

IS THERE NON-EPISTEMIC VAGUENESS ?

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In this paper I will argue for the following point: For any property P, and any object x, either x has P or x doesn't have P. (More precisely, for any n-place property P, and any n-tuple $\langle x,y,z\dots \rangle$, $\langle x,yz\dots \rangle$ has P or it doesn't.) After doing this, I will try to say exactly what vagueness is.

I

Something is bald just in case it falls in the class of bald things, and something is not bald (has the property of being not-bald) just in case it falls *outside* the class of bald things. It would be hard to contest either of these points.

By an 'indeterminate property' I mean a property P such that, for some possible x, it is not the case that x *has* P, and it is also not the case that x has not-P. So x 'indeterminately' has P just in case x has neither P nor not-P- just in case, to put it another way, x falls neither inside nor outside the class of things that have P. For the sake of argument, let us suppose that there are indeterminate properties. In fact, let us suppose that baldness is one of them. So there could¹ be some object x such that x isn't bald and x isn't not-bald-such that x falls neither inside nor outside the class of bald things.

Let x be any bald object and let y be any indeterminately bald object. x has some property that y does not have : x has the property of being bald, and y does not have that property. So by Leibniz's Law, x and y are different. So no bald object is identical with any indeterminately bald object. This means that any indeterminately bald object simply falls *outside* the class of bald objects. This in turn means that any indeterminately bald object is

simply *not* bald².

Basically, being indeterminately bald is a way of falling *outside* the class of bald things; and to fall outside the class of bald things is to be not bald. So the idea that there are indeterminately bald things-things that are neither bald nor not-bald, things that fall neither inside nor *outside* the class of bald things-is not a coherent one.

Of course, this argument works for any property, not just the property of baldness. Let *a* be any molecule that is a part of Mt. Everest, and let *b* be any particle that is indeterminately a part of Mt. Everest. *a* and *b* have different properties and are therefore distinct. So *b* simply falls outside the class of particles that are a part of Mt. Everest, and therefore is not a part of Mt. Everest.

The most contentious part of the above argument is this: I assumed that if something falls *outside* the class of bald things, it is ipso facto *not* bald. Some might say that this assumption is question-begging: may be something can fall outside that class without actually being *not*-bald. that, arguably, is just what the believer in objective (non-epistemic) indeterminacy is trying to prove.

I think that this objection is similar to the following:

Something can fall outside the class of white things without being *not*-white. Why? Well, to be not-white it is necessary that something fall a certain *distance* outside of the class of white things. A cream colored object may fall *outside* the class of white objects, but it doesn't fall far enough outside the class of white objects to not-white. To be not white, something has to be, at a minimum, a pale yellow.

There is nothing to being not-bald other than *failing* to be bald. If we say that, for something to be not-bald, it had to do more than just fall outside the class of bald things-that it has to fall way outside that class (that it has to be quite hairy) we would simply be redefining the word 'not'.

Another (weaker) objection to my argument is this:

Suppose *x* and *y* are exactly alike except that *x* is determinately bald while *y* is indeterminately bald. To be sure, it seems that *ipso facto* *x* has some property that *y* doesn't (and vice versa). But may be the predicates 'indeterminately bald' and 'bald' don't correspond to any *real* properties,

so that there is no true property that *y* has that *x* doesn't. Why say this? Well, not all predicates correspond to properties. Consider the property 'is a barber who shaves all and only those who do not shave themselves'. Nothing can satisfy this predicate, so (it would seem) there is no property corresponding to it. Another predicate that arguably doesn't correspond to a *real* property is Nelson Goodman's 'grue'. This word corresponds to a real concept, but is there any *property* answering it? Someone *might* argue that there isn't. Maybe the predicate 'indeterminately bald' is like this.

I only bring this objection up because it appears to be in the literature.³ I confess that it makes little sense to me: who could possibly deny that baldness is a real property and that, consequently, there is some property that *x* has that *y* doesn't? In any case, *even if we concede* this objection, it fails to undermine my argument. This is so for two reasons. Once again, suppose that *x* is determinately bald whereas *y* is indeterminately bald. Given this, it is plainly impossible that *x* and *y* should have the same number of hair (or, at any rate, they should be qualitatively identical in respect of their physical properties). Given that *x* is determinately bald, whereas *y* is indeterminately bald, it follows that *y* has more hair than *x*. (If *x* and *y* had the same number of hair, then they would both be bald, both be not-bald, or both be indeterminately bald.) So-regardless of whether we hold the predicates 'determinately bald' and 'indeterminately bald' to correspond to properties- as long as we assume that the former property applies to *x* and the latter doesn't, then we are committed to holding that there is some genuine property that the one has that the other doesn't. Basically the applicability of putative pseudo-predicates (predicates that don't correspond to properties) supervenes on the applicability of what are plainly legitimate predicates (predicates that do correspond to real properties).

Another counter-objection (due to Nathan Salmon⁴) is this. Suppose that not all predicates correspond to properties. If we assume this, then surely we must countenance the following idea: if *x* and *y* are to be distinct, it is not necessary that they differ in properties, but only that they differ in what predicates (or, equivalently, what concepts) they satisfy. If we are going to fuss about what predicates or concepts correspond to real properties, then our concept of identity is not to be explicated by saying 'x and y are

identical just in case they have the same properties', but rather by saying 'x and y are identical just in case they satisfy the same predicates (or concepts).'

Here is another counter-objection (this one is by far the weakest):

By definition, someone is indeterminately bald just in case he is neither bald nor not bald. You have said that if someone is indeterminately bald, then he is distinct from anything that is bald, is therefore not bald. But given how we've defined 'indeterminately bald', you cannot legitimately arrive at that conclusion. *By hypothesis* an indeterminately bald person is *not* not-bald. So there is no way you could prove that such a person *is* not bald.

This argument doesn't, so far as I can tell, have much merit. Imagine the following. One day Smith says 'let n be an even prime greater than 10.' Later on, someone comes up with a proof that any number greater than 2 (and therefore greater than 10) cannot be both even and prime. In response, Smith says:

That's impossible: n is *by hypothesis* an even prime greater than 2. So your proof must have gone astray somewhere.

Obviously Smith's point has no merit. It is a hard mathematical fact that there cannot be an even prime greater than 2. So if one supposes that there is such a number, one is making an incoherent supposition. Similarly, it is a hard fact that if x is distinct from anything that has P , x falls outside the class of things that have P and therefore has *not-P*. So if one were to suppose that, for some x , x fell outside the class of things that have P and yet nevertheless were not *not-P*, one would be making an incoherent supposition.⁵

Here is another argument against indeterminacy. My first premise is this: For something to be bald is for it to be determinately bald, and for something to be not-bald is for it to be determinately not-bald. What is my argument for this premise? Consider the following two sentences:

(i) Bob is bald, but Bob is not determinately bald.

(ii) Bob is determinately bald, but Bob is not bald.

Both (i) and (ii) are patent falsehoods. So the property of baldness is that

of determinate baldness, and the property of not-baldness is identical with the property of determinate not-baldness. Now, if something is indeterminately bald, then it obviously isn't determinately bald, and it therefore isn't bald either. So indeterminate baldness collapses into determinate *non*-baldness.⁶

II

In this section I'd like to set forth a couple more arguments against the idea that there could be objective (as opposed to epistemic) indeterminacy. My first argument is against indeterminacy in the spatiotemporal world. (This argument doesn't show that Fregean concepts⁷ cannot be indeterminate.)

If there are indeterminate spatiotemporal states of affairs, these states of affairs seem to *supervene* on precise states of affairs. It is impossible that there should be two objects (or two possible worlds) that are exactly alike *except* for their indeterminate properties. For example, it is impossible that Bob and Joe should be exactly alike *except* that Bob is bald whereas Joe is indeterminately bald. If Bob is bald, that is *in* virtue of his having (say) zero hair, and if Bob is indeterminately bald, that is in virtue of his having (say) fifty hair. So if two people differ in respect of whether they are bald, that difference must correlate with—must *supervene on*—some other difference, and this other difference must be a *precise* one.

It would be fair to say that whenever an object has an *indeterminate* property (I am allowing for the moment that there are such properties), that always *consists in* (or *supervenes on*) that object's having some other, precise property. Baldness may be an indeterminate property (though of course I dispute this), but any particular case of baldness consists in someone's having a *certain number of hair*—in someone's having, say, two hair. (Similarly, *beauty* may be a vague concept, but any *instance* of beauty—any one person's beauty—always consists in someone's having *precise* physical characteristics—precise dimensions, and so on.) And if a person is indeterminately bald, he is that way in virtue of having a certain number of hair. This shows, incidentally, that if indeed the spatiotemporal world is indeterminate, it is indeterminate only *relative to certain ways of describing it*. Described in terms of the concept *baldness*, the spatio-

temporal world is (arguably) vague. But described in terms of the concept *hair*, it is not vague. (And even if it is vague if described in terms of the concept *hair*, we could, it would seem, find *some* concept C such that it would be vague if described in terms of that concept - say *electron*.) Any indeterminate state of affairs - e.g. Joe's being indeterminately bald - consists of some precise state of affairs - Joe's having fifty hair. So indeterminateness is a property not of the spatiotemporal world, but of certain *descriptions* of it.

As against this, one could conceivably argue as follows :

May be the concept *hair* is more precise than the concept *baldness*, and the concept *cell* is more precise than the concept *hair*, and the concept *molecule* is more precise than the concept *cell* - so that some concepts allow for sharper descriptions of the world in terms of others. But may be, there is no concept C such that a description of the world in terms of C would allow for *no* indeterminacy.

This point cannot be dismissed summarily. But, as I'd now like to show, it doesn't necessarily undermine our point that vagueness is not a property of the spatio-temporal world *per se* but only of certain descriptions of it (though it *may* undermine the argument just given for that view). It seems that⁸ there is no *limit* to how precise our descriptions of the world could be.⁹ Let me explain this. For any description D that has a certain degree of indeterminacy, it seems that we can (in principle) come up with a description D' that is less indeterminate. So even if *all* cases of indeterminacy cannot be got rid of, *any given* indeterminacy can be got rid-displaced onto another kind of indeterminacy. Consider the indeterminacy that inevitably characterizes descriptions that employ the concept *baldness*. We can get rid of any such description in favor of one that uses the concept *hair*. (John's being indeterminately bald consists in his having fifty hair. So we can, as it were, eliminate the statement 'John is a borderline case of baldness' in favour a statement like 'John has fifty hair.' So we can get rid of the indeterminacy associated with the first sentence. Now, a new kind of indeterminacy may emerge in connection with the second sentence: may be the concept *hair* is indeterminate. But the indeterminacy that characterizes 'John has fifty hair' is *different* from that which characterizes 'John is a borderline case of baldness.' So it seems that what *kinds* of

indeterminacy there are in the world depends on how it is described: different descriptions, different kinds of indeterminacy. From this it follows that indeterminacy *is* a property of descriptions, and not of spatio-temporal states of affairs, even though (perhaps) it might not be possible to produce a description that is free from any indeterminacy. To put this point more perspicuously: it seems that (even if we grant that there are indeterminate properties) what kinds of indeterminacies there are in the spatio-temporal world is contingent on how it is described: if, relative to a certain description D, the world contains indeterminacy *i*, there can always be found some description D' such that, relative to D', the world does not contain *i*. (In any case, this seems plausible.) So even if no description of the world is free from indeterminacy, there is still reason to believe that it is not the spatio-temporal world *per se* that is indeterminate, but only the spatio-temporal world *as described* a certain way that is indeterminate.

But the spatio-temporal world is not *everything* that there is (or, at any rate, it is not *uncontroversially* everything that there is). In addition to spatio-temporal entities there are also concepts (I am referring to concepts in the platonic or Fregean sense: concepts in the psychological sense are spatio-temporal), and the argument just given doesn't show that concepts can't be indeterminate in some respect. (It doesn't show that for any C, any x, x either falls under C or doesn't fall under C—that any object is either bald or not bald.) Now I'd like to show this: *if we assume the correctness of a certain widely held, and prima facie plausible analysis of what concepts are* then with regard to the idea that there is a concept C, and an object n, such that C(n) is neither true nor false—this idea is self-defeating. If it is true, 'C(n)' is meaningless (I am assuming, of course, that 'C' denotes C and that 'n' denotes n); and if 'C(n)' is meaningless, then the very question whether C applies to n is itself meaningless and thus cannot arise.

The aforementioned assumption about concepts is this: a concept is a function from states of affairs (possible as well as actual) to truth-values. This *seems* like a good analysis, and it is certainly a widely held one. (Also, I will present an argument in favor of this analysis: I will not simply take it for granted.) So, just to be perfectly clear, what I am saying is this: *if* this analysis of what concepts are is correct, then it is incoherent to say that,

for some C, some x, neither C nor not-C applies to x. I must make it clear that the aforementioned analysis of concepts *is* (though widely held) a contentious one. (So I am setting forth a conditional proof.)

First of all, as we saw a moment ago, if a predicate - e.g. 'is bald' - applies to someone, or fails to apply to someone, it applies (or fails to apply) to that person in virtue of his having some *specific* number of hair. Even if we grant that 'is bald' doesn't yield a truth-value when applied to certain people, we must hold that *whatever* results when we apply that predicate to someone - be it truth, falsity, or neither - that result is a consequence of that person's having some specific characteristic, of his having some specific number of hair.¹⁰

What is it to *fully* grasp the meaning of the predicate 'is bald'? It *seems* that to *fully* grasp this meaning is to know, for any number, n, whether a person with n hair satisfies that predicate. If you know, for any number n, whether 'is bald' yields truth when applied to an expression denoting a person with n hair - if you know this, then there is nothing you don't know about the meaning of the predicate 'is bald'. Of course, the meaning of this predicate is nothing other than the concept it expresses. So if you know, for any n, whether a person with n hair falls under the predicate 'is bald', then - it seems reasonable to say - you fully grasp the concept of baldness.¹¹

Let B(x) be short for 'anyone with x hair is bald.' So 'B(0)' is true and 'B(1,000,000)' is false. Suppose that a person with 50 hair is neither bald nor not-bald - so that 'B(50)' is neither true nor false. Given that 'B(50)' is neither true nor false, it seems to follow (indeed, it *does* follow, as I will argue in a moment), that 'B(x)' isn't *defined* for the number 50. (If 'B(x)' isn't defined for 50, then 'B(50)' is indeed lacking in truth-value, but not because it expresses a proposition that lacks truth-value: it is lacking in truth value because it is *ill-formed* and therefore doesn't express *any* proposition-because, in effect, it *has no meaning*. If a predicate isn't defined for a certain object, then coupling that predicate with an expression denoting that object yields non-sense: it *doesn't* yield a proposition - not even one lacking truth-value. So if the predicate 'B(x)' isn't defined for 50, then 'B(50)' is meaningless, and so, therefore, is the sentence 'a person with 50 hair is bald'. And so, therefore, is the question 'is a person with 50 hair

bald?' Of course, this point about predicates corresponds to a point about concepts. If 'B(x)' cannot meaningfully be predicated of 'n', then n cannot meaningfully be thought of as falling under, or failing to fall under, B(x). So there would be *no proposition* corresponding to the words 'a person with n hairs is bald' and thus *no question* corresponding to the words 'is a person with n hairs bald?' (I must stress that/am firmly convinced that, for any n, it is meaningful to say 'a person with n hairs is bald' - I gave my arguments for this in section I. What I am trying to show is that someone who believes in objective indeterminacy is implicitly committed to the view that this is not always meaningful.)

The argument just set forth can be given wholly in terms of concepts, as opposed to predicates. If B(x) isn't defined for the number 50, then B(50) isn't a proposition, whatever it is, it isn't the kind of object that can be the meaning of a sentence. So the question whether B(x) applies to 50 is meaningless. More precisely, *there is no such question*, there is no question corresponding to the words 'is B(x) true of 50', no proposition corresponding to the words 'B(x) is true of 50' (or simply 'B(50)').

There is an obvious objection to this argument:

Just because 'B(50)' is neither true nor false, it doesn't follow that 'B(x)' isn't *defined* for '50'. Surely *it is* defined for '50': only, when applied to that expression, it yields a proposition having no truth-value. To put this point in terms of concepts, just because the concept B(x), when applied to the number 50, doesn't yield a truth or a falsehood, it doesn't follow that B(x), isn't *defined* for that number, it doesn't follow that B(50) is some kind of non-proposition.

This point is, at least arguably, incoherent. If you know, for any n, whether 'is bald' can or cannot be truly predicated of someone with n hair, then there is nothing left for you to know about that predicate, nothing left for you to know about its meaning. The meaning of a predicate *is* an assignment of truth-values to states of affairs. So if a state of affairs isn't assigned a truth-value by a predicate, that means that it simply isn't meaningfully applied to that state of affairs. So if 'B(x)' doesn't yield a truth-value for 'n', then 'B(n)' doesn't express a proposition. (Therefore 'Is it the case that B(n)?' doesn't express a question.)

Of course, intuitively we think that, for any number n , the sentence 'a person with n hair' *does* express a proposition. I wholly agree. Any such sentence is, in my view, either true or false (and therefore meaningful). What I am saying is that such a sentence *couldn't* be meaningful - couldn't express a proposition - unless it did state a truth or a falsehood. For the meaning of an expression *is* an assignment of truth-values to states of affairs (possible as well as actual) : to put it roughly, where there is no truth-value assignment, there is, in effect, no meaning -no concept and therefore no proposition. Anyone who holds that there is nonepistemic indeterminacy must hold that 'B(n)' can be meaningful even if 'B(x)' isn't defined for ' n '. I am trying to show that this is incorrect.

Perhaps the following consideration will lend some credence to this position. Imagine that you are constructing or defining some predicate 'P(x)'. You stipulate that 'P(x)' yields when applied to the expressions '1', '3', and '5' (with their current English meanings) or synonyms thereof; yields a falsehood when applied to '2', '4' and '6' or synonyms thereof, and you make *no* stipulations for any other expressions. Does 'P(10)' express a proposition (albeit one with no truth-value)? There is nothing to the predicate 'P(x)' over and above its assigning truth to '1', '3' and '5' (with their current English meanings) and falsehood to '2', '4' and '6'. 'P(10)' is neither true nor false, but only because it has no meaning, not because it expresses a proposition that lacks truth-value. If you *stipulate* that 'P(x)' yields no truth-value when applied to any expressions besides, does it change matters? It doesn't seem so. *Failing* to stipulate what meaning 'P(x)' has for (e.g.) '10' seems no better and no worse than explicitly stipulating that 'P(10)' has no truth-value.

Of course, this point can be made in terms of the concept P (x), as opposed to the predicate 'P(x)'. There is nothing to this concept over and above its pairing of certain numbers (1, 3 and 5) with truth and others (2, 4 and 6) with falsehood. So P(10) - whatever it is - isn't a proposition.

Everything we have said about 'P(x)' applies to 'B(x)' ('anyone with x hair is bald'). There is nothing to this predicate other than its pairing off certain numbers with truth and others with falsehood. So if this predicate doesn't assign a truth-value to an object (a number in this case) it simply

isn't defined for that object.

The view that concepts might not pair off certain objects with truth-values is, I think, self-defeating. If $C(x)$ isn't true of a , then we can't concatenate or put together $C(x)$ and a in such a way as to form a proposition. We can't say that $C(x)$ does apply to a , that $C(x)$ doesn't apply to a , or therefore that $C(x)$ neither applies nor fails to apply to a . So if $C(x)$ neither applies nor doesn't apply to a , then there is no proposition to the effect that $C(x)$ neither does nor doesn't apply to a . But if there is no such proposition, then there can be no view that $C(x)$ neither does nor doesn't apply to a . So, with regard to the view that concepts might not pair off certain objects with truth-values, this view is incompatible with its own existence !

My own view is that any concept *can* meaningfully be applied to any object, that any predicate can be meaningfully applied to any expression.¹² (I tried to justify this view in section I.) I believe that, if you are defining a predicate 'P(x)' and you stipulate that this predicate can be truly applied only to '1', '3' and '5' (with their current meanings) and synonyms thereof, then *ipso facto* you have (in effect) stipulated that it will be *false* when applied to '10' or to 'Bill Clinton', that if a concept is true only of 1, 3, and 5 then it is *ipso facto false* of 10 and of Bill Clinton. But those who believe in non-epistemic indeterminacy cannot hold this. They must hold that concepts apply to certain objects but do not assign truth-values to those objects, that predicates apply to certain expressions but don't assign truth-values to them. But what I have tried to show that is that for a concept to apply to an object *is* for it to pair it off with a truth-value, that for a predicate to be defined for an expression *is* for it to pair it off with a truth-value.

Now I'd like to set forth an exactly parallel argument about propositions. So what I will try to show is this: *if we assume the correctness of a widely held and prima facie plausible analysis of what propositions are*, then it can be shown that it is incoherent - self-defeating - to suggest that propositions can be neither true nor false.

The aforementioned analysis of propositions is this: Propositions are functions from possible worlds to truth-values. So, just to be perfectly clear,

I am trying to show that *if* this analysis of a proposition is correct, *then* it is self-defeating to suggest that propositions can be neither true nor false. I admit that this is a contentious analysis of what propositions are.

Here is my argument. Every proposition corresponds to a concept. The proposition *Bob is tall* corresponds to the concept *is an object x such that Bob is tall is true in x*. (Of course, only whole worlds could fall under this concept.) The argument set forth a few paragraphs ago shows that if (*per impossibile*) a concept paired off an object with neither truth nor falsity, then we couldn't concatenate¹³ that object with that concept to form a proposition. So if *Bob is bald* is neither true nor false of a world with such and such characteristics, then the concept *is an object x such that Bob is bald is true in x* isn't defined for that world. So there would be no proposition to the effect that *Bob is bald* would be true in such a world, false in such a world, or even neither true nor false in such a world. Of course, with regard to the view that *Bob is bald* might neither be true nor false in some worlds, that view presupposes that there is a proposition to the effect that *Bob is bald* is neither true nor false of certain worlds. So that view is incompatible with its own existence.

As we already noted, this proof assumes that propositions are functions from possible worlds to truth-values. Now I'd like to give a brief argument for that assumption. (I admit that this argument is not decisive. But it is at least suggestive.) Consider the sentence 'Bob is tall'. Under what circumstances does someone *fully* understand that sentence? As we noted earlier, even if we suppose that this sentence is non-epistemically vague, we cannot deny that, whatever truth-valuational status it has in *w* (truth, falsity, or neither), it has that status in virtue of *w*'s having *non-vague* properties - in virtue of Bob's being (say) 2.85674 meters tall in *w*. So, the meaning of 'Bob is tall' can be thought of as a function from precise states of affairs to truth-values. So to *fully* grasp the meaning of this sentence would be to know, for any precisely described state of affairs (possible world), whether 'Bob is bald' paired off that state of affairs with truth or falsity. So the meaning of that sentence is just such a pairing.

Again, I admit that this analysis of what propositions are is debatable. But it is a widely accepted and also a plausible one. And, as I hope I have

shown, if this analysis is correct, then propositions can't be of indeterminate truth-value. (There can be *expressions* without truth-value: no one would ever deny that. But, supposing that what we've said is right, if an expression has no truth-value it is because it expresses *no* proposition, not because it expresses a proposition that has no truth-value.)

My own view is that it is *always* meaningful to say that *Bob is tall* is true or false in a world. I say this because *Bob is tall* is true or false in every world; *not* because it is applicable to every world but not true or false in every world. Again, for a concept to be defined for an object *is* for it to assign truth or falsity to that object. Each proposition corresponds to a concept. So, in effect, each proposition assigns a truth value to every world. (In fact, each proposition assigns a truth-value to every object. However, it will always assign falsehood to objects other than worlds.)

There is a simpler (but less interesting) way to prove that all propositions must be true or false. Let P be any proposition that is true and let Q be any proposition that is indeterminately true. P and Q have different properties. Therefore P and Q are distinct. So any indeterminately true proposition falls *outside* the class of true propositions. Therefore any indeterminately true proposition is simply false. Basically, indeterminate truth collapses into falsehood.

III

We have seen some reason to believe that any given proposition is true or false—that there is no indeterminacy (except of the epistemic kind). Therefore vagueness cannot consist in something's being objectively indeterminate. So what is vagueness?

An answer commonly given by those who don't believe in objective vagueness is this: vagueness is a property of *symbols* or, more generally, of *representations* (perceptions, beliefs and so on).¹⁴ And, we are told, for a representation to be vague is for it to be the case that it is indeterminate what it represents: more exactly, for a representation R to be vague is for it to be the case that, for some representational content C, it neither is, nor isn't, the case that R has C.

But we cannot countenance this analysis of what vagueness is.

Representations are as much a part of the spatiotemporal world as

anything else. So, given what we've said, we must hold that, for any representation R, and any property P, R must either have P or have not-P. So for any representational content C, R must either have C or not have C. Basically, representations cannot be *objectively* indeterminate in any way.

It should be pointed out that the very people who *deny* that there can be nonepistemic vagueness are often the same people who *affirm* that representations can be objectively indeterminate - i.e. that it can be indeterminate, for example, whether some object x falls within the scope of a given representation (whether e.g. Bob falls within the scope of Frank's conception of baldness).¹⁵ But this point of view, as we've just seen, is incoherent: if there is no non-epistemic vagueness, then representations cannot be non-epistemically vague, and their relations to the world-these relations themselves being entities in their own right - cannot in any way be non-epistemically indeterminate. (Either Bob does, or does not, fall within Frank's conception of baldness. If not, then there is some property P such that Frank's conception neither has nor lacks P. But we have seen that this cannot be the case.) To sum up, vagueness does not consist in some *representation's* being indeterminate in respect of what it represents (or in any other respect for that matter).

So what else might vagueness be, given that there is no non-epistemic vagueness? it might be tempting to identify vagueness with *imprecision*: a representation is vague if it is imprecise. But vagueness is not imprecision: in fact, there are completely non-vague, but highly imprecise propositions, and there are vague, but relatively precise propositions.

Consider the statement

(i) 'the number of hair on John's head is between 1 and 1,000,000'.

This statement is in no way vague (unless the concept of a hair is vague-but for argument's sake, let's suppose that it is a well-defined concept). But that statement is by no means precise. By contrast, the statement

(ii) 'John is bald'

is vague, even though, in all likelihood, the latter gives quite a bit more information- and is therefore more precise than the statement 'John

has between 1 and 1,000,000 hair'.

To take another example, the statement

(i') 'The number of stars is between 1 and 10,000,000,000'

is not vague, though it is extremely imprecise (let us assume, for argument's sake, that the concept *star* is not vague). By contrast, the statement

(ii') 'The number of stars is extremely large' is vague, even though it probably gives more information than (i').

what is the difference between (i) and (ii)? Someone who believes in objective vagueness would say:

There are no possible worlds where (i) and (i') lack truth-value. By contrast, there are possible worlds where (ii) and (ii') lack truth-value. Basically, vagueness is truth-valuelessness in some possible worlds.

But we've seen reason to believe that this view doesn't work. So what is vagueness? First I'd like to give a definition of vagueness for sentences. (What I say about sentences can be easily extended to cover other kinds of representations - e.g. perceptions, beliefs.) There are two kinds of vague sentences: those that concern contingent matters of fact (e.g. 'John is bald') and those that express, or purport to express, relations between concepts that hold in all possible worlds. First I will give a definition of vagueness for the former, then I will give one for the latter. Finally, I will give a definition that covers both kinds of sentences. The definition I will come up with is basically this: a sentence S is vague if one can understand it without fully knowing the rule that assigns it a truth-value. (This implies - what we've seen reason to hold - that nothing is vague *in itself*. A representation is vague *for someone* who lacks a certain kind of knowledge.)

An empirical sentence is vague if one can understand it without knowing how it is to be assigned a truth-value in *all* possible worlds. One cannot grasp a sentence S without knowing for at least *one* world w what w would have to be like for S to be true in w. But, it seems, one can grasp a sentence S without knowing for *every* possible world w what w would have to be like for S to be true in w. Let me elucidate this.

No cognitively normal English speaker past the age of three can be accused of not understanding sentences like 'Bob is bald'. At the same time, no English speaker (to my knowledge) knows *exactly* what the cut-off line between baldness and non-baldness is. (Let us suppose that if someone has 300 hair, then he doesn't *strike* people either as definitely being bald or as definitely not being bald.) So if you ask an ordinary English speaker to consider a possible world *w* where Bob has 300 hair, and you ask that person 'Is Bob bald in that world?', that person will say either 'I don't know' or (if he's philosophical) 'he's neither bald nor not bald.' So understanding a sentence like 'Bob is bald' is compatible with not knowing how to assign it a truth-value in *some* possible world. (This is so even though a sentence's meaning *is* such an assignment. So I am committed to the view that, in at least some cases, to understand a sentence, it is enough to *partially* grasp its meaning. This seems to be a reasonable view. Does everyone have a total grasp of the meaning of every sentence that they can be said to understand? That would be an extreme view.) At the same time, if someone had *no* idea how to assign a truth-value to 'Bob is bald' in *any possible world*, then surely that person could not be said to know what proposition it expressed. Suppose you described a world *w* where Bob has *no* hair at all, and you asked someone 'is Bob bald in *w*?' and that person said 'I don't know'. In that case, surely that person doesn't know what the predicate 'is bald' means.

As we noted earlier, whatever truth-value a 'vague' sentence (e.g. 'Bob is bald') has, it has that truth-value in virtue of there being some *precise* state of affairs-in virtue of Bob's having 37 hair. The proposition expressed by 'Bob is bald' is to be thought of as a rule going from precise numbers of hair (on Bob's head) to truth-values. The sentence 'Bob is bald' is vague because one could understand that sentence without knowing that rule *in its entirety*- without knowing what truth-value to give that sentence in a world where Bob has (say) 998 hair.

Consider the sentence 'the number of stars is extremely large'. To understand that sentence, you must surely know that, given a world *w* where there were 80 trillion stars, it would be true and that, given a world where there was one star, it would be false. But it does seem to be possible to understand that sentence without knowing whether it would be true in a

world where there were 1,300 stars. So 'the number of stars is extremely large' is vague because one can understand it without being able to assign it a truth-value in *all* possible worlds.

For an empirical sentence S to be non-vague is for it to be the case that, if one understands, if one knows for *any* world w what w has to be like for S to be true in it. If you understand the sentence, then you know *exactly* what any world has to be like for that sentence to be true (or false) in it. Suppose Bob were asked to consider a world w where there were 587 stars, and Bob were asked whether (ii') was true in it?' If Bob didn't know the answer, then surely he couldn't really be said to understand (ii').

Not all vague sentences are empirical in character. Consider the following sentences:

- (i) Pride is a sin.
- (ii) Patience is a virtue.
- (iii) Cleanliness is next to Godliness.

These sentences express, or are supposed to express, truths that can be ascertained merely through reflection on the concepts involved. (Presumably one doesn't need to do empirical work to discover whether patience is a virtue or whether pride is a sin: if one is in possession of the concepts of patience and virtue, then presumably one has all the information one needs to determine whether patience is or is not a virtue.)

The following sentences, on other hand, are not vague:

- (i') A circle is a closed planar figure of uniform curvature
- (ii') Every even number is the sum of two primes.
- (iii') A straight line is the shortest distance between two points.

What is the difference between (i)-(iii) and (i')-(iii')? Here is an answer that we *cannot* accept (I bring it up because it seems plausible at first):

The sentence 'pride is a sin' is vague because it is built up out of vague concepts-because it expresses a relation between vague concepts. (This formulation is not circular because - given your definition of vagueness for empirical sentences - we in effect *already* have a definition of vagueness for

concepts: roughly, a concept C is vague if one can understand sentences of the form 'x is C' without knowing, for any world w, what that sentence's truth-value is in w.)

The problem is that there are sentences that express relations between vague concepts that are not themselves vague. Consider the sentence 'if one is obese then one is not skinny' or (what is equivalent) :

(iv) 'for all x, if x is obese, then x is not skinny'.

Any sentence of the form 'x is obese' is vague, and so is any sentence of the form 'x is skinny'. But (iv) is not vague (it is obviously true - there is no indeterminacy about it). Here's another example:

(v) 'for all x, if x is skinny, x is obese'.

(v) isn't vague at all: it is obviously *false*: it's not on the borderline between truth and falsehood. But all sentences of the form 'x is skinny' and of the form 'x is obese' are vague: the concepts *skinny* and *obese* are presumably vague. So (v) counterexamples the objector's thesis. So what is the difference between (i)-(v) and (i')-(iii')?

'Pride is a sin' is vague because for some possible person x, in some possible world w, someone who *understood* that sentence could know everything there was to know about x and yet not know whether that person was proud or sinful or neither or both, and so wouldn't know whether x counter-exemplified that sentence. Let me elucidate this. A vague sentence like 'Bob is proud' or 'Bob is in a state of sin' has whatever truth-value it has in virtue of Bob's having certain *specific* properties - in virtue of certain non-vague sentences holding true of Bob. (If Bob is in a state of sin, his having that property consists in his having properties that are amenable to description in non-vague terms - in virtue of his having *specific* feelings, having committed *specific* acts, and so on. We've already seen why this is so.) Someone who understood the sentence 'pride is a sin' could know all of the facts about Bob that are relevant to his being proud and sinful and yet not be able to determine whether he constituted a counterexample to the sentence 'pride is a sin'. Basically, 'pride is a sin' is vague because one can understand that sentence without fully knowing what exactly must be the case if that sentence is to be true.

Given this, we can easily explain why the sentence 'for all x, if x is

skinny, then x is obese' is *not* vague' even though any sentence of the form 'x is skinny' or 'x is obese' is vague. If a person counter-examples this sentence, or fails to counter-example it, he does so in virtue of having certain *specific* characteristics - in virtue of having certain *specific* bodily dimensions. Let Bob be any one who understands the sentence 'for all x, if x is skinny, then x is obese.' For any person x, if Bob knows what specific bodily dimensions x has, Bob will know whether x counterexamples (or fails to counterexample) the sentence in question. Basically, one cannot possibly understand a sentence like 'for all x, if x is skinny, then x is obese' without *fully* knowing the rule that assigns it a truth-value.

To sum up, a sentence is vague if one can understand it without fully knowing the rule that assigns it a truth-value. Actually, there is a simpler way to put this. A sentence is vague if one can understand it without fully knowing its representational content. The representational content of a sentence is some proposition, and a proposition is a rule that assigns that sentence a truth-value.

How is vagueness to be defined for representations in general? What e.g. is a vague perception or a vague belief? One possible answer is: a representation is vague if its content is given by a vague sentence. But this answer is satisfactory only if all representational contents can be put into words; and it isn't clear whether this is true.

Another possible answer is as follows. A representation R is vague if it can be intelligible to someone without that person's knowing for all states of affairs (or worlds) S whether S would be consistent with R or not. Suppose you have a blurry, low resolution perceptual experience. (By a 'perceptual experience' I mean that kind of experience that, *if veridical*, qualifies as a perception.) Let P be this experience. It seems that, for a perceptual experience to be veridical, it must satisfy two requirements: (i) it must be caused by some external object, and (ii) the phenomenology of that perception must have *some* correspondence to that object.¹⁶ If you had an experience that was subjectively just *like* that of seeing a dog, but that experience had been caused by a person, then that experience would not be veridical (it would be a misperception): the phenomenology of the experience wouldn't have the right correspondence to the cause of that experience. Because it is so vague, P is such that you don't know *quite*

what would make it veridical or non-veridical. You know that P would definitely be veridical if there were a squirrel or a hedgehog in front of you, and that it would definitely *not* be veridical if there were a person in front of you. (So P is not an unintelligible confusion.) But you don't know whether P would be veridical if there were, say, a small dog in front of you. Basically, P is vague because, while you do not know for *any* object O whether O's being the cause of P would make P be veridical, you do know this for *some* object O. If you knew for *any* object O whether O's being the cause of P would make P veridical, then P wouldn't be the least bit vague to you. On the other hand, if you didn't know for *any* O whether O's being the cause of P would make P veridical, then P wouldn't be *vague* to you: it would just be completely unintelligible. (If you don't speak Albanian, then Albanian sentences aren't *vague* to you: they are simply unintelligible.)

Briefly and roughly, a representation R is vague if R can be intelligible to someone without that person's knowing *exactly* what makes R true or false. If a representation cannot be intelligible to someone without that person's *ipso facto* exactly what would make it true, then it is non-vague.

REFERENCES

1. Evans, Gareth : 'Can There Be Vague Objects?' Reprinted in Keefe and Smith (ed.) *Vagueness : A Reader*, MIT Press, 1999
2. Parsons, Terrence : *Indeterminate Identity* (Oxford University Press 2000)
3. Russell, Bertrand : 'Vagueness' reprinted in Keefe and Smith : *Op.cit.*

NOTES

1. In the metaphysical, not the epistemic, sense of 'could'. Indeterminacy should be defined in terms of *possible*, and not merely actual, objects. Suppose that there were only two people on Earth, one of whom had no hair, and one of whom had a million hair. In that case, there would be no cases of indeterminate baldness. But that wouldn't mean that baldness was a determinate property. For as long as there *could* be a borderline case (an indeterminate case), baldness is to be considered an indeterminate

property.

2. The exact same point holds of the boundary line between not-bald things and indeterminately bald things. Let x be any not-bald thing, and let y be any indeterminately bald thing. x has some property that y doesn't have: x is *not*-bald, whereas y is *not not*-bald. So the line separating indeterminately bald things from not-bald things is sharp, nothing straddles it.
3. See Terrence Parsons *Indeterminate Identity* (Oxford University Press 200), especially pp. 54-55.
4. Conveyed to me in a private communication.
5. Gareth Evans set forth a short but compelling argument to the effect that there can be no cases of indeterminate *identity*. (See Evans [1.]) His argument is basically this. For any x , x is obviously determinately identical with itself. Given this, suppose that y is indeterminately identical with x . In that case, x and y don't have quite the same properties: x is determinately identical with x whereas y is *not* determinately identical with x . Therefore x and y are simply *different*. Basically, the relation of *indeterminate* identity collapses into that of determinate *non-identity*.

I'd like to show that our argument against indeterminacy in general does recover Evans' result-that, in fact, our argument can be seen as a kind of generalization of Evans' argument. (In any case, our argument can be seen as a general application of the main idea behind Evans' argument.) Our argument against indeterminacy in general, it will be recalled, was this. Let x be anything that has the property P and let y be anything that indeterminately has P . y is not identical with x : for x and y don't have quite the same properties (x has P whereas y is such that there is no fact of the matter as to whether it has P). So y simply falls *outside* the class of things that have p , and therefore has not P . Applied to the problem of indeterminate *identity*, our argument becomes the following. Let z be anything that is identical with x , and let y be anything that is indeterminately identical with x . z has a property that y does not have: z is identical with x , whereas y is such that there is no fact as to whether it is identical with x . Therefore y and z have different properties and are not identical. So y ends up falling outside the class of things that are identical with x . So anything that is *indeterminately* identical with x is simply *not* identical with x .

The *basic* idea behind Evans' argument and mine seems to be the same. Only Evans happens to be concerned with a special *kind* of property: with properties of the form *is identical with x*. Evans' basic point seems to be that anything *indeterminately* having this property—anything *y* such that there is no fact of the matter as to whether *y* has this property — is distinct from anything that has this property), so that *y* is simply *not* one of the things that has this property. My point is that this argument applies not just to properties of the form *is identical with x* but to all properties — e.g. *is a part of Everest, is bald, is a talented pianist*.

6. Applied to the problem of indeterminate *identity*, this argument becomes the following. Consider the statements:
 - (i') *x* and *y* are identical but they are not *determinately* identical.
 - (ii') *x* and *y* are *determinately* identical, but they are not identical.
 Both (i') and (ii') are patently false, for all values of *x* and *y*. So identity is the same thing as determinate identity. So if *x* and *y* are only indeterminately identical, then they are really just *not* identical. So this argument recovers Evans' result.
7. The word 'concept' has two different meanings or, in any case, refers to objects of two quite different kinds. Sometimes this word refers to *mental* entities and sometimes it refers to non-mental entities. In the sentence 'Einstein's concept of sub-atomic phenomena is richer than mine', the word 'concept' is being used to denote mental entities. In the sentence 'for any *x*, if *x* falls under the concept *triangle*, then it also falls under the concept *two-dimensional figure*', the word 'concept' is not being used to refer to mental entities but to some kind of Platonic (or, as we might also say, Fregean) entities.
8. Leaving aside epistemic problems, like those associated with Heisenberg's Law.
9. At any rate, *semantics* doesn't prevent this, but maybe the structure of the world does: maybe given (e.g.) Heisenberg's law it is not epistemically possible to come up with a completely indeterminacy-free description of the physical universe.
10. For the sake of simplicity, I am assuming that whether a person is bald depends *solely* on how many hair he has. This assumption may well be

false. Other factors are probably at work. If two people have the same number of hair, and their hair are of the same thickness, but one of those two people was fifty times larger than the other, then it could well be that one of them was bald and the other was not. So whether a person is bald depends not just on how many hair he has, but also on the thickness of his hair, on the size of his head, and possible on other variables. But if, in my discussion of indeterminacy, I always made allowances for all these variables, my discussion would be clumsy and long-winded in the extreme, and there would be absolutely no concomitant gain in substance. So I am assuming, for the sake of expository simplicity, that whether a person is bald depends only on how many hair he has.

11. It might be thought: 'look, any English speaker has a full understanding of the predicate "x is bald", but no English speaker knows for *every* n whether "n is bald" is true or false.' This objection is surely misguided. Suppose Bob knows for every n, whether 'n is bald' yields a truth, a falsehood, or neither, and that Jerry knows this only for some numbers. In that case, Bob surely has a fuller understanding of this predicate than does Jerry, even though Jerry has some understanding of it. A person can meaningfully and successfully use a predicate without knowing *everything* about it. It is not unreasonable to say that few, even no, English speakers *completely* grasp the meaning of the predicate 'is bald'. If we all did, then there would be no arguments as to whether some objects could neither have nor lack it. More generally, if every predicate were completely understood by everybody, then it is hard to see how there could be any philosophical debates. (Though, admittedly, this might be an overstatement.)
12. I admit that the theory of types may impose some restrictions on this statement. But, plausibly, a case could be made that these restrictions are peripheral to the present topic.
13. 'Concatenate' might not be the right word. Maybe 'put together' would be more appropriate, as it leaves it open how concepts and objects are to be composed to form propositions, whereas 'concatenate' seems to suggest that they must be put together in a certain way.
14. See Bertrand Russell 'Vagueness' (reprinted in *Vagueness: A Reader* edited Rosanna Keefe and Peter Smith, M.I.T. Press 1999): 'Vagueness and

precision alike are characteristics which can only belong to a representation, of which language is an example.' (p. 61)

15. See Russell *loc. cit.* I should point out that, according to Russell, no representation *per se* is indeterminate:

When knowledge is vague, this does not apply to the knowing as an occurrence, as an occurrence it is incapable of being either vague or precise. Vagueness in a cognitive occurrence is a characteristic of the *relation to that which is known* [my italics], not of the occurrence in itself.' (p. 61)

But someone who denies the existence of non-epistemic vagueness cannot hold this view. If one says that this relation is only *epistemically* vague, then one is saying that in itself that relation is perfectly determinate - that for any mental representation R, and for any object x, it is completely determinate how R and x are related. But this is surely not what anyone who holds that representations are vague wants to say. On the other hand, if one believes that this relation is *objectively* vague, then one is countenancing the idea that there is non-epistemic vagueness. So given someone who holds that vagueness is a function of representations' - or, at any rate, of their relations to the world - being indeterminate, that person, in order to be coherent, must either countenance the existence of non-epistemic vagueness or must countenance the idea that representations (and their relations to the world) are always *precise* (but that, presumably, we are ignorant of the nature of these representations or relations). But with regard to thinkers who hold that vagueness is a property of their relations to the world, these thinkers don't seem to countenance *either* of these ideas (*vide* Russell), and are thus guilty of incoherence.

16. Actually, these are necessary but not sufficient conditions. Some third condition would have to be added to avoid Gettier problems.