontology’ [2, p. 134].

Finally, she emphasizes that the constitution view is not committed to indeterminate identities: ‘Objects may be (and usually are) vague in that they have vague spatial and temporal boundaries without there being any indeterminacy in identity. As Stalnaker pointed out: “[I]f we insist that, say, Mt. Rainier is a vague individual, and that the name ‘Mt. Rainier’ refers determinately to this individual, we do not thereby commit ourselves to vague identities.”’ [2, p. 135] The point is that vague objects will be determinately distinct from, not vaguely identical to, the precise micro-aggregates, because they are intrinsically vague.
5 A Comparison of the Views

In this section I compare the DB account and the constitution account of MI. Although Wilson suggests that the two accounts are of distinct types, the former being object-level and the latter meta-level, I will show that this claim is questionable.

It will be recalled that Wilson formulates the distinction between object-level and meta-level accounts in terms of the following contrast: while according to object-level accounts what it is for there to be MI is for it to be determinately the case that an indeterminate state of affairs obtains, according to meta-level accounts what it is for there to be MI is to be indeterminate which determinate state of affairs obtains. For brevity, let me refer to the latter clause as ‘the “indeterminate which” clause’. The problem is that, judging from the way some of the meta-level theories are formulated, they could do without the ‘indeterminate which’ clause. On the other hand, Wilson’s makes use of the clause in one application of her object-level account. This may lead to a hypothesis that the difference between the two types of accounts might be merely verbal. Let me expand on this point.

5.1 A merely verbal difference?

When Wilson mentions that Morreau’s constitution account is meta-level, she claims: ‘Here MI involves its being indeterminate which of various determinate (precise) quantities of matter are constitutive parts of a given object’ [24, p. 362]. Baker, in her exposition of the constitution account of vague boundaries, states: ‘The vagueness arises, not from what “Everest” refers to, but from the availability of many candidates to be the aggregate that constitutes Everest. What is vague in reality is which of the many candidate aggregates is the constituter of (spatially vague) Everest’ [2, p. 134]. In contrast, even though Wilson recognizes the existence of a plethora of micro-aggregates in the vicinity of Mt Everest and it would be quite natural to say that the indeterminacy of Mt Everest’s boundary consists in it being indeterminate which of the micro-aggregates determines the boundary, she avoids that claim. Instead, she says that ‘it would be arbitrary to single out one among the multiple determinate boundary properties as that which is uniquely had by the macro-object’ [24, p. 374]. In her 2017 paper, discussing Barnes and Cameron’s theory, she states: ‘what it is for a cloud to have an indeterminate boundary is for it to be indeterminate which precise boundary the cloud has. On the approach I favour, […] what it is for
a cloud to have an indeterminate boundary is for the cloud to have a determinable boundary property, but no unique determinate boundary property.’ [25, pp. 105–106] So, again, Wilson admits there are multiple candidate boundary properties, but shies away from adding ‘and it is indeterminate which of them is the cloud’s boundary’.

A question arises whether the presence or absence of the ‘indeterminate which’ clause marks a deep difference between the two accounts. I believe one could consider the hypothesis that it does not.

First of all, it seems that there is nothing in the constitution theory that really forces its proponents to subscribe to the clause. Above, Baker is cited as saying that the indeterminacy of Mt Everest’s boundaries arises from the availability of many candidates to be the aggregate that constitutes Everest. Like Wilson, Baker could add: ‘and it would be arbitrary to single out one among them’ and stop there. After all, Rosen and Smith, as evident from the quotation that I emphasised above, do not include the clause in their characterization of supervaluationism, either. They merely say that, in the case of the vagueness of the predicate ‘tall’, we fail to single out a unique property. Of course, Rosen and Smith are not describing the constitution account. They are describing a semantic indecision theory of indeterminacy. Nevertheless, in Wilson’s classification their theory belongs to the same category as the constitution account – it is a meta-level account. So it seems that meta-level theories need not necessarily be characterized by saying that indeterminacy is a matter of it being indeterminate which determinate state of affairs obtains.

On the other hand, there is a very thin line between Wilson’s claim that ‘it would be arbitrary to single out one . . . ’ and the ‘indeterminate which’ clause. The line is so thin that, at one point, even Wilson crosses it. When she applies the DB account to another type of MI, that of open future indeterminacy, she states:

> What it is for a claim \( p \) about a specific future time \( t' \) to be MI at an earlier time \( t \) is (a) for it to be settled at \( t \) that a certain determinable SOA \( S \) will obtain at \( t' \); and (b) [...] for it not to be settled which, if any, unique [...] determinate of \( S \) will obtain at \( t' \). [24, p. 381]

As indicated by the quoted passage, the indeterminacy of the open future consists in the fact that it is not settled at \( t \) which determinate state of affairs will determine, at \( t' \), a determinable state of affairs that will definitely obtain at \( t' \). If ‘settled’ means simply ‘determined’, as I believe it does, then Wilson seems to be providing a meta-level account of
open future MI, even though she claims she is providing an object-level account.

The above considerations seem to suggest that one might defensibly claim that the difference between object-level theories and meta-level theories might be merely verbal. Alternatively, the considerations suggest that the distinction should be stated more clearly. At least two points need explaining: a) why Wilson’s claim that ‘it would be arbitrary to single out one among the multiple determinate boundary properties’ is not to be interpreted as the claim that ‘it is indeterminate which determinate boundary property determines the determinable boundary property’, and b) why Wilson’s treatment of open future indeterminacy is object-level when it is characterized by the ‘indeterminate which’ clause.

To the argument presented in this section, it might be objected that I have been paying too much attention to only a half of the definition of the distinction between object-level and meta-level approaches to MI. I should not forget the first clause of the definition, according to which object-level approaches are committed to saying that MI consists in it being determinately the case that an indeterminate state of affairs obtains and, thus, posit the existence of genuinely indeterminate states of affairs. If we give proper weight to both of the clauses, perhaps the distinction will turn to be clear.

However, it can be shown that both the DB account and the constitution account are committed to genuinely indeterminate states of affairs and, as a result, the distinction remains unclear.

5.2 Indeterminate states of affairs

First of all, both authors claim that MI primarily concerns states of affairs. We have seen that on the DB account, there are genuinely indeterminate states of affairs, which consist of an object instantiating a determinable property and there being no unique determinate of that determinable property. On Baker’s account, all indeterminacy can be understood as indeterminacy of states of affairs. According to Baker, ‘If \( x \) is an object, \( P \) is a property and \( t \) is a time, there is the state of affairs that \( x \) has \( P \) at \( t \). That state of affairs obtains if and only if \( x \) has \( P \) at \( t \). Then a state of affairs, \( s \), is borderline if and only if it is vague whether \( s \) obtains’ [2, p. 128].

It might be objected at the outset that the treatment of indeterminate states of affairs in the two theories is markedly different and that the difference reveals why the DB account should be categorized as object-
level while the constitution account as meta-level. After all, on the DB account, what is indeterminate about indeterminate states of affairs is not whether they obtain; according to Wilson, indeterminate states of affairs determinately obtain. Rather, it is the fact that they contain an unspecific constituent – a determinable property – and there is no unique determinate of that property. In contrast, on Baker’s theory a state of affairs is indeterminate in the sense that it is indeterminate whether it obtains. The would-be constituent object and property may be present, but it is indeterminate whether the object has the property, and, thus, whether the relevant state of affairs obtains. Further, if it may be indeterminate whether the state of affairs obtains or not, it must also be indeterminate which states of affairs obtain. But then, indeterminacy is understood as indeterminacy regarding which states of affairs obtain, which is a distinguishing mark of meta-level approaches to indeterminacy.

However, I will argue that Baker’s theory is committed to genuinely indeterminate states of affairs as well. Let us recall that the constitution theory is special in that it distinguishes constituted objects from their constituters. Importantly, although the relation of constitution is an intimate relation between the constituted object and its constituter, it falls short of identity. As a result, the constituted object’s properties may not be limited to the properties of the constituter, and the states of affairs that the constituted object is involved in may not be exhausted by the states of affairs that its constituter is involved in. I maintain that, in its analysis of macro-object boundary, the constitution theory is bound to accept that the constituted object is involved in a genuinely indeterminate state of affairs. Let me argue for this claim using an example.

Let us consider the Mt Everest example again. What objects, properties and states of affairs do we find in the vicinity of Mt Everest? We are told there are a number of precise aggregates of matter, candidate constituters, $a^1$, $a^2$, $a^3$, etc. These aggregates have precise boundaries. Let us call the boundary properties $P^1$, $P^2$, $P^3$, etc. As a result, the following states of affairs determinately obtain: ‘$a^1$ having $P^1$’, ‘$a^2$ having $P^2$’, ‘$a^3$ having $P^3$’, etc. Is Mt Everest, the constituted object, one of $a^1$, $a^2$, $a^3$, etc.? Not on the constitution theory. Mt. Everest is an object determinately different from any of the aggregates in its vicinity; while it may be indeterminate which of the aggregates constitutes Mt Everest, Mt Everest is determinately not one of the aggregates. What properties does Mt Everest instantiate and what states of affairs
is it a constituent of? Well, for each of the boundary properties it is indeterminate whether Mt Everest has it in the derivative sense that it is indeterminate whether Mt Everest is constituted by an aggregate that determinately has it. Does it mean that Mt Everest has all of its properties indeterminately, because it is indeterminate which aggregate constitutes it? No, it does not, I maintain. For what is determinately true of Mt Everest, in contrast to the aggregates, is that it has a vague boundary. Having a vague boundary is a property of the mountain that distinguishes it from the aggregates. As a result, Mt Everest is a constituent of a further state of affairs, one which consists of Mt Everest and the property of having a vague boundary and one which definitely obtains.

Consequently, while it may be the case that it is indeterminate which boundary property Mt Everest has (and in this sense it is indeterminate which precise state of affairs obtains), it is also the case, and determinately so, that Mt Everest has a vague boundary. And this state of affairs, I maintain, is an analogue of the indeterminate states of affairs of the DB account—it consists of an object having an unspecific property and it determinately obtains.

Thus, it may be reasonably claimed that the constitution account does posit genuinely indeterminate states of affairs and can be categorized as an object-level account of MI.

To sum up the findings of the previous two sections, according to Wilson, meta-level theories are characterized by the fact that they threat MI as indeterminacy regarding which determinate state of affairs obtains. I have argued that Wilson treats open-future indeterminacy in this manner. I have also argued that the difference between the meta-level theory proponent’s ‘indeterminate which’ clause and Wilson’s ‘it would be arbitrary’ clause seems merely verbal. Secondly, Wilson maintains that object-level accounts are characterized by recognizing the existence of genuinely indeterminate states of affairs. I have argued that the constitution theory is bound to accept the existence of such states of affairs too.

For these reasons I find the distinction between object-level and meta-level approaches unclear. However, the important thing is not how we categorize the individual approaches to MI or what we call them. From the perspective of the argument developed in this paper it is important that the DB account and the constitution account provide analogous explanations of macro-object boundary and claim that this explanation enables them to avoid vague identity. Let me summarize the similarities
between the two accounts in these respects now.

5.3 Macro-object boundaries

It has been indicated that both theories ultimately explain macro-object boundary indeterminacy by reference to multiple equally suitable candidates for the boundary. We have seen that, for Baker, Mt Everest is a genuinely vague object which is determinately referred to by the term ‘Mt Everest’. I have argued that, in that case, Mt Everest must determinately instantiate the property of being a vague object (or having a vague boundary). But apart from the vague mountain, Baker recognizes the existence of multiple precise micro-aggregates in its vicinity, and the intrinsic vagueness in Mt Everest’s boundary is explained by the fact that it is indeterminate which of the aggregates constitutes the mountain. On the DB account, Mt Everest is a genuinely vague object that determinately instantiates a determinable boundary property, but no unique determinate of that property. That is, Mt Everest has a boundary, but no precise boundary. The reason is that there are multiple precise micro-aggregates in the vicinity of Mt Everest and it would be arbitrary to choose one of them as the one that determines Mt Everest’s precise boundary. So, at the fundamental level, the indeterminacy of Mt Everest’s boundary consists in its overdetermination by multiple precise aggregates on both accounts.

5.4 Vague identity

The similarity between the DB account and the constitution account in their application to boundary indeterminacy is further supported by Wilson’s and Baker’s reasons for eschewing vague identities. Why is it that on the DB account Mt Everest is not indeterminately identical to the micro-aggregates in its vicinity? It is because the micro-aggregates instantiate determinate boundary properties, while Mt Everest only instantiates a determinable boundary property. And what are the reasons on the constitution account? Mt Everest has a vague boundary and the micro-aggregates are precise. On both accounts the intrinsic nature of vague objects makes them determinately non-identical to micro-aggregates.

So the metaphysical accounts of vague objects the two theories propose seem to be analogous. On the DB account a macro-object determinately exemplifies the determinable property of having a boundary,
and on the constitution account it instantiates the property of having a vague boundary. On the DB account there are many micro-aggregates with precise micro-boundaries and it would be arbitrary to choose one among them as the aggregate that determines the macro-boundary. On the constitution account there are many precise micro-aggregates and it is indeterminate which constitutes the vague object and, thus, determines its boundaries.

6 Commitment to Vague Identity Reconsidered

The ultimate point of comparing the DB account of MI with the constitution account was not merely to question the clear applicability of the distinction between object-level and meta-level approaches to MI, but to show that, in spite of Wilson’s proclamations, it is not clear at all that the DB account can avoid commitment to vague identity. My reasoning on this matter stems from several observations.

Wilson maintains that a ‘seeming commitment to indeterminate identity arises against the backdrop of a meta-level account’ while her object-level DB account is immune from it (see [25, p. 114]). But the distinction between meta-level and object-level accounts is less clear than it should be and, as I have shown, the constitution account of MI can be interpreted as providing an object-level treatment of macro-object boundaries, even though Wilson categorizes it as a meta-level account. In fact, the ways the two accounts explain macro-object boundary indeterminacy are strikingly similar. The problem is that it has been shown that the constitution account will have trouble avoiding commitment to indeterminate identity in some more complex cases of spatial boundary indeterminacy (see [4]). And since the two accounts are so similar in their treatment of macro-object boundary indeterminacy, it makes one wonder whether the DB account is immune from the problems posed by the more complex cases. I believe it is not.

The stock of mountain-themed illustrations of macro-boundary indeterminacy in the relevant literature is remarkably poor. Although there might be examples that I am not aware of, philosophers usually demonstrate their accounts of indeterminacy using the case of a single mountain – Mt Everest. Both of the authors discussed here show, convincingly in my view, that the MI involved in Mt Everest’s boundary does not involve indeterminate identity. There are a number of precise aggregates of matter in the vicinity of Mt Everest which make it indeterminate where precisely its boundary lies, but Mt Everest is not indeterminately iden-
tical to them. The aggregates have precise boundaries while Mt Everest has a determinable or vague boundary. As such they are determinately distinct and the problematic notion of indeterminate identity is avoided.

But from the point of view of MI analysis, Mt Everest and other such mountains are rather uninteresting. There are much more thought-provoking mountains, such as Hozomeen Mountain in the North Cascades, Ushba in the Caucasus or Castle Peak in Idaho. What is remarkable about these is that there are two massive summits divided by a deep saddle. This makes one wonder whether one is really looking at a single mountain, or whether these are two mountains that share a large section. Of course, we have avoided the problem by inventing terms such as ‘a double-summitted mountain’ or ‘twin peaks’. But this does not settle the metaphysical question of how many objects there are and what the relation between them is.

Let us imagine one such alpine structure extending from east to west and an explorer approaching it from the east, who points to it and says: ‘This shall be called Vidar’. At the same time, another explorer, unaware of the first one, comes to the structure from the west, points to it and says: ‘This shall be called Tyr’. Is Vidar Tyr? Did the two explorers name the same mountain?

What does the DB account of MI suggest about this case? It might be said that Vidar is a metaphysically vague object, because its boundary is indeterminate. Its indeterminacy consists in the fact that Vidar has a determinable boundary property but no unique determinate of that determinable. This is so because there are a lot of precise micro-aggregates of matter whose boundaries could determine Vidar’s boundary, but it would be arbitrary, hence inappropriate, to choose one as the determinate. But note that there is no indeterminacy in the identity relation, because Vidar, having a determinable boundary, is determinately distinct from any micro-aggregate.

Now an analogous explanation might be provided for Tyr. Being a vague object, it has a determinable boundary property while having no unique determinate of that property. Again, there are multiple micro-aggregates in its vicinity, and any choice would be ungrounded, but Tyr is determinately non-identical to any of them, so there is no indeterminacy in the identity relation.

These explanations provide a plausible analysis of Vidar’s and Tyr’s boundaries individually considered. But they say nothing about what the relationship between Vidar and Tyr is. Vidar has a vague boundary and so does Tyr. But is Vidar’s vague boundary the same boundary
as Tyr’s? It is no use showing that the relationship between Vidar and the micro-aggregates is a determinate non-identity, because Tyr is not one of the micro-aggregates; it is a vague object too. Similarly, Tyr’s relationship to ‘its’ micro-aggregates is irrelevant to the question of its relationship to Vidar.

It seems to me that, unless we want to adopt a linguistic solution to the question, the most natural description of the phenomenon is that the identity between Vidar and Tyr is indeterminate and it is simply not settled how many objects there are. It further seems to me that the DB account cannot avoid this conclusion easily.

Consider that, in the explanation of macro-object boundaries, the proponent of the DB account cannot appeal to any micro-aggregates that come to her mind. For instance, in the explanation of Mt Everest’s boundary she cannot appeal to the aggregates in the vicinity of the Eiffel Tower. She has to appeal to those aggregates that are somehow relevant to Mt Everest’s boundary, that is, those that are suitable candidates for the determinates of Mt Everest’s determinable macro-boundary property, even if none of them uniquely determine it. But the problem is that, in the case we are presently considering, it is quite plausible to think that some of the micro-aggregates that are relevant to Vidar’s boundary are at the same time relevant to Tyr’s boundary. In other words, the indeterminacy in Vidar’s boundary is partly caused by the overdetermination of Vidar’s determinable macro-boundary property by a vast number of micro-aggregates in its vicinity, some of which will also play a role in the overdetermination of Tyr’s determinable macro-boundary property. And, I repeat, stating that each of Vidar and Tyr are determinately non-identical to any of the micro-aggregates is irrelevant.18

It might be suggested that the proponent of the DB account could attempt to explain this case along the lines of Baker’s Everest–Schmeverest case and claim that both ‘Vidar’ and ‘Tyr’ determinately refer to the very same mountain and that that mountain has dramatically vague boundaries. The problem with this response is that in the case presently under consideration it seems quite implausible. Schmeverest, if we can conceptualize such a mountain, is meant to overlap Everest massively and only differ from it in a few inches along the line of the foot. In any encounters a normal person might plausibly ever have with Everest, it and Schmeverest will be practically indistinguishable. In contrast, it is the very point of controversy whether there is any overlap between Vidar and Tyr at all! There seem to be two clearly distinguishable, phenom-
enally salient peaks that are connected in a puzzling way. There might be complete overlap between them or there might be none. To settle the issue by declaring that, in spite of all appearances, there is a single mountain, seems highly implausible.

The only other option is that Vidar and Tyr are determinately distinct vague objects. The proponent of the DB account might say that Vidar and Tyr differ with respect to some properties. For instance, Vidar is such that the east peak is determinately part of it, but Tyr is not, because it is indeterminate whether the east peak is part of Tyr. Analogically, it is determinately the case that the west peak is part of Tyr, but it is indeterminate whether it is part of Vidar. Generally speaking, Vidar and Tyr differ with respect to which parts they determinately have and which parts they have indeterminately. Now, since Vidar and Tyr differ in these respects, by the contrapositive of Leibniz’s Law they must be numerically different.

The first thing to note is that this cannot seriously be taken as an argument for the numerical difference of Vidar and Tyr, because the argument already presupposes that there are two mountains. No-one who believes that ‘Vidar’ and ‘Tyr’ name a single mountain will accept the premise of the argument that Vidar and Tyr differ with respect to which parts they determinately have and which indeterminately. If Vidar is Tyr, they have the same determinate and indeterminate parts.

Secondly, I am afraid that this option comes with a cost that is not worth paying. It can be shown that the above argument leads to a version of the problem of the many for vague objects. Specifically, where we thought was a single vague object, there is, in fact, a plethora of them. Why would that be so?

Take Mt Everest again. Imagine there are two pillars at the foot of the mountain such that it is indeterminate whether they are part of the mountain or not. Suppose one is on the south side and the other on the north side of the mountain. Call them $SP$ and $NP$, respectively. Now, intuitively, Mt Everest is such that it is indeterminate whether $SP$ and $NP$ are part of it. But, surely, one can also conceive of a mountain-like structure in the vicinity of Mt Everest that is such that $SP$ is a determinate part of it, but it is indeterminate whether $NP$ is part of it. And, admittedly, there is also a mountain-like structure such that $NP$ is a determinate part of it while it is indeterminate whether $SP$ is part of it. Applying the contrapositive of Leibniz’s Law to these objects we derive the conclusion that they are numerically distinct vague objects.

But there is nothing special about $SP$ and $NP$. At the foot of Mt
Everest there are myriads of rock formations such that it is indeterminate whether they are part of Mt Everest. For each of these, there is a vague object \( V \) that largely overlaps Mt Everest but differs from it in that the indeterminate part of Mt Everest is a determinate part of \( V \), and some other part, which is a determinate part of Mt Everest, is indeterminately part of \( V \). As a result, in the vicinity of Mt Everest there is an enormous number of massively overlapping vague objects.

I think that no friend of vague objects should welcome this conclusion. One of the reasons why vague objects are admitted into ontology (when they are) is to deal with the original problem of the many, the reasoning being that there are not millions of clouds where we observe one; rather, there is one, but it is a vague object. If it turns out now that there are millions of vague objects where we thought there was one, the whole point of introducing vague objects is lost.

So the prospects of the DB account in explaining the indeterminacy involved in the double-summitted mountain cases do not seem very good. Although the DB account provides a plausible explanation of the relationship between a macro-object and the micro-aggregates in its vicinity, this explanation cannot be easily extended to the treatment of phenomenally distinct but connected objects. Note that there are other, now well-known examples of the same phenomenon in the relevant literature. Shoemaker’s Alpha Hall–Beta Hall scenario comes to mind, in which there is a structure seemingly consisting of two buildings connected by a ‘flimsy’ hallway (see [20, p. 146]). Or there are temporal analogues of such examples, such as Shoemaker’s Santa Trinita Bridge case (see [19], reference adopted from [13, p. 17]) or van Inwagen’s Cabinet case (see [22, pp. 241–242]), in which we have a clearly identifiable object at \( t^1 \) and a clearly identifiable object of the same kind at \( t^2 \), but these objects are connected by a period of ‘indeterminate existence’. It is even less clear how the DB account could explain these cases without invoking the notion of vague identity.\(^{21}\)

Of course, there is always the option to say that there is no metaphysical indeterminacy involved in these cases and that, in fact, in all of these examples we are dealing with referentially indeterminate linguistic expressions. However, if such a response were adopted, it would have to be explained why such a linguistic solution is not to be applied to the simple cases of macro-object boundary indeterminacy such as that of Mt Everest. After all, the difference between Mt Everest and Castle Peak, for instance, is a difference in degree, not in principle.
7 Conclusion

The DB account of MI is a unique theory that innovatively reduces the notion of metaphysical indeterminacy to the notions of determinable and determinate properties. As such, it can provide a plausible explanation of a number of kinds of metaphysical indeterminacy. In particular, it provides an elegant treatment of macro-object boundaries. However, I have argued that this particular application of the DB account does not substantially differ from the analysis of macro-object boundaries provided by the constitution account. This is problematic for two reasons. Firstly, it blurs the alleged distinction between object-level and meta-level accounts of MI. I have argued that the two theories could be placed in the same category, contrary to Wilson’s supposition. Secondly, the DB account will share certain problems of the constitution account. In particular, the apparatus developed by the theory is insufficient to analyse complex cases of spatial boundary indeterminacy (exemplified by double-summitted mountains) without invoking the notion of vague identity.

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Notes

1 However, an anonymous reviewer has pointed out that Wilson’s object-level theory is similar to the account proposed by Smith and Rosen [17]. If that is so, it further supports my claim that Wilson’s distinction between object-level and meta-level accounts is unclear, because Wilson categorizes Smith and Rosen’s theory as a meta-level theory.

2 Although some authors distinguish the concepts of vagueness and indeterminacy, I use these terms as synonyms throughout the paper as it is stylistically convenient and makes no difference in the presented arguments.

3 The history of semanticism begins with Russell’s seminal paper [18]. Contemporary semanticists include Keefe (see [8], for instance), and Noonan (see [14], for instance).

4 The seminal work in epistemicism is Williamson [23].

5 See Baker [2, p. 123].
6 Prominent adherents of metaphysical indeterminacy include Parsons (see [15]), van Inwagen (see [22]) and Lowe (see [10]).

7 The structure of this example is inspired by [12, p. 338] and [14, p. 246].

8 This latter project is developed by [22, ch. 18] and [15, ch. 4], for instance.

9 In [24], Wilson provides a more complex definition, but the arguments in this paper do not hinge on the subtleties not included in this one.

10 An important qualification: to my knowledge, there is nothing in the constitution theory that would correspond to Wilson’s treatment of ‘gappy’ cases of indeterminacy. When I argue that the two accounts are structurally similar, what I have in mind are the ‘glutty’ cases, or, more specifically, their treatment of vague objects’ boundaries.

11 Including the account presupposed by Evans in his argument against vague identity and accounts developed by [16], [17] and [3], among others.

12 Another supervaluationist account is developed by Fine [6], for instance. Lewis [9] applies supervaluationism to the problem of indeterminate boundaries.

13 The second way, not discussed here, is to claim that even the micro-aggregates have vague boundaries — an option that is more plausible from a scientific perspective. The difference between the two approaches is irrelevant to the arguments developed in this paper.


15 Another contributor to this project is Lowe [11]. A notable difference between Baker and Morreau on the one hand and Lowe on the other is that Lowe is willing to accept indeterminate identities and argues against the validity of the Evans argument. Baker and Morreau, in contrast, deny their accounts entail the vagueness of identity.

16 An anonymous reviewer has pointed out that the reason why Wilson does not say that it is indeterminate which determinate micro-boundary property Mt Everest has is that, on her account, Mt Everest determinately has all of them. However, I find absolutely no evidence for and a lot of reasons against that interpretation of Wilson’s account. First, Wilson always says that there is no unique determinate property that the MI phenomenon in question has. It does not follow from that claim that the MI entity determinately has all of the determinate properties. Secondly, if Mt Everest, for instance, determinately had all of the determinate micro-boundary properties, it would have mutually inconsistent properties. An object cannot determinately have both boundary $b^1$ and a different boundary $b^2$. It is true that Wilson gives the example of an iridescent feather (mentioned above), in which the feather has all of the determinate colour properties at the same time. However, that case is very different from the case of boundary indeterminacy, because the feather has each of the determinate colour properties relative to a perspective (see Wilson [24, p. 367]). As a result, it does not have inconsistent properties, for ‘being red from perspective $p^1$’ is not inconsistent with ‘being blue from perspective $p^2$’. In contrast, Mt Everest cannot be sensibly claimed to have all the micro-boundary properties relative to different perspectives. Boundaries, unlike colours, do not depend on perspectives. Thirdly, if the reviewer was right, it would be a mystery where MI was located in the given phenomena at all. Mt Everest would determinately have a determinable macro-boundary property and
it would determinately have all of the determinate micro-boundary properties. Where exactly would the indeterminacy of Mt Everest’s boundary lie?

17 To be fair, Wilson does not state categorically that meta-level accounts are committed to indeterminate identity. Rather, it seems that meta-level accounts naturally invite the notion. Wilson [24, p. 377] believes there are exceptions, but does not mention any.

18 The constitution theory faces the same problem. Vidar’s boundary is explained by the fact that it is indeterminate which relevant micro-aggregate constitutes Vidar. Analogously, Tyr’s boundary is explained by the fact that it is indeterminate which relevant micro-aggregate constitutes Tyr. Each of the vague objects is determinately non-identical to any of the aggregates. But some of the aggregates that are the candidates for constituting Vidar are also the candidates for constituting Tyr. And that being the case, the most natural description of the relationship between Vidar and Tyr is indeterminate identity.

19 The idea that the existence of vague objects does not entail the vagueness of the identity relation was formulated by Tye. According to him, each vague object is numerically identical with itself and numerically distinct from any other vague object. See Tye [21].

20 Let me also remark that Parsons [15, p. 37] argues that one needs to be careful in applying the contrapositive of Leibniz’s Law in indeterminacy contexts. He maintains that predicates involving indeterminacy need not always express properties and, as a result, the contrapositive of Leibniz’s Law cannot be applied. I shall leave open the question whether this is so in the present context.

21 It is beyond the scope of this paper to argue for this point.

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