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Multiple actualities and ontically vague identity

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Gareth Evans's argument against ontically vague identity has been picked over on many occasions. But extant proposals for blocking the argument do not meet well-motivated general constraints on a successful solution. Moreover, the pivotal position that defending ontically vague identity occupies vis a vis ontic vagueness more generally has not yet been fully appreciated. This paper advocates a way of resisting the Evans argument meeting all the mentioned constraints: if we can find *referential indeterminacy* in virtue of ontic vagueness, we can get out of the Evans argument while still preserving genuinely *ontically vague identity*. To show how this approach can vindicate particular cases of ontically vague identity, I develop a framework for describing ontic vagueness in general in terms of *multiple actualities*. The effect, overall, is to provide a principled and attractive approach to ontically vague identity that is immune from Evansian worries.

Gareth Evans's (1978) argument against ontically vague identity has been picked over on many occasions.² But extant responses do not meet well-motivated general constraints on a successful solution. I argue for a form of response that requires no logical revisionism, allows us to preserve compelling metaphysical principles such as the indiscernability of identicals, which works against the argument in its strongest form, and which genuinely delivers *ontically* vague identities. I present the resolution by developing a general framework for understanding ontic vagueness: multiple actualities.

The paper falls into five sections. In the first I present Evans' argument, and argue for a series of constraints on a successful response. In the second section, I look at *what is at stake* in the Evans argument, highlighting the practical and metaphysical significance of ontically vague identities. I provide arguments that other forms of ontic vagueness *entail* ontically vague identities, so that if the latter is proved incoherent, ontically vague existence and ontically vague instantiation must also be given up. I argue on this basis that Evans' argument, if successful, gives good reason for us to believe *microphysicalism*. In the third section, I describe an *in principle* loophole in the Evans argument: if we can find *referential indeterminacy* in virtue of ontic vagueness, we can get out of the Evans argument while still preserving *ontically vague identities* in the sense that is important to the wider concerns described in section 2. Section 4 develops the framework for describing ontic vagueness in general in terms of multiple actualities; and section 5 applies this to paradigmatic cases of vague identity. The effect, overall, is to provide a principled and attractive approach to ontically vague identity that is immune from Evansian worries.

1. Evans' argument against ontically vague identity

The core of Evans' argument against vague identity is disarming in its simplicity:

¹ This paper was presented at a Leeds *Work in Progress* seminar: thanks to all concerned for extremely helpful discussion. I owe especial thanks for discussion of material here to Ross Cameron, Andrew McGonigal. My greatest debt is to Elizabeth Barnes, whose work on ontic vagueness made me start thinking about these issues in detail, and whose ideas have influenced my ways of thinking of the matter tremendously.

² Some highlights: Thomason (1982), Noonan (2004, 1990, 1982, 1984), Broome (1984), Lewis (1988), Parsons and Woodruff (1995). For a fuller set of references to the literature, see section 8 of Williamson (2003).

1. It is indeterminate whether A is identical to B
2. A has the property of being indeterminately identical to B (from 1)
3. It is not indeterminate whether B is identical to B
4. B does not have the property of being indeterminately identical to B (from 3)
5. A is not identical to B (2 and 4)

There are just three steps and a single premise to be defended here. If they are granted, we have the following result: supposing things to be indeterminately identical, we can conclude that they are distinct. The premise, (3), is supposed to be self-evident: everything is determinately *self-identical*. The step from (1)-(2) is a simple 'property abstraction'; that is, an instance of the form:

From: $F(N)$; *infer* N has the property F_{ness}

The step from (3)-(4) is not a simple property abstraction like that from (1)-(2). In (3)-(4) the 'abstraction' occurs within the scope of a negation. One might therefore describe it as an application of 'generalized' property abstraction (property abstraction within the scope of an extensional operator). Or one might categorize it as a case of property instantiation:

from N has the property F_{ness} ; *infer* $F(N)$.

Contraposing this, we have the move from $\sim F(N)$ to N failing to have the property of F_{ness} .

Finally, the step from (2) and (4) to the conclusion is, at heart, simply an application of the indiscernability of identicals: if things are identical, they must share the same properties; equivalently, if things differ in their properties, then they must be distinct.

Given the economy of the argument, there are only a few ways of resisting. General methodological strictures restrict our room for maneuver further. I am interested in solutions that meet the following constraints:

- A. We should preserve classical logic.
- B. We should be prepared to take 'properties' in a thin or merely abundant sense (cf. Lewis 1983). So even if there is no Armstrongian universal corresponding to 'being identical with 'A'', there is still (in standard cases) a property accurately so-described.
- C. Leibniz's law (the indiscernability of identicals) holds.
- D. The logic of 'determinately' will be S5. A consequence of this is that if something is indeterminate, it is determinate that it is indeterminate.
- E. The solution should rescue *ontically* vague identity, not merely identity statements that are vague in virtue of semantic indecision or ignorance.

These desiderata are enough to disqualify all the responses to Evans that I know of. I think that the desiderata are, individually and collectively, quite reasonable. I will briefly sketch some of my reasons here.

On A. The constraint of preserving classical logic I put in for broadly methodological reasons. Classical logic gives rise to many puzzles when vagueness and indeterminacy

are considered, but so do other logics. If many-valued logics, for example, gave a compelling or even a plausible analysis of vagueness and indeterminacy *in general*, one would have motivation to consider their application to the current situation. But I am convinced by the arguments in Williamson (1994, ch 4.) that we make no progress in the general case by adopting a many-valued approach. Many-valued logics give rise to *prima facie* unacceptable results: for example, some contradictions will be less than completely false. Such worries would carry over to the ontic applications: see Williamson (2003a) for an explicit case against a 'many valued' treatment of ontic vagueness. This constraint debars, for example, the defence of vague identity presented by Broome (1984)

On B. The constraint that we take the property-talk in a 'thin' sense seems obviously right to me. One should address the strongest form of the argument. The argument is at its strongest when 'property' is taken in the thinnest sense compatible with the truth of Leibniz's law (notice that neither the premises nor the conclusions indulges in property-talk. Hence if there is *any* reading of 'property' on which the relevant moves are valid, we have a successful argument against vague identity). Here is one suggestion for getting a sense of the power of the argument. Let us regard 'the property of Fness' as just a way of speaking *plurally* about things which are F (cf. Boolos 1984). Under this interpretation, (2) reads: A is one of the things that is indeterminately identical to B; and line (3) reads: B is not one of the things that is indeterminately identical to B. The plural reading of Leibniz's law is as compelling as the property-version, if not more so. The relevant claim is: if A and B are identical, and A is one of the Fs, then B is one of the Fs.

On C. The indiscernability of identicals can seem an obvious truism. How could it possibly be that two things are the same (in the sense of being identical to one another) and yet different (in the sense of instantiating different properties)? Yet there are in philosophy a number of occasions on which Leibniz's law appears to be denied.

Some of these are merely apparent. For example, failures of substitution in quotational and intentional contexts I do not count as genuine counterexamples, as (on my view) Leibniz's law is not to be formulated in terms of a substitution principle. To get a compelling counterexample to Leibniz's law, we should find *de re* predications which hold of A and not of B, when A and B are identical. The most plausible case of which I am aware concern *de re* modal predications. The statue and the clay are identical, it is claimed, yet the statue would be destroyed by deformation whereas the clay would not. I take it that David Lewis's counterpart theory of *de re* modality delivers exactly this result (for discussion, see Lewis (1986a, sec 4.5). Indeed, counterpart theory explains the apparent failure: the *de re* modal properties of a thing depend on what its counterparts are, and what its counterparts are depend on what similarities are being invoked. The concepts 'statue' and 'clay' raise to salience different aspects of similarity, and so, depending on which is mentioned, invoke different counterpart relations.

There is a clear sense in which even counterpart theory does not involve us in a failure of Leibniz's law: rather, it points to the danger of systematic equivocation when using *de re* modal predications to argue for the distinctness of things. *Qua* statue, the lump of clay is destroyed by deformation. *Qua* lump, the statue can survive deformation. So even here I think Leibniz's law itself ultimately remains inviolate.

The *contrapositive* of Leibniz's law seems as non-negotiable to me as Leibniz's law itself: if A is one of the F's, and B isn't, then A and B are distinct. This might follow automatically from Leibniz's law given our adherence to classical logic; but there are some subtleties hereabouts (cf. Williamson (1994, ch 5)). Since it is the contrapositive of Leibniz's law that is directly invoked in Evans' proof, let us make it explicit that it, too, is to be in force. I take this constraint to undermine the defence of vague identity in Parsons and Woodruff (1995).

On D. The point of requiring the logic of 'indeterminately' to be S5 is to disallow solutions that would exploit the a supposed consistency of 'it is indeterminate whether (a=b) and not a=b' to resist Evans argument. (See Heck (1998) for a careful treatment of how to use this assumption to derive a contradiction from Evans' argument.) To begin with, if each putative case of vague identity is a case of distinctness, then the game is up anyway. There is no point in quibbling whether the refutation proceeds by deriving a contradiction from the supposition that vague identity occurs; or merely by pointing to an unsustainable feature of the philosophical position (viz. that each case of vague identity would have to be a case of distinctness). Furthermore, many of the cases where one might be *tempted* to think that identity is vague are cases where one will be equally tempted to think that it is determinately vague. For example, we shall shortly consider cases of vague survival: where it is purportedly vague whether Bob survives a massive character-destroying trauma. Bill (the person who emerges after the treatment) has enough bodily and psychological continuities with Bob to make the identity claim tenable, but not enough to make it a clear case of survival. It seems to me to that if one wishes to say that "Bill=Bob" is ontically indeterminate, then it will be a clear case of ontic indeterminacy. So it is a constraint on a good solution will be that it work under the S5 hypothesis.

Heck himself argues that the operator *cannot* be assumed to have an S5 logic and explores what sort of picture of ontically vague identity might therefore be left open by the Evans argument. My constraint rules out this line of response.

This just leaves one constraint to be argued for, (E): that the solution should not make the vagueness of the identity a matter of mere 'semantic indecision'. This will be important to what follows, so I discuss it in more detail.

Resisting Evans via referential indeterminacy

The following statement is true:³

(*) It is contingent whether the number of planets is eight

However, it does not follow from (*) that there is some object which satisfies:

(**) is one of the things which are contingently identical to eight.

³ The following presentation draws on Lewis (1988).

Indeed, on standard (Kripkean) assumptions *there is no object* that satisfies that predicate. The point is that 'the number of the planets' picks out different objects in different situations, and you need this kind of variability to get (*) to come out true. Basically, you can only safely move from (*) to the claim that something satisfies (**) if nothing funny is going on with the reference relation: if the name picks out the same thing with respect to every world.

The parallel to the Evans case is this. Just because we have:

It is indeterminate whether Sue=Sandy

It does not *immediately* follow that there is some object which satisfies:

is one of things which is indeterminately identical to Sandy

We need some further guarantee that 'indeterminately' and 'Sue' don't interact in the way that 'contingently' and 'the number of the planets' do in the Quinean case.

I've described this all quite abstractly, and filling out the details here would require us to talk in detail about how we are going to handle the operator 'determinately'. However, what I'm interested in is a move made in support of Evans, that aims to rule out concerns on this point. That is the idea that we can *stipulate* that no 'spooky stuff' is going on with the names such as 'Sue' and 'Sally'. In the modal context, the idea is familiar and widely accepted: names such as 'Sue' are supposed to *rigidly* designate their referents, unlike definite descriptions such as 'the number of planets'. In the context of vagueness, the analogous property is that of *referential determinacy*: the idea that if 'Sue' in any sense refers to an object O, then it *determinately* refers to O.

(I speak in this way in order to avoid commitment to an analysis of 'determinately'. If we drop this non-committal stance, say in favour of a supervaluational treatment of indeterminacy, we can make the analogy more exact. Non-rigidity is a matter of referring to different things at different worlds. Referential indeterminacy would be a matter of referring to different things at different sharpenings of the language.)

I do not see why the sort of reasons that led people to think that ordinary proper names were rigid should lead one to impose the constraint that proper names must be referentially determinate. Thinking that there is referential indeterminacy in ordinary names seems to me a perfectly reasonable theoretical option. Suppose that we use 'Kilimanjaro', for example, in such a way that all our claims would be made-true by assigning any one of a number of agglomerations of rock as the referent of 'Kilimanjaro'. Ex hypothesi, no one of these appears better placed, metaphysically or in point of fitting linguistic usage, to be the unique referent of that term. All else equal, it is quite plausible that the name will be referentially indeterminate between these 'Kilimanjaro candidates'. This would be 'semantic indecision', and it leads to referential indeterminacy.

To finish the example, let us name a particular one of the Kilimanjaro candidates K1. It will be indeterminate whether Kilimanjaro is K1; but there is nothing that is indeterminately identical to K1. To think this follows from the preceding claim is

to make exactly the Quinean fallacy.

To sum up: the received view, I am taking it, is that there is a perfectly reasonable way of resisting Evans' argument against vague identity statements, by analogy to the response to the Quinean attack on modality. This reasonable response involves thinking of names as referentially indeterminate. But the only case for referential indeterminacy we have seen is one where the referential indeterminacy arises from so-called 'semantic indecision': the world itself being perfectly precise, but our linguistic practices not being such as to fix a single determinate reference for our terms.⁴

The constraint that we not exploit semantic indecision in this way to resist Evans' argument is based simply on a concern to avoid changing the subject. Evans' argument is explicitly concerned with the hypothesis that *world itself* might be vague. If the only way that we can escape refutation is by pointing to non-ontic sources of indeterminacy, then we have conceded the main point.

With the constraints in place and justified, the Evans argument looks in good shape. The question then arises: why shouldn't we simply endorse it? What is at stake that might force us to take a deeper interest in resisting the argument?

2. The significance of ontically vague identity

What is at stake? I

The tenability of ontically vague identity might initially seem an abstract question. But it has deep significance, in two ways. First, it has direct practical and ethical implications. Second, it has deep theoretical significance within metaphysics.

Vague identity has practical and ethical significance when we consider cases of vague survival. After massive trauma, or tremendous psychological change over time, it may not be clear to us whether the person inhabiting a body prior to the trauma or change is the same person as the one inhabiting the body after the trauma or psychological change. Likewise, it might be unclear to us whether a fertilized egg, or a foetus, is identical to the baby born eight months later. The identity claims in each case are at the heart of moral evaluations: if you think that the fertilized egg or the foetus could survive as a baby (rather than merely 'give rise' to one) then there is a *prima facie* case that abortion is killing a person. Imprisoning an old man for crimes committed in 'his' youth, may be just or unjust according to whether he really is the same person as the one who committed those crimes.

There are views on personal identity which would not allow my case to be set up. On some views, a fertilized egg may be identical with a baby, and yet the latter but not the former is a 'person' and thus a morally significant individual.⁵ On some views, bodily continuity ensures that the old man is identical to the criminal; though it doesn't settle the question of whether he is 'the same person' in a morally significant

⁴ The line of resistance is described by Noonan (1982). Noonan does not confuse it with a defense of *ontically* vague identity

⁵ See Olson (1999) for a view on which one might be identical to a foetus while that foetus fails to be a person. See also Olson, *passim*, for scepticism about the moral significance of diachronic identity claims.

sense. My point is only that there are a large range of perfectly natural views on which evaluation of the identity is morally central.

A natural view here seems to be that it is *vague* whether or not the fertilized egg is identical to the baby; but not vague in virtue of epistemic limitations or semantic indecision, but rather vague in virtue of *ontic* unsettledness. Those resisting the ontic characterization have to explain how anything ethically 'deep' could turn on (for example) the linguistic and epistemic issues at the heart of rival treatments of vagueness.

Another potentially significant case of vague identity occurs with 'fission' scenarios. Suppose my brain is split in two, and the halves implanted into two new bodies, giving rise (apparently) to two viable persons, psychologically continuous with me. Which, if either, inherits my fortune? Who is punished for my crimes? What should my girlfriend think? As Parfit (1984, ch.12) urges, it is hard to maintain that I survive as *both* individuals: if I am identical to both, shouldn't they be identical to each other by elementary formal properties of identity?⁶ Again, a natural proposal is to think that in such a case I survive, but there is *no fact of the matter* concerning which of the subsequent individuals I survive as. A natural proposal, but one that appears unavailable if Evans' argument works.

What is at stake? II

So far, I have just described a class of practically and ethically significant cases where ontically vague identity would appear *prima facie* a natural and important descriptive option. I now turn to a wider *theoretical* significance. I shall argue first, that rejecting ontic vagueness in general commits one to a substantive metaphysical results; and second, that on certain modest assumptions, Evans argument against ontically vague identities rules out ontic vagueness more generally.

Following Barnes 2005, consider some property that isn't at the ultimate microphysical level, Uranium say. Something gets to be Uranium when it is a cluster of smaller particles appropriately arranged. Is *being Uranium* one of the primitive ways that things can be (is there an Armstrongian Universal of Uranium)? Or should the primitive description of the world simply list the arrangements of quarks and leptons at the ultimate microphysical level, and regard it as a semantic matter when those arrangements count as Uranium?

Intuitively it can be a vague matter at a given moment whether some cluster of particles is Uranium (consider cases where the Uranium atom is in the process of undergoing radioactive decay, but at a point where it is unclear whether or not it has decayed). So take an A such that it is vague whether A is Uranium. Is this a matter of semantic vagueness? That is an appealing option if we go for the microphysicalist thought that a description of the world at the ultimate microphysical level exhausts the distribution of primitive properties across the world, for then whether A is Uranium can be identified with the question of whether A is in an arrangement that does enough to fall under the word "Uranium". But if *being Uranium* was a primitive way

⁶ Though see Lewis (1976) and Sider (1996) for proposals for defending this 'double survival' view. The puzzle is sharpest for an endurantist theory of persistence.

something could be, we couldn't take this line. If it is vague whether A is Uranium, it is on this view vague whether the metaphysically primitive ways that A is, includes *being Uranium*. There seems no room to wriggle out of this by appeal to semantic phenomena. What goes for Uranium, of course, goes in spades for other kinds in which we might take a metaphysical interest: *being a person*; *being water*; *being conscious*. In each case, there is the microphysicalist line that these do not correspond to primitive ways the world can be, but are rather ways of classifying situations that can be exhaustively described ultimately in terms of a distribution of micro-properties. That allows any vagueness in whether something has these properties to be construed as a matter of semantic vagueness. But *prima facie* we cannot appeal to such considerations if any of these macro-properties are to be admitted to our metaphysic on a par with micro-properties.

If one regards *Uranium*, or *water*, or *consciousness*, or *being a person*, as among the perfectly natural properties (in the sense of Lewis (1983)), then one might still avoid ontic vagueness by taking there to be – against appearances – sharp boundaries to the application of such properties. Consider a “sorites series” of arrangements of particles, going from clear cases of Uranium through successive stages of radioactive decay to clear cases of non-Uranium. Perhaps there is some – presumably metaphysically brute – cut-off in the series, dividing the cases of Uranium to non-Uranium. Such metaphysical brutalism might be still be consistent with an *epistemic* account of the vagueness of the property *being Uranium*.⁷ If one is not to be a brutalist, then I do not see any way to avoid regarding the vagueness of whether or not something is Uranium in appropriate cases, as being an instance of ontic vagueness.

If the domain of the perfectly natural extends beyond the microphysical to paradigmatic macro-properties, then *prima facie* we are faced with a choice between brutalism and ontic vagueness. It comes as no surprise, therefore, that those such as van Inwagen who take properties as *being alive* with great metaphysical seriousness, also buy into ontic vagueness. Turning this around, if we had decisive arguments against ontic vagueness, and we regard brutalism as beyond the pale, then a microphysicalist account of which properties are perfectly natural seems the obvious way to go. (It remains to be seen, of course, whether even this sort of view can avoid ontic vagueness, but prominent defenders such as Lewis are explicitly committed to avoiding such vagueness, and we have as yet no *prima facie* reason to doubt this.)

This is one illustration of the way that rejecting ontic vagueness would constrain one's overall metaphysics. There are many others, and contemporary debate in metaphysics provides us with explicit illustrations. Lewis (1986a, pp.212-13) famously argues for mereological universalism on the grounds that non-crazy alternative composition principles would lead to ontic vagueness, which should be rejected. Sider (2001) argues for the existence of instantaneous temporal parts along much the same lines. A principled argument against ontic vagueness would be a powerful tool in the metaphysician's armoury.

Interconnections between types of ontic vagueness

⁷ For brutalism, see Markosian (1988) (Markosian discusses the particular case of brutalism about composition).

To argue that vague identity (ontically construed) is incoherent, is not yet to say that all ontic vagueness is incoherent. What of vague existence, or vague instantiation of universals? What of vague location, vague part-hood, vague constitution? Perhaps we can have a non-microphysicalist metaphysic, shot through with ontic vagueness, but steering clear of ontically vague identity that would lead us into the problems that Evans' argument illustrates. For all that the Evans argument against ontically vague *identity* directly implies, all these other kinds of ontic vagueness could still be coherent. Thus Noonan (2004, p.131):

Everyone knows that Evans's argument against vague identity in-the-world doesn't show that there aren't vague objects. Even if the argument succeeds all it proves is that every vague object is determinately distinct from every precise object and every other vague object

Akiba (2000) develops an account of vague objects that is supposed to avoid vague identities. I want to argue that the claim Noonan takes to be common ground is highly problematic: powerful considerations suggest that vague objects, insofar as they exist vaguely, and vaguely instantiate properties, give rise to ontically vague identities. If so, then the believer in vague objects must take seriously Evans's attack. As shall emerge, however, I think that Evans's argument is resistible in these cases.

We shall be investigating the *relationships* among these kinds of ontic vagueness. This is an under-explored area, but I will give two arguments that convert vague existence into vague identity, and vague instantiation of a property into vague existence. If these are successful, then any metaphysical picture that is committed to vague existence or vague instantiation will be convicted of incoherence by the Evans argument.

The following considerations convert cases of vague existence into a case of ontically vague identity. (They are based on an argument in Hawley (2001). She presents this as an argument throwing into question the universal applicability of standard axioms of set-theory. What follows, by contrast, presupposes that the standard axioms of set theory (with *urlemente*) hold quite generally.)

Suppose that it is vague whether A exists, for A something other than a set. Now consider the set of all non-sets. (To secure the existence of this set, using the standard set-theoretic axioms, we need to presume that there is a set containing as many things as there are non-sets. Let that assumption be made.) Call this B. Now consider the set of all non-sets *which are not identical to A*. Call this C. Is it the case that B=C? They differ, if at all, only in whether they include A. By the extensionality axiom of set theory, therefore, they will be distinct if and only if A exists. Since it is vague whether this is the case, it is vague whether the sets mentioned are identical.

Once one has seen the structure, one can run parallel arguments with other materials. For example, presuppose classical extensional mereology, and consider the fusion of everything whatsoever. Call this B'. Now consider the fusion of everything that is not identical to A. Call this C'. Is it the case that B'=C'? By the extensionality of mereology, they will be distinct if and only if A exists. Since it is vague whether the latter is the case, it is vague whether the mereological sums mentioned are identical.

Barnes (2005) argues that many cases of ontic vagueness will give rise to vague existence, given an appropriate realist property and fact ontologies. If it is vague whether *A* instantiates *F*-ness, then it is vague whether the state of affairs *A being F* exists. If *A* is the only candidate for being *F*, then on an Aristotelian theory of universals, it will be vague whether *F*-ness itself exists.

So vagueness in instantiation leads to vague existence (modulo an appropriate metaphysics of properties and facts). And by Hawley's argument, this leads to vague identity. Ontically vague identity is thus a keystone: removing it will remove *many* kinds of ontic vagueness; and the metaphysical results mentioned earlier will follow.

3. A loophole in Evans' argument

With the stakes raised, let us now return to consider whether any escape route is left, or whether, granted my constraints, the Evans argument succeeds. There is little room for manoeuvre. Given an *S5* treatment of indeterminacy, once we reach (5), the game is over. Given classical logic and Leibniz's law, if we reach each of (2) and (4), we are in no position to resist the conclusion. Since rejecting the premise (1) would be to concede the point, there seem to be but two options: to reject premise (3), or to reject the abstraction steps. (Barnes (ms.) explores one further option: to diagnose an ambiguity in the argument in the way that counterpart theorists would do to analogous Leibniz law arguments involving modals. I won't consider this further here.)

I cannot imagine what it would be to reject premise (3), if it is read (as intended) *de dicto*. So we are left with the abstraction steps. Can these be resisted?

One way of resisting them is to invoke a heavyweight property ontology, and proclaim bafflement at 'properties' specified in terms of identity, or in terms of the notion of determinacy. But we have resolved to treat property-talk in a lightweight way, perhaps rephrasing matters in terms of plurals. So this option is closed.

Given this, how could we resist the abstraction steps? As described earlier, there is a presumption in the literature that resistance at this stage, once issues about robust property ontology are cleared away, would be to miss Evans' point.

I think this presumption contains one right thought and one wrong thought. The right thought can be articulated as follows:

- ([^]) Unless 'a' or 'b' are referentially indeterminate, then each of the following hold:
- from it being indeterminate whether *a* is identical to *b*, it follows that *a* has the property of being indeterminately identical to *b*.
 - from *a* having the property of being indeterminately identical to *b*, it follows that it is indeterminate that *a* is identical to *b*.

The wrong thought, I claim, is the following:

- (^{^^}) If 'a' is referentially indeterminate, then it is so in virtue of semantic indecision.

Given our ground-clearing work, I know of no way to explain a failure (1)-(2) or (3)-(4) steps *unless* one invokes referential indeterminacy, so I grant (^). Given this, *any* way of resisting Evans must diagnose semantic indeterminacy. If we have (^), then the case against ontically vague identity is closed. If the only way to resist the argument is to resist the abstraction moves, and (granted (^) and (^)) this involves diagnosing semantic indecision in one of the terms involved, have we not shown that any way of resisting Evans at this point will violate our last---and perhaps least negotiable---constraint? For now it seems that to avoid the result we are left appealing to semantic, rather than ontic, indeterminacy in diagnosing the source of the vagueness of the relevant identity statement.

Referential indeterminacy without semantic indecision.

It seems to me that there is a perfectly sensible view of ontic vagueness which gives rise to vague identity statements, and for which the appropriate response to the Evans argument is to point to referential indeterminacy in the names. Though I concede (^), I reject (^). I shall argue below that there is a theoretical gap here which the believer in ontically vague identities can exploit.⁸

A disclaimer however: I do not wish to defend the view that there could be *vague instances of the identity relation*. Rather, I am aiming to defend the view that there might be *vague identity statements arising in virtue of ontic vagueness*. One might think that Evans argument should be directed only against the stronger claim. However, to argue this way would be to give up on our reasons to be *interested* in the Evans argument. It seemed significant because there were many cases where there were *prima facie* vague identities (in cases of psychological change, or foetus development, or fission) where it seems the indeterminate identity is not a mere matter of semantic indecision, but is rather due to *worldly indeterminacy*. Likewise, it seemed significant because vague existence and vague instantiation can be argued to give rise to vague identities; and again, semantic indecision cannot be the culprit in such cases. In each case, the important thing is whether there can be ontically vague identity, understood as *an identity statement which is vague in virtue of ontic indeterminacy*. To make the Evans argument significant, we should interpret it as attempting to establish that ontically vague identity in this wide sense is incoherent.

How might we defend the claim that there can be ontically vague identities, in this sense? The basic thought is the following. The reference relation is the joint upshot of what we do to fix the meanings of words, and the way that the world is. To see how this can surface within a theory of reference, consider an analogy to cases of reference-failure. For the sake of argument, suppose that one of the things we have to do in order to refer to a thing is to acquire a capacity to perceptually recognise that thing again under a range of circumstances. Some attempts to introduce a name referring to an object might then fail, not because the world isn't cooperating, but

⁸ This move is not without precedent in the literature: see for example Parsons & Woodruff (1995, s.6). Their reasons for questioning the distinction are rather different from mine, however. Lowe (1999, p.329) sketches a route from vague identity to referential indeterminacy that I would look to describe in the framework which follows, though it is not clear to me that he would be happy with this representation of what he is doing (and in particular, with my giving up on vagueness in the *identity relation* itself).

because *we* have not done *our* part. One might think this about Evans' purported 'descriptive name', *Julius*. Since the name is supposedly introduced as the unique satisfier of a purely general description (the inventor of the zipper), our ability to use that word is unaccompanied by any perceptual capacity to recognize the supposed referent. On the other hand, there are cases where *we* seem to have done our part correctly, but where we fail to refer to anything because the world isn't cooperating. Think of Macbeth's demonstrative *that dagger*, for example.

What happens with reference-failure can in principle happen with referential indeterminacy. The usual examples of referentially indeterminate words ('mass'⁹, 'the square root of minus one'¹⁰, 'Kilimanjaro'¹¹) are presented as cases where our reference-fixing actions have failed to home-in on one amongst a range of candidate referents. Perhaps, even, there is some in principle obstacle to our doing so. These are cases where we have referential indeterminacy *in virtue of* semantic indecision.

We can envisage a different case. This is where we, as language-users, have done our part of the bargain, but where because of worldly indeterminacy, we do not secure a determinate referent. At the moment, this is only an *in principle* possibility. But in what follows, I shall argue for a way of viewing ontic indeterminacy on which this kind of referential indeterminacy will occur, and give rise to vague identity statements.

4. A framework for ontic vagueness

I will not give here a *constitutive* account of ontic indeterminacy: a story which would tell someone what ontic indeterminacy *is*. What I will tell you is one way in which ontic indeterminacy *surfaces*---in particular, how it surfaces within one's account of modality and possible worlds. The account of ontic indeterminacy that I favour is in one sense schematic. It treats as primitive a certain notion, and is thus compatible with a variety of accounts that might try to further analyze or reduce that notion. Despite this, we shall have all the resources we need to describe situations where ontically vague identities arise, in a way which is immune to Evans' argument.

Indeterminate Actuality¹²

One aspect of extant theories of possible worlds is that they almost invariably take there to be a single, determinate actual world. Thinking of possible worlds, as Lewis (1986a) does, as extended concrete objects of the same kind, and 'existing' in the same way as us and our surroundings, this seems a natural result. For the actual world is then just that concrete object which contains as parts we ourselves (this naturally leads to the thought that phrases such as 'actually' function as *indexicals*). The case is not totally conclusive; since it supposes that we ourselves occupy only a single possible world (Akiba (2004) exploits this loophole.) However, I leave this aside for

⁹ Field (1973)

¹⁰ Brandom (1996)

¹¹ McGee (1997)

¹² This section is especially indebted to discussions with Elizabeth Barnes, who has been developing independently a similar position, albeit differing on some details. Many of the ideas here expressed owe a lot to discussions with her.

the moment, since I will take it that not many friends of possible worlds will endorse Lewisian 'genuine modal realism' (GMR).

If GMR is to be abandoned, what do we replace it with? *Abstractionist* theories of possible worlds are a natural starting point. For example, some think of possible worlds as *maximal properties* that reality as a whole may instantiate. Many of these world-properties are uninstantiated, and these correspond to non-actual possibilities. On other conceptions, worlds are some kind of abstract constructs (perhaps set-theoretic entities or world-descriptions); or perhaps they are to be thought of as big 'images' of possible worlds.

Let a thousand flowers bloom: I do not wish to take a stance at this point. What is important for my purposes here is that *on such views, the reality we inhabit is not itself a possible world*. Rather, one among the possible worlds *corresponds to* reality, and *that* world-property, construction, image or whatever will be the surrogate for reality within the space of possible worlds. Sometimes the terminology of 'actual world' (for reality) vs. 'actualized world' (for its surrogate) is used to mark this distinction; I mark the same distinction by using the word 'actuality' for the privileged member of the set of possible worlds), and the word 'reality' for us and our surroundings. I am tempted by the view that reality is a totality of states of affairs, along the lines of Armstrong (1997).

How are we to think of this 'correspondence' relation? Is it *sui generis* or can it be explained in other terms? That is a central question of modal metaphysics. For one who identifies worlds with world-properties, then it is natural to think that to be actual, a maximal world-property must be instantiated – perhaps it needs to be instantiated by the *whole* of reality, rather than just a part. For one who identifies worlds with images, then to be actual a world must optimally *resemble* reality. And so on and so forth. Of course, on some conceptions, the relation will indeed be *sui generis*: consider for example 'magical ersatzism' (Lewis 1986a, sec. 3.4): 'correspondence' can be understood as the inverse of Lewis's 'selection'.

The real point here is that *many questions remain open* about the nature of this 'correspondence' relation. In particular, there is a potential gap between the claim that we inhabit a single reality, and the claim that there is a single 'actualized' world. Prima facie, many distinct world-properties could be instantiated by reality; many of the images may depict reality equally well. On a *sui generis* approach to correspondence, why not think that this *sui generis* relation is many-one? The idea that there is a single actual world now needs *argument*: I contend that no general argument for this conclusion is available.

Let me tie this down in a particular case: we shall take possible worlds to be maximal precise world-properties. If reality is vague, then presumably it is vague which precise world property is instantiated. Let us now define 'w corresponds to reality' as *w is not determinately uninstantiated*, and say that the world is an *actuality* when it corresponds to reality in this sense. Notice we *use* the notion 'determinately' in defining actuality. This would undermine an ambition to use this characterization to reductively define the notion 'determinately' via modal metaphysics. But as flagged early, the ambition here is not to reduce ontic vagueness, but only to develop a framework for theorizing about it. (Though I need only take the notion as a working

primitive here, I think one attractive “null” option for a constitutive account of vagueness would claim that this sort of operator is a *metaphysical primitive*, just as some would claim that a possibility operator is a metaphysical primitive.)

Given the above, ontic indeterminacy will surface in *multiple worlds being actual*. We can exploit this to give coherent descriptions of particular cases of ontic vagueness. If it is indeterminate whether A exists, then there is an actuality where A exists and an actuality where it doesn't: it will be vague whether the exact total world property that is instantiated is one that says that A exists; or rather one that says that A fails to exist. If it is vague whether A is located at L1 or L2, then there are actualities where it is located at each of those places.

This framework allows us to give a systematic account of what *truths* obtain at a vague reality. A sentence will be true (simpliciter) just in case it is true relative to all the actual worlds. Let me give just one example: there may be no fact of the matter where the object A is exactly located, as it is located in one place at one actual world and at another place in another. Despite this, there can be a fact of the matter that it is located within the dining room, since its location at every actual world falls within that area.

The framework is strongly analogous to supervaluational treatments of semantic indeterminacy. There are other options to be considered within the ersatz worlds framework: see Barnes (ms) for discussion of one such. In respect of resembling supervaluationism, the framework developed here resembles that put forward by Akiba (2004) as an account of ontic vagueness. The overall packages, however, are quite different: Akiba's `ontic sharpenings' are slices of a quasi-temporal dimension of reality; whereas I find a place for them within an ersatz theory of possible worlds.

5. Application to vague identities

A natural thought dismissed

Once one has the machinery of multiple actualities on the table, a natural approach to purported cases of vague identity suggests itself. According to this line, ontically vague identity is a matter of two objects being identical at some actuality, and distinct at another.

However, *this* kind of claim is not obviously coherent. If identity across worlds is truly a species of *identity*, then surely it must at least be transitive and symmetric. But then if A and B are identical at world w1, and A is identical to C at world w2, and B is identical to D at w2, then C and D must themselves be identical.

Some deny that “transworld identity” is a species of identity. Some instead would analyze it instead terms of similarity relations between world-bound objects---objects have *representatives* at other worlds even though strictly speaking they don't exist there. Such a `counterpart theory' may allow objects to have multiple counterparts at a given world, without there being any pressure to identify those objects, or even say that they are counterparts of one another. I am not opposed in principle to counterpart theory, and it may be that a counterpart-theoretic treatment does indeed allow us to

sustain the natural thought voiced at the beginning of this section (cf. Barnes (ms)). If so, perhaps I could rest my case. But two factors incline me to say more:

- Neutrality here is a virtue: if at all possible it is best not to take a stance on counterpart theory vs. genuine transworld identity.
- One may reasonably insist that the identity statements at issue in Evans proof be understood as making reference to *strict* identity (the counterpart theorist has no reason to regard this stricture as illegitimate). The question then arises as to whether the Evans argument works in that context.

I wish, therefore, to explore what one should say to one who will not countenance failures of transitivity or symmetry in transworld identity. The natural thought is then unavailable. Ontically vague identity statements cannot involve a pair of objects being identical at one world and distinct at another.

Referential indeterminacy in virtue of ontic indeterminacy: the case of fission

Given the current picture of ontic indeterminacy, the question that we should ask is: what are the "sharpenings" of reality (the "actualities") between which reality fails to select? Let us focus for the time being on a particular purported case of vague identity: that of the fission of an enduring object. Let us suppose that a particular amoeba, Sue, splits into two 'daughter' amoebas. Call them Sally and Sandy, respectively. After the fissioning event, Sally wanders off to the west, and Sandy to the east.

We want to defend a description of this fissioning event as one where:

- a. Sue survives past the fission event
- b. It is indeterminate whether she survives as Sally or as Sandy
- c. This indeterminacy is a matter of ontic unsettledness, rather than semantic indecision or epistemic limitations.

Two relevant candidates to 'correspond' to the actual world, therefore, are:

- A. a world where Sue survives as the amoeba who wanders off to the west after the fissioning event (i.e. Sue survives under the name 'Sandy'). A new, distinct amoeba is created at the fissioning event and wanders off to the east: this amoeba gains the name 'Sally'.
- B. a world where Sue survives as the amoeba who wanders off to the east after the fissioning event (i.e. Sue survives under the name 'Sally'). A new, distinct amoeba is created at the fissioning event and wanders off to the west: this amoeba gains the name 'Sandy'.

Diagrammatically, we can represent the situation as shown in figure 1. For the sake of simplicity, I shall assume the following transworld identity facts: that the amoebas that survive the fissioning event in their respective world are identical, and that the amoebas who are created by the fissioning event in their respective world are identical.

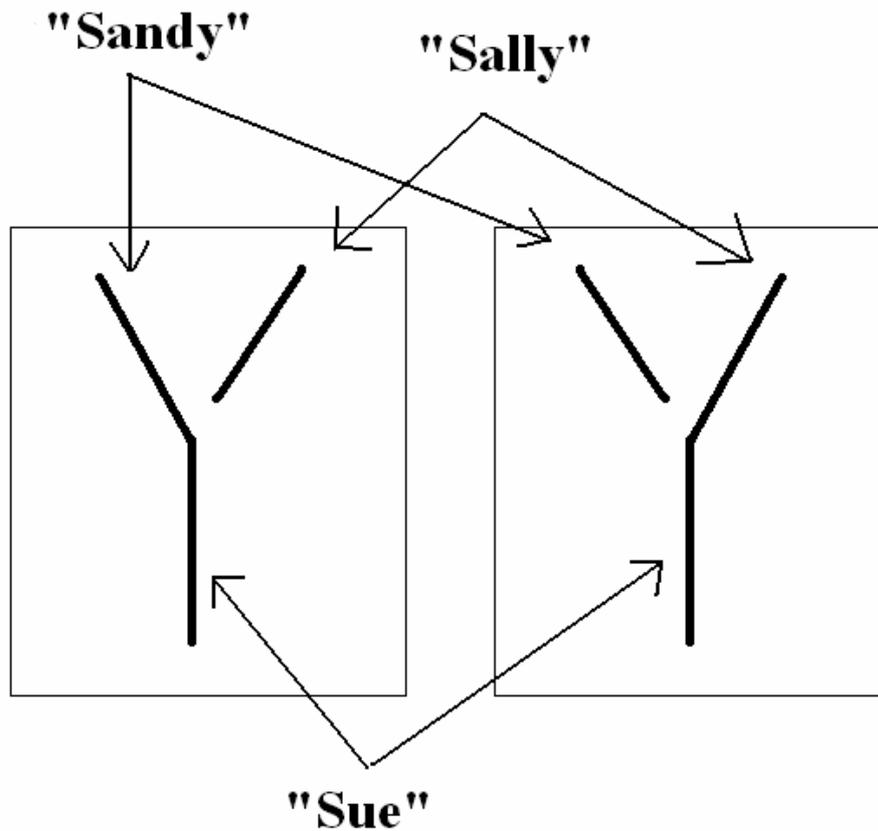


Figure 1: Referential indeterminacy in fission cases

The name 'Sue' suffers no referential indeterminacy. In each case, it refers to the surviving amoeba. However, 'Sally' picks out the surviving amoeba in one world, and the newly minted amoeba in the other. The name 'Sandy' suffers exactly analogous referential indeterminacy.

How does this referential indeterminacy arise? Not from any failure on our part. Metaphysically, we are supposing that it is indeterminate *what the location is of the surviving amoeba (Sue)* after the fissioning event. Since we introduce the names 'Sandy' and 'Sally' (in part) by pointing to an amoeba at a certain location, this ontic indeterminacy *induces* referential indeterminacy. The (ontically based) referential indeterminacy induces a vague identity statement. 'Sue=Sandy' is true at one actual world, but false at the other. So, overall, it is indeterminate in status.

(Alternative assumptions about transworld identities are no doubt possible. For example, we could assume that in each case the amoeba that wanders west is the same, and the amoeba that in each case the amoeba that wanders east is the same. In such a scenario, which names are referentially indeterminate will vary: "Sue" will be referentially indeterminate, while each of "Sandy" and "Sally" will be referentially determinate. The fundamental point is that no matter how we assign transworld identities, we'll never get a vague identity statement where both the terms flanking the identity are referentially determinate).¹³

¹³ Thanks to an anonymous referee for pointing out the range of options here.

Let us see what we should say about the relevant instance of the Evans argument:

1. It is indeterminate whether Sue is identical to Sandy (premise)
2. Sue has the property of being indeterminately identical to Sandy (from 1)
3. It is not indeterminate whether Sandy is identical to Sandy (premise.)
4. Sandy does not have the property of being indeterminately identical to Sandy (from (3)).
5. Sue is not identical to Sandy (from (2) and (4))

Given our assumptions about transworld identity, we have no need to quarrel with the premises or the step from (1) to (2) (the name "Sue" referring to the same amoeba on each candidate world). On the other hand, "Sandy" is referentially indeterminate: in one actuality it picks out Sue, and in the other actuality, it picks out the new amoeba. (3) is true, for no matter which world we consider, whatever "Sandy" picks out is self-identical. Yet (4) is false; there is no object which both is identical to what "Sandy" picks out in world A, and identical to what "Sandy" picks out in world B. Thus, the move from (3) to (4) fails. Because this is an instance of referential indeterminacy, there is no mystery as to why it fails---it is simply the kind of Quinean failure for which we already have precedent. Yet this is not a case of mere semantic indecision: the indeterminacy arises because a particular feature of reality (the location of Sandy) is ontically unsettled.

Extension to other cases

I claim that a similar story can be told in all the other significant cases of vague identity. In the paradigmatic survival cases, the world may be indeterminate between (A) a world where there is a single individual who survives to old age; and (B) a world where the individual is at some point destroyed by psychological change, and replaced by a new individual. When we point to the old man in the dock, our demonstrative 'that man' will be referentially indeterminate between these two.

The cases of ontically vague identities arising from vague existence are another case in point. To take the example of Hawley (2002), consider the organicist view of Van Inwagen (1990): a collection of cat-parts compose a cat if and only if they are caught up in a life. Take a case where a cat is dying; and an instant where it is (ontically) indeterminate whether it is alive or dead. A macroscopic object exists, lying on the mat, if and only if the cat is alive. The latter is vague; so it is vague whether a macroscopic object exists there. On our view, we say that there it is indeterminate which of two worlds is actual: one where there only cat parts on the mat (the cat is dead); and a second where these compose a live cat.

Consider, then, the phrase 'the set of everything on the mat'. In one world, this picks out all and only the cat-parts. In the other world, this picks out all the cat-parts, together with the cat. If sets are individuated by their members, then these are distinct sets, so in our scenario 'the set of everything on the mat' is referentially indeterminate. We can accept, therefore, that vague existence leads to ontically vague identities; but again, the Evans argument will fail since the ontic vagueness is manifested in referential indeterminacy.

6. Conclusion

I have given arguments that cases of ontically vague identity are of interest in themselves, and are of strategic importance to foundational questions of metaphysics. We have seen arguments that if ontically vague identity is given up, many other forms of ontic vagueness fall too: in particular, vague existence and vague instantiation. Evans' arguments, if they succeed, thus establish deeply significant results.

Traditional responses to Evans have too high a cost; being logically revisionary or otherwise objectionable. I contend that the *only* reasonable way to resist the arguments is to diagnose referential indeterminacy. However, this is not to give up on ontically vague identity, on the understanding of that notion that it must have to possess the strategic significance just described.

There is just a single Reality that includes us and our surroundings. Nevertheless, most plausible theories of modality and possible worlds leave room for this single reality to be represented by a multitude of possible worlds that 'correspond to' reality to exactly the same extent. These are the *multiple actualities*. This then allows us to formulate descriptions of ontic vagueness in ways that both vindicate ontically vague identities, and allows us to diagnose exactly where Evans' argument against this possibility breaks down.

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