Logique & Analyse **135-136** (1991), 349-358

VAGUENESS, IDENTITY, AND THE WORLD (*)

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1. Gareth Evans' short and puzzling article 'Can There Be Vague Objects?' (*Analysis 38.4* 1978: 208) has generated an enormous secondary literature. Without explicitly commenting on that literature, I want to re-construct a plausible argument from what seems true or promising in Evans' brief remarks.

Evans article is in two parts. Its first paragraph attempts to gloss the idea of vague objects. Its second and third paragraphs present a *reductio* proof which purports to show that identity cannot have a certain feature (*viz.*, vagueness or indeterminacy). Evans intended his proof to undermine the coherence of the idea that the world might contain vague objects.(1) I will begin by commenting on the first paragraph, and will then discuss the proof presented in subsequent paragraphs.

2. Evans wrote:

"It is sometimes said that the world might itself *be* vague. Rather than vagueness being a deficiency in our mode of describing the world, it would then be a necessary feature of any true description of it. It is also said that amongst the statements which may not have a determinate truth value as a result of their vagueness are identity statements. Combining these two views we would arrive at the idea that the world might contain certain objects about which it is a *fact* that they have *fuzzy* boundaries. But is this idea coherent?

Let 'a' and 'b' be singular terms such that the sentence 'a = b' is of indeterminate truth value, and let us allow for the expression of the idea of indeterminacy by the sentential operator '∇'.

(*) Thanks to Joseph Almog, Peter Roeper, and Graham Oppy, for helpful comments. This article is an expansion of my earlier paper 'Vague Identity and Vague Objects' (*Nous XXV* 1991 341-53). The present paper offers a more focussed and comprehensive assessment of Evans' reasoning.

(1) Evans' strategy, if successful in its intent, would imply not just that there cannot be vague objects (i.e., continuants), but also that there cannot be vague properties, relations, events, etc. The strict conclusion is that the world cannot contain vague entities of any sort.

Then we have:

(1) $\nabla(a = b)$

(1) reports a fact about b which we may express by ascribing to it the property '$\hat{x}[\nabla(x = a)]$':

(2) $\hat{x}[\nabla(x = a)]b$.

But we have:

(3) $\sim\nabla(a = a)$

and hence:

(4) $\sim\hat{x}[\nabla(x = a)]a$.

But by Leibniz's Law, we may derive from (2) and (4):

(5) $\sim(a = b)$

contradicting the assumption, with which we began, that the identity statement '$a = b$' is of indeterminate truth value.

If 'Indefinitely' and its dual 'Definitely' ('Δ') generate a modal logic as strong as S5, (1) - (4) and, presumably, Leibniz's Law, may each be strengthened with a 'Definitely' prefix, enabling us to derive
(5') $\Delta\sim(a = b)$
which is straightforwardly inconsistent with (1)." (208)

3. One immediate problem with the first paragraph, indeed with the whole article, is that Evans fails to say how he understands the notion of vagueness, or the sentential indeterminacy operator '∇'. He begins by observing that some people have thought that the world might be vague. That is, worldly items — objects, properties, relations, etc. — might themselves be vague. Ontological vagueness (the coherence of which Evans seeks to undermine) is contrasted with a rival conception of vagueness: the view that vagueness is "a deficiency in our mode of describing the world."

The view that the world itself might be vague is not further discussed by

Evans, but he combines it with the view that there might be vague identity statements in order to "arrive at the idea that the world might contain certain objects about which it is a *fact* that they have fuzzy boundaries." But the reasoning is obscure. Neither of the two views — that the world is vague and that there are vague identity statements — individually implies that there are vague objects. The world might be vague because it contains vague properties. And there can be vague identity statements, e.g., that expressed by the sentence 'my pen is the first orange pen in that sorites sequence', the vagueness of which is not attributable to the existence of vague objects.(2) What is puzzling is why Evans thinks that *jointly* they imply that the world might contain vague objects.

It would have been better if Evans' first paragraph had simply read:
'Some people think that the world itself might be vague. In particular, some people think that there might be certain objects about which it is a *fact* that they have fuzzy boundaries. But is this idea coherent?'
We still haven't been told what the view that there might be vague objects amounts to, but the proof in the second and third paragraphs will enable us to extract some clues.

4. What should we say about Evans' proof? The intended structure of the proof is clear: (1) entails (2), and (3) entails (4); (2) and (4), by Leibniz's Law, entail (5); (1) - (5) can all be strengthened with a 'Definitely' prefix ('Δ'), yielding (5'), which is 'straightforwardly inconsistent' with (1). But much else is unclear. Why did Evans let 'a' and 'b' be singular terms, rather than constants? The proof cannot be sound if we let in singular terms without restriction: our earlier identity sentence 'my pen = the first orange pen in that sorites sequence' is indeterminate, and no proof to the contrary can be sound. Further, a proof that there cannot be vague identity sentences would not connect with the issue of vagueness in reality. Evans assumed that the existence of vague objects stands or falls with the vagueness of the identity relation. No proof of the determinacy of identity *sentences* could engage with that issue.

So let us take 'a' and 'b' to be constants. Why did Evans rely on the

(2) Imagine that a series of pens is arranged in such a way that the first is red and the last is orange, and that adjacent pens are indiscriminable in colour. In such a smooth sorites sequence, there is no first orange pen, and the singular term 'the first orange pen in that sorites sequence' has no determinate reference. (At least, this is so on any non-epistemic view of vagueness.)

move from (1) to (2), rather than simply take (2) to be the premise for *reductio*? This is a good question for two reasons. First, analogous moves elsewhere are often thought invalid, e.g., the move from 'John believes that the tallest spy is a spy' to 'the tallest spy is such that John believes him to be a spy'.(3) Second, it is the *de re* claim (2), and not the *de dicto* claim (1), which properly captures the idea that identity might be vague: a given object (*b*) is such that it's vague whether it has a particular property (identity with *a*); if so, it is vague whether the relation of identity holds between *a* and *b*. Consequently, if we cannot validly reach (2), or if (2) is not coherent, then Evans will have won at the outset: there will be no stable position for him to argue against.

5. For these reasons, Evans should have presented his proof as follows:

[1]	$\hat{x}[\nabla(x = a)]b$	(Supp.)
[2]	$\sim\hat{x}[\nabla(x = a)]a$	(Truism)
[3]	$\sim(a = b)$	([1], [2], LL)
[4]	$\Delta\sim(a = b)$	(Strengthened [1] and [2], LL)
[5]	$\sim\hat{x}[\nabla(x = a)]b$	([4])

We can now ask the following questions: (i) Does '$\hat{x}[\nabla(x = a)]$' denote a genuine property? (ii) Is the proof valid? (iii) Is [2] really truistic?

(i) It's obviously essential to the validity of Evans' proof that '$\hat{x}[\nabla(x = a)]$' is not analogous to, e.g., '— is so-called because of his size'. The inference:

Giorgione was so-called because of his size
Barbarelli was not so-called because of his size; so

$\sim$ (Giorgione = Barbarelli)

(3) It may be worth noting that '∇', unlike epistemic operators, appears to generate a referentially transparent context. That is, e.g.,:

∇(Tully is bald)
Tully = Cicero

∇(Cicero is bald)

appears to be valid.

is famously invalid. The invalidity of this inference is linked to the fact that we don't regard ' — is so-called because of his size' as denoting a genuine property of Giorgione. It is not genuine because whether it can be truly ascribed depends on *how* we refer to its intended object (e.g., whether as 'Giorgione' or as 'Barbarelli').([4])

Is '$\hat{x}[\nabla(x = a)]$' analogous to ' — is so-called because of his size'? If it is, then it doesn't denote a genuine property, and for that reason we should not believe in the possibility of vague identity. (Evans wins by default.) To keep the debate going, let's assume that it does denote a property. We can now proceed to questions (ii) and (iii).

(ii) There are two places at which the validity of the proof might be questioned — the step from [1] and [2] to [3], and the step from [3] to [4].

It might be thought that the predicate '$\hat{x}[\nabla(x = a)]$' denotes different properties in [1] and [2]: the reference of the predicate shifts when appended to a different subject-term. In *Personal Identity* (London: Routledge, 1989) Harold Noonan takes such a view of the predicate ' — is so-called because of his size'. He writes: "...it stands for the property *being called 'Giorgione' because of his size* when attached to 'Giorgione' and the property *being called 'Barbarelli' because of his size* when attached to 'Barbarelli'." (147) But even if this were the right account of the 'Giorgione'/'Barbarelli' example, there is no reason to think that any reference-shift occurs in the move from [1] to [2]. The reference of '$\hat{x}[\nabla(x = a)]$' is not determined by the *spelling* of terms to which it is attached.

The step from [3] to [4] is more problematic. In the final paragraph, Evans writes: "If 'Indefinitely' and its dual, 'Definitely' ('Δ') generate a modal logic as strong as S5, (1) - (4), and, presumably, Leibniz's Law, may each be strengthened with a 'Definitely' prefix, enabling us to derive (5')...".([5]) In our version of the proof, this reduces to the claim that [1] and [2] may both be prefixed with 'Δ'. Is this right?

([4]) This explains why we cannot infer 'Someone was so-called because of his size' from 'Giorgione was so-called because of his size'. (See W. V. Quine 'Reference and Modality' in *From a Logical Point of View* (New York: Harper & Row, 1963) 145.)

([5]) Evans' assertion that '∇' and 'Δ' are duals must be a slip. $\sim\nabla p$ is not equivalent to $\Delta\sim p$: Δp is consistent with the former, but not with the latter. Also I assume that Evans is not just endorsing a (trivial) conditional in the final paragraph; he must believe that the antecedent of the conditional has some plausibility.

The principle which would justify the strengthenings of [1] and [2] is: *if* ∇p *then* $\Delta\nabla p$ (the analogue of the distinctive S5 axiom *if* $\Diamond p$ *then* $\Box\Diamond p$.) But this principle is not valid.(6) No plausible logic of vagueness will be as strong as S5. But all is not lost. A believer in vague identities presumably believes that some vague identities are definitely vague. (Just as, in the pen example (see n.2), pens in the middle of the sequence are definite borderline cases of redness.) In such cases we can prefix [1] with 'Δ'. (And, if [2] is true, we can also prefix [2] with 'Δ'.) We can then validly infer [4] and conclude that there cannot be any definite cases of vague identity.

A defender of vague identities may claim that this shows only that all vague identities are indefinite. But there are two reasons why this is not a comfortable position to occupy. First, as noted, it is plausible that if there can be vague identities, there can be definite cases of vague identity. (There can be definite borderline cases of all other vague properties and relations. Why should identity be special in this regard?) Second, the position is uncomfortable because it forces the defender of vague identities down an infinite regress: at no point can he allow a 'Δ' operator to appear in front of a vague identity; so he will be forced down an endless stream of higher orders of vagueness. This is not just uncomfortable, it is barely coherent.

Hence, despite the fact that $\langle\nabla, \Delta\rangle$ does not generate a logic as strong as S5, Evans' proof is a valid *reductio* of cases which ought to be central to a friend of vague identities.

(iii) If the argument is valid, everything hinges on the answer to the question: Is premise [2] true? Evans assumed that *a* does not have the property of being such that it's vague whether it is identical to *a*. This is a plausible assumption. If we have successfully singled out an object, we cannot sensibly go on to ask whether that object is only vaguely identical to itself. However, it is sometimes objected that a believer in vague objects would not accept [2]. Perhaps a vague object is precisely an object which is such that it's vague whether it is identical to itself. So, if the purpose of Evans'

(6) Why not? Consider the case where ∇p is itself indeterminate (a case of second-order vagueness). In that case, the conditional *if* ∇p *then* $\Delta\nabla p$ has an indeterminate antecedent. Its consequent should then be counted as false (if q is indeterminate, Δq is false). A conditional with an indeterminate antecedent and false consequent should not receive the value true (rather, it should be counted indeterminate). Consequently, *if* ∇p *then* $\Delta\nabla p$ cannot be an axiom of vague logic.

proof is to undermine the possibility of vague objects, his proof is question-begging. David Wiggins has replied to this objection. He writes:
"... even if ... *a* were a vague object, we still ought to be able to obtain a (so to speak) perfect case of identity, provided we were careful to mate *a* with exactly the right object. And surely *a* is exactly the right object to mate with *a*. There is a complete correspondence. All their vagueness matches exactly."(7)

But there is a danger in this reply. If it is conceded that the truth of [2] is consistent with the view that *a* is a vague object, then surely the truth of [5] (the negation of Evans' (2)) ought to be consistent with the view that *b* is a vague object. But in that case Evans cannot use his proof to undermine the possibility of vague objects.

So: either [2] is inconsistent with the possibility of vague objects or it is not. If it is, then Evans' proof is question-begging. (Indeed, we might then wonder why the proof is needed at all: why didn't Evans just write the following, much shorter, article: "$\sim \hat{x}[(\nabla(x = a)]a$; so there cannot be any vague objects"?) If it is not, then [5] is also not inconsistent with the possibility of vague objects, so the conclusion of the proof fails to establish the impossibility of vague objects.

However, we must distinguish the soundness or otherwise of a proof from the uses to which its conclusion might or might not be put. It may be that, although Evans' proof is suasive, we cannot use its conclusion to argue against the possibility of vague objects. We have already been presented with one reason for thinking that [5] does not imply the impossibility of vague objects. In the next section, I present another.(8)

(7) D. Wiggins 'On Singling Out an Object Determinately' in *Subject, Thought and Context*, edd. P. Pettit & J. H. McDowell (Oxford: OUP 1986) 175.

(8) Is Nathan Salmon's version of the proof of the determinacy of identity an improvement on Evans'? Salmon writes:

"... if there is a pair of objects, x and y, of which the 'is' of identity is neither determinately true nor determinately false ... then since the 'is' of identity is absolutely determinately true of $\langle x,x \rangle$, the two pairs must be different pairs of objects. It follows that the objects x and y are themselves distinct." ('Modal Paradox: Parts and Counterparts, Points and Counterpoints' *Midwest Studies in Philosophy XI* 1986: 110)

I don't think that anyone unconvinced by Evans' proof will be convinced by Salmon's proof. The very same questions arise: Does the predicate "being such that the 'is' of identity is neither determinately true nor determinately false" denote a genuine property of the pair

6. We have not yet made explicit the connection between the first paragraph and the remaining two, that is, between the incoherence of the idea of vague objects and the proof of the determinateness of identity. Evans presumably had a certain connection in mind *viz.*, if identity cannot be vague, there cannot be vague objects.(9) This conditional straightforwardly links the conclusion of the proof with the impossibility of vague objects.

There are two problems with this link. First, as noted above, if [2] (and hence [5]) are consistent with the existence of vague objects, then the link principle is false. Second, the link is open to a quite general doubt. There may be other criteria for the existence of vague objects which are consistent with the determinacy of identity. For example: (a) an object is vague if it lacks precise spatial (or temporal) boundaries; or (b) an object is vague if it is vague whether it has such-and-such as a part.(10) These criteria may be unsatisfactory, but not for reasons that have anything to do with Evans' link conditional.(11) Hence, the conclusion of Evans' proof, in the absence of further argument, does not imply the impossibility of vague objects.

7. Evans' proof that identity cannot be vague bears great structural similarity to Saul Kripke's proof that identity cannot be contingent.(12) But there is a point of disanalogy. Kripke noticed that the metaphysical thesis

⟨x,y⟩? (Hence: Is Leibniz's Law applicable?); and is it truistic that the 'is' of identity is determinately true of the pair ⟨x,x⟩?

(9) This conditional should be distinguished from its converse: if the identity relation is (can be) vague, there are (can be) vague objects. Evans may well have implicitly accepted this principle as well, but he would have been wrong to do so - or so I have claimed elsewhere (see my 'Vague Identity and Vague Objects', *op. cit.*, 349-51).

(10) See, e.g., Michael Tye 'Vague Objects' *Mind 99* 1990 and R.M. Sainsbury 'What is a Vague Object?' *Analysis 49* 1989: 101.

(11) Such criteria are unsatisfactory. Why? Because (i) every concrete object counts as vague by these criteria (which makes the criteria uninteresting); and (ii) it's unclear whether these criteria really capture the notion of worldly vagueness. Everest is a vague object by these criteria, but this conclusion does little to assuage our conviction that the ultimate source of Everest's vagueness is our concept *mountain*.

(12) See, e.g., Saul Kripke 'Identity and Necessity' in M.K. Munitz (ed.) *Identity and Individuation* (New York: New York University Press, 1971).

of the necessity of identity happens to have a semantic corollary.([13]) He noticed that, in the case of, *inter alia*, proper names, the following substitution is valid:

$$\frac{\text{(i) } A = B}{\text{(ii) } \Box(A = B).}$$

Terms for which such a substitution is valid, he called 'rigid designators'.

What is striking is that there appears to be no specifiable class of singular terms in natural languages (e.g., proper names, or demonstratives) such that for any two members of that class, 'A' and 'B':

$$\sim\nabla(A = B)$$

is guaranteed to be true. Natural languages do not contain a class of 'precise' designators (i.e., a class of terms such that any non-empty member of that class is guaranteed to have determinate reference).([14]) Singular terms from *any* semantic category (definite descriptions, proper names, demonstratives, etc.,) can fail to have determinate reference.

This explains why we cannot run an informal analogue of Evans' proof to show that any identity sentence containing, e.g., proper names or demonstratives, must be definite in truth value. One or both of the singular terms in any vague identity sentence will lack determinate reference. Consider the following sentences: 'my pen = the first orange pen in that sorites sequence'; 'Smith = Jones' (where it is vague whether Smith and Jones stand to each other in whatever relations make for personal identity over time — e.g., non-branching psychological continuity); 'this ship (t1) = that ship (t2)' (where I have quickly removed and replaced half of the original ship's planks).

It is vague which pen the definite description 'the first orange pen in that sorites sequence' singles out. It is vague whether the proper name 'Smith'

([13]) It is entirely contingent that there is such a corollary — even if natural languages contained no rigid designators, the proof of the necessity of identity (formulated using variables) would still be valid.

([14]) In this respect, '∇' is analogous to an epistemic operator such as 'X believes that —'. There is no class of singular terms such that co-referring members of that class are guaranteed to be substitutable *salva veritate* in a context generated by 'X believes that —'.

refers to Jones. It is vague whether the demonstrative 'this ship (t1)' refers to the ship at t2. No object is determinately selected *of* which we can attribute any vague identity property, and so the informal analogues of Evans' premise (2) (my premise [1]) cannot even be evaluated.([15])

The observation that natural languages contain no category of precise designators is as striking a result as Evans' proof of the determinacy of identity.

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([15]) It does not matter whether our conception of ordinary continuants is three-dimensional or four-dimensional. I assume a three-dimensional view in the above, but the same point can be made on the four-dimensional view. Take the ship example. Of course, 'the ship-at-t1 = the ship-at-t2' is not vague — it is just false. But we can generate the following vague identity sentence: 'the four-dimensional object of which the ship-at-t1 is a part = the four-dimensional object of which the ship-at-t2 is a part'. We cannot prove that this sentence cannot be vague: both its singular terms lack determinate reference.