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## 1. Introduction

Elizabeth Barnes and Robert Williams (this volume) do two main things in their insightful paper.<sup>1</sup> They defend the intelligibility of the idea of metaphysical indeterminacy, and they present a new theory of metaphysical indeterminacy, one which is fully classical and bivalent. Their main project is the second one, but I will also pause for some time on the first. While for the most part talking about *indeterminacy*, I will also compare the more narrow issue of *vagueness*. Keeping the distinction between indeterminacy and vagueness sharply in mind will prove analytically useful at various points.

In sections two through four I will discuss what Barnes and Williams say about the intelligibility of metaphysical indeterminacy, and compare the case of metaphysical vagueness, which Barnes and Williams – separately – have discussed elsewhere. In sections five through seven I will turn to questions regarding the logic of indeterminacy. First I will consider Barnes and Williams' defense of their classical and bivalent approach. Then I will consider the matter of the logic of indeterminacy more generally. What exactly is it we do ask when we ask what the logic of indeterminacy is?

While I suspect that Barnes and Williams are right about the intelligibility of metaphysical indeterminacy, I will stress that the case of vagueness are different. When it comes to the question of the logic of indeterminacy, the claims I make will be more tentative. I am not persuaded by what Barnes and Williams say, but not because I have some other theory at hand which I think is better. My main concern is that they claim some metaphysical advantages for their classical and bivalent theory while I do not see that their classical theory avoids the problems that Barnes and Williams press for alternative views. If, then, one demands of an adequate theory of metaphysical indeterminacy what Barnes and Williams demands, there could be some grounds for worrying about the intelligibility of metaphysical indeterminacy after all.

## 2. Varieties of indeterminacy

By *vagueness* I will mean the phenomenon that paradigmatically rears its head in the sorites paradox. *Indeterminacy* is *prima facie* wider. One can believe that quantum physics provides examples of indeterminacy, or that the 'open' future is a matter of the future being indeterminate, or that the

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<sup>1</sup> When, henceforth, I refer to joint work by Barnes and Williams, that will be the paper I refer to.

continuum hypothesis is indeterminate in truth-value, while emphasizing that in neither case do we have to do with a phenomenon that has anything to do with sorites-susceptibility.

The ‘indeterminacy’ we speak of can in principle be held to be *semantic* (or more, generally: representational), *metaphysical*, or *epistemic*. To say that it is semantic is to say that the indeterminacy in question is a matter of how we represent the world; of the relations between our representations and the world. To say that it is metaphysical is to say that the world in itself, as opposed merely to how we represent it, is indeterminate. To say that it is epistemic is to say that we are dealing with a case where our ignorance is in a certain way principled. One can suspect that ‘epistemic indeterminacy’ is a misnomer, that if what we are dealing with is a case where there is a fact of the matter, only one that we are in principle ignorant of, what we are dealing with is not genuinely *indeterminacy*. For many purposes the question of whether epistemic indeterminacy is indeterminacy can be treated as a merely terminological question. But it will actually be important for a topic that comes up in the next section. For now I will continue to speak of epistemic indeterminacy as indeterminacy.

Of course some indeterminacy can be of some kind while some indeterminacy is of some other kind. And of course something which is indeterminate can in principle be indeterminate in two different ways at the same time.

Another question, apart from the question of the nature of some indeterminacy – metaphysical, representational, or epistemic – is the question of the logic of indeterminacy. Is classical logic the proper logic of an indeterminate language? Or is some ‘deviant’ logic the proper logic? It is again possible to treat different cases of indeterminacy differently. It can be that some forms of indeterminacy conflict with classical logic and others do not. Maybe the open future is best represented one way, and vagueness another. It may be that some forms of indeterminacy are incompatible with classical logic but others are not; it may be that different forms of indeterminacy require different deviations from classical logic. One possibility here is that there is just one logic of indeterminacy; or at least that all semantic indeterminacy has the same sorts of consequences for logic and all metaphysical indeterminacy has the same sorts of consequences. But the truth need not be nearly that neat. (Throughout the discussion I will, for simplicity’s sake, set aside other potential reasons for deviating from classical logic.)

### 3. The intelligibility of metaphysical indeterminacy and metaphysical vagueness

Barnes and Williams spend some time responding to the envisaged worry that metaphysical indeterminacy is *unintelligible*. Maybe they are wise to do so: maybe there is skepticism out there that they need to respond to. But my initial reaction is that while it can reasonably be doubted whether there really *is* any metaphysical indeterminacy, the *intelligibility* of the hypothesis that quantum physics or the open future present us with indeterminacy – and indeterminacy that must be seen as

metaphysical – ought not to be in serious doubt. More specifically, I suspect that the illusion that there is a substantive question concerning the intelligibility of metaphysical indeterminacy stems from not adequately distinguishing between indeterminacy and vagueness. For there is a substantive question concerning the intelligibility of metaphysical vagueness. There is a tradition, one paradigmatic representative of which is Russell (1923), of taking vagueness to be a representational phenomenon as much as ambiguity, polysemy, and context-sensitivity are. On this view, the idea of metaphysical vagueness makes no more sense than metaphysical ambiguity or metaphysical context-sensitivity, even though this may not be as obvious in the case of vagueness as in the other cases.

Even though I am inclined agree with Barnes and Williams concerning the intelligibility of metaphysical indeterminacy, I do have some complaints regarding their reasoning concerning this matter. The reason it is important to discuss this is, as I will shortly get to, that in other work their strategy has been employed in defense of the idea of metaphysical vagueness, and I am more skeptical of that idea.

In outline – and simplified, in a way I will get to – Barnes and Williams’ defense of the intelligibility of metaphysical indeterminacy is this: They argue that we possess a generic notion of indeterminacy. We have conceptions of what it is for something to be semantically indeterminate, and of what it is for something to be epistemically indeterminate. Metaphysical indeterminacy is then just indeterminacy with a metaphysical source, and hence is neither semantic nor epistemic. Perhaps a way to represent Barnes and Williams’ stance is: “What part of metaphysically indeterminate don’t you understand? Surely you understand ‘indeterminate’, for you have a generic notion of indeterminacy. And surely you understand what it is for the source of a phenomenon to be metaphysical.”

But suppose a theorist – BW\* – proposes that the world is *metaphysically ambiguous* (or *metaphysically context-sensitive*, etc.). When, bewildered, we ask what that is supposed to mean, BW\* defends the intelligibility of metaphysical ambiguity by saying that surely we know what it is for something to be ambiguous and surely we know what it is for the source of a phenomenon to be metaphysical. So – what part of metaphysical ambiguity don’t we understand? BW\*’s defense of his idea shouldn’t convince. Why should we be any more convinced by what Barnes and Williams say?

Now, as should be immediately clear from my summary just above, Barnes and Williams do say something that helps distinguish their defense of their view from BW\*’s defense of his. They say that we already have a *generic* notion of indeterminacy, having both a notion of semantic indeterminacy and a notion of epistemic indeterminacy. When it comes to ambiguity, by contrast, we only have a notion of *semantic* ambiguity.

However, if this is supposed to be a telling difference between Barnes and Williams on the one hand and BW\* on the other, it may be relevant to recall that it is far from obvious that the

notion of epistemic indeterminacy is in good standing, or that it is another species of the genus indeterminacy. To be sure, epistemicists writing about vagueness tend to argue that they do not deny that vagueness is bound up with indeterminacy, but rather only understand the indeterminacy to be epistemic in nature, a matter of ignorance. But despite the epistemicists' protests, one may well think that what the epistemicist view really involves is that what we mistake for genuine indeterminacy is merely a certain kind of ignorance. If so, Barnes and Williams aren't better off than BW\* is: in each case we have a phenomenon whose uncontroversial instances are semantic, and someone who claims that the phenomenon also has 'metaphysical' instances.

As I mentioned, my summary above of Barnes and Williams' strategy is somewhat simplified. It is now relevant to reveal the extra complication. Barnes and Williams actually distinguish between *indefiniteness* and *indeterminacy*, when they talk about the epistemic phenomenon they talk of *epistemic indefiniteness* and not *epistemic indeterminacy*. One might attempt to use this to respond to the objection, as follows. They might say that while there may not be epistemic indeterminacy, properly so called, surely there is such a thing as epistemic indefiniteness. The generic notion is that of indefiniteness. When the indefiniteness is semantic or metaphysical rather than epistemic, it is appropriate to describe the indefiniteness as indeterminacy. But one may be forgiven for thinking that the distinction between indefiniteness and indeterminacy is not very natural. Is there really a pretheoretic distinction there?<sup>2</sup>

While I have doubts regarding Barnes and Williams' reasoning, I am on their side as regards the intelligibility of metaphysical indeterminacy. But, as comes out in other work of theirs, both Barnes and Williams also want to defend the notion of metaphysical vagueness. Since their strategy for defending the intelligibility of metaphysical indeterminacy is unsuccessful, that strategy cannot be used to defend the intelligibility of metaphysical vagueness. Moreover, even if their strategy were successful in the case of indeterminacy, there would be room for doubt: for to deploy that strategy in the case of vagueness, they would have to assume that we have a generic notion of vagueness, and that is just what someone in the tradition from Russell would reject.

In work where they do discuss metaphysical vagueness, the reasoning is somewhat different. But the reasoning is problematic for reasons parallel those I have noted in the discussion of indeterminacy. Barnes (forthcoming) suggests that explained as follows, metaphysical vagueness (or, as she puts it, *ontic* vagueness) is intelligible:

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<sup>2</sup> As stressed, Barnes and Williams not only distinguish between indeterminacy and indefiniteness, but insist that we have a *generic* – as opposed to merely disjunctive – notion of indefiniteness. But if we draw an indeterminacy/indefiniteness distinction we should not be lured into thinking that we have a generic, non-disjunctive notion of indefiniteness just because we have a generic, non-disjunctive notion of indeterminacy.

(OV) Sentence S is ontically vague iff were all representational content precisified, there would be an admissible precisification of S such that according to that precisification the sentence would still be non-epistemically indeterminate in a way that is sorites susceptible.<sup>3</sup>

Again comparing the ambiguity-theorist BW\* may be instructive. Suppose that, taking a cue from Barnes, BW\* proceeds to explain metaphysical ambiguity as follows: a sentence S is metaphysically ambiguous iff the sentence is ambiguous, and some ambiguity would remain even after the sentence is fully semantically disambiguated. This characterization is as successful as Barnes' characterization of ontic vagueness is when it comes to responding to the more radical charge of absolute unintelligibility. But of course it is not sufficient to render the idea of metaphysical ambiguity kosher. We may still find it unintelligible how there could possibly be any residual ambiguity when the semantic ambiguity is eliminated.

#### 4. Indeterminacy and vagueness

As already should be clear, Barnes and Williams do distinguish between indeterminacy and vagueness, and in some places even emphasize the distinction. Barnes, as should be clear from above, tries to distinguish vagueness from other indeterminacy by appeal to sorites-susceptibility. And in Williams' (2008) survey article on these topics, one of the useful distinctions stressed is precisely the distinction between indeterminacy and vagueness I have stressed here.<sup>4</sup> But while the distinction is drawn, it is not always properly heeded. When Williams turns to discuss the charge that metaphysical indeterminacy is unintelligible, the authors he refers to for 'paradigmatic dismissals' are Russell (1923), Dummett (1975), David Lewis (1986) and Hud Hudson (2005).<sup>5</sup> But Russell's and Dummett's discussions are squarely focused on the nature of vagueness, and while one may speculate that their opposition to metaphysical vagueness is just a special case of opposition to metaphysical indeterminacy, such speculation receives no direct support from their texts. What Lewis says in the famous passage to which Williams refers is

The only intelligible account of vagueness locates it in our thought and language. The reason it's vague where the outback begins is not that there's this thing, the outback, with imprecise borders; rather there are many things, with different borders, and nobody has been fool enough

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<sup>3</sup> Barnes (forthcoming), ms p. 5f.

<sup>4</sup> Williams (2008), p. 767.

<sup>5</sup> Williams (2008), p. 784n43.

to try to enforce a choice of one of them as the official referent of the word ‘outback’.

Vagueness is semantic indecision.<sup>6</sup>

Lewis speaks of ‘vagueness’, and the example certainly is one of vagueness. What Lewis says would be completely beside the point as directed against the view that the future is indeterminate, or that quantum-physical phenomena demonstrate the existence of indeterminacy.<sup>7</sup>

Now, some worries in the vicinity can seem to concern indeterminacy generally and not only vagueness. Gareth Evans’ famous argument is to the effect that there cannot be any de re indeterminate identities, and Evans thus presents a problem regarding indeterminacy generally, not just regarding vagueness.<sup>8</sup>

Evans’ argument, even if otherwise impeccable, shows only that there cannot be identity statements whose indeterminacy is metaphysical in nature.<sup>9</sup> One obvious – and common – type of response on behalf of the friend of metaphysical indeterminacy is to grant this, but say that there is still metaphysical indeterminacy even if identities cannot be metaphysically indeterminate: for example, it can be metaphysically indeterminate what properties an object has.<sup>10</sup>

I have elsewhere tentatively suggested that Evans’ argument – if sound (and I am not weighing in on its soundness) – can be deployed against the idea of metaphysical vagueness as follows: (P1) Vagueness is everywhere the same kind of phenomenon (e.g., everywhere metaphysical, or everywhere semantic); (P2) By Evans’ argument, in the case of vague identity statements, the vagueness cannot be metaphysical. (C) So, vagueness is never metaphysical.<sup>11</sup> Of course doubts can be raised regarding both premises. I mention the argument here not to defend it. What I do want to stress, though, is that the corresponding argument against metaphysical indeterminacy is a non-starter. Consider: (P1\*) Indeterminacy is everywhere the same kind of phenomenon (e.g., everywhere metaphysical, or everywhere semantic); (P2) By Evans’ argument, in the case of indeterminate

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<sup>6</sup> Lewis (1986), p. 212.

<sup>7</sup> The passage in Hudson that Williams refers to is,

Few things in metaphysics strike me as obvious, but a notable exception is the thesis that ontological vagueness is metaphysically impossible; that is to say, there is no such thing as non-epistemic, non-linguistic indeterminateness with respect to existence or identity. Others are willing to be even more severe in their criticism, by maintaining that ontological vagueness is also unintelligible....But that seems like overkill. (Hudson 2005, p. 11)

One thing that stands out here is that Hudson equivocates between vagueness and indeterminacy.

<sup>8</sup> Evans (1978); see too Lewis (1988).

<sup>9</sup> See Williams (2008a) for critical discussion of the import of Evans’ argument.

<sup>10</sup> In the passage quoted above (fn6), Hudson simply identifies metaphysical indeterminacy with indeterminacy with respect to existence or identity, thus ruling out the possibility I am here describing.

<sup>11</sup> See my (2008). In the paper in question I tentatively defend the argument given, and note that (P2) can be defended by other means than by Evans’ point about identity statements.

identity statements, the indeterminacy cannot be metaphysical. (C) So, indeterminacy is never metaphysical.

(P1), whatever in the end its fate, has a certain plausibility. Vagueness, as we conceive of it here, is a rather special phenomenon, and one may think vagueness everywhere has the same type of explanation. (P1\*), by contrast, seems like a non-starter, given how disparate the purported cases of indeterminacy are.<sup>12</sup>

## 5. The logic of indeterminacy and vagueness

I will now leave questions of intelligibility behind, and turn to Barnes and Williams' specific account of metaphysical indeterminacy, an account according to which metaphysical indeterminacy is fully compatible with classical logic and bivalence. After having brought up some concerns regarding their discussion, I will in later sections broaden the scope and ask more general questions about the project of figuring out what is the 'logic' of indeterminacy.

Barnes and Williams develop a classical framework for the representation of metaphysical indeterminacy; a similar classical framework is also developed in Barnes (forthcoming), explicitly focused on the specific case of vagueness. Since Barnes goes into some more detail as concerns motivation, I will focus on her discussion. She sometimes speaks of 'indeterminacy' in her discussion, so I assume she means what she says to apply to indeterminacy as well as to vagueness.

Here is what Barnes provides by way of motivation for her classical framework.

I find the following characterization of ontic vagueness plausible: when  $p$  is ontically indeterminate, there is not some special state of affairs – the state of affairs of  $p$ 's being indeterminate – which obtains. Rather, there are two possible states of affairs – the state of affairs of things being such that  $p$  and the state of affairs of things being such that not- $p$  – and it's simply indeterminate which of these two states of affairs in fact obtains. Moreover, I think the best (and perhaps the only) way of cashing out this conception of vagueness is from a

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<sup>12</sup> Another well-known problem, highlighted in Sainsbury (1995), genuinely does concern vagueness and indeterminacy equally. Sainsbury discusses the thesis that "there is vagueness in the world" and discusses how to understand that claim. One central proposal is that there is vagueness in the world "iff, for some  $x$ , some object satisfies the predicate:  $\exists z(z \neq x)$ ".<sup>12</sup> Sainsbury goes on to argue that if this is how we conceive of vagueness in the world, also semantic and epistemic theorists of vagueness should agree that there is vagueness in the world, and he takes this to be a reductio of the claim that this is an adequate characterization. He finds more elaborate proposals similarly wanting. It should be obvious that while Sainsbury's explicit topic is *vagueness*, the problem extends to the more general case of indeterminacy. Proper discussion of Sainsbury would however take us too far afield.

classical framework. So I take the two main desiderata of a theory of ontic vagueness to be rejection of third-category conceptions of indeterminacy and preservation of classical logic.<sup>13</sup>

(Below I will turn to how she elaborates the motivation for taking this line.) There is a similar passage in Barnes and Williams:

When  $p$  is metaphysically indeterminate, there are two possible (exhaustive, exclusive) states of affairs—the state of affairs that  $p$  and the state of affairs that not- $p$ —and it is simply unsettled which in fact obtains. No further explanation is possible or needed. A primitivist about indeterminacy might take a different line: claiming that there is a tripartite (exhaustive, exclusive) division amongst states of affairs: the state of affairs that  $p$ , the state of affairs that  $\neg p$ , and, incompatible with either, the state of affairs of  $p$  being indeterminate. This is not the conception to be pursued here, and leads to quite different pictures of primitive indeterminacy.<sup>14</sup>

Barnes and Williams go on to say that the upshot of accepting this picture is a “fully non-revisionary, bivalent account of vague language”.<sup>15</sup> Some remarks are in order:

First, note that on one straightforward view, it is simply *trivial* that for all  $p$ , if it is the case that  $p$ , then there is such a state of affairs as the state of affairs that  $p$ . Barnes and Williams must reject this view. To see this, just substitute something of the form “it is indeterminate whether...” for  $p$ .

Second, even if we accept that indeterminacy is ‘not a special state of affairs’, it is not clear that we should be in favor of classical logic and bivalence. Suppose we say there are just the two states of affairs,  $p$  and not- $p$ . We can still go on to say that “it is indeterminate whether  $p$ ” is true when neither the state of affairs which would make  $p$  true nor the state of affairs which would make not- $p$  true obtains. (Perhaps it is relevant here that some who think there is a third status, incompatible with truth and falsity, conceive of this status as ‘gap’ rather than as a third truth-value.)

Third, not only is saying that indeterminacy is not a special state of affairs not sufficient to motivate a classical framework, one may wonder how it even is suppose to be *relevant* to the decision to represent it as an operator in a classical framework. Consider other operators: possibility and necessity operators; probability operators; various epistemic and deontic operators; etc. In each of these cases we might understand what is represented as a special state of affairs. We can think that there are such states of affairs as that of it being possible that  $p$ , it being probable that  $p$ , it being

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<sup>13</sup> Barnes (forthcoming), ms p. 16.

<sup>14</sup> Barnes and Williams, ms p. 9.

<sup>15</sup> Barnes and Williams, ms p. 10.



knowable that *p*, etc., all separate from *p*. Of course these states of affairs are not incompatible with adherence to a classical framework. Similarly, one can think that always exactly one of the state of affairs that *p* and the state of affairs that not-*p* obtains, while thinking the state of affairs that it is indeterminate that *p* can *also* obtain.

Note that Barnes and Williams in the passage quoted above only compare two views. One is that there's no such possible state of affairs as it being indeterminate whether *p*; the other is that there is such a state of affairs and it is incompatible with both *p* and not-*p*. They omit discussion of a third alternative: there is such a state of affairs, but it isn't incompatible with either *p* or not-*p*. The third alternative might sound odd: if there is such a state of affairs as *p*, how can it also be indeterminate whether *p*? But this oddity is shared by conjunctions of the form "*p* and it is indeterminate whether *p*", and Barnes and Williams are committed to the truth of some such conjunctions.

Barnes explicitly refers to Crispin Wright's work when motivating what she says:

Wright's worry, levelled against those theories that construe indeterminacy as some special, distinct category lying 'between' truth and falsity is in essence this: if we carve out a special category for indeterminacy, then we seem to have lost the notion of indeterminacy as things not quite being 'settled' between different options. If there's a unique way for things to be when *p* is indeterminate then indeterminacy with respect to *p* is no longer unsettledness between *p* obtaining and not-*p* obtaining; rather it's just some state of affairs (which we've decided to label 'indeterminately *p*') obtaining, just in the same way that *p* would obtain or not-*p* would obtain. But that seems wrong. Intuitively, *p*'s indeterminacy shouldn't just be another way things could be – a third option between *p* and not-*p*. *p*'s indeterminacy should be things being somehow unsettled between *p* and not-*p*.<sup>16</sup>

There is something intuitively quite compelling about this. But, first, I think that once we speak of indeterminacy this carefully, not all that we might otherwise speak of as indeterminacy falls under that heading. For example, when, or insofar as, I conceive of the future as unsettled, I conceive of it as not being the case that *p* and not being the case that not-*p* but that it will be the case that *p* or it will be the case that non-*p*, for some proposition *p* about the future. But if this is how to think of unsettledness here, the unsettledness is not a matter of indeterminacy.<sup>17</sup>

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<sup>16</sup> Barnes (forthcoming), ms p. 17f.

<sup>17</sup> Or, to be more cautious: What I fundamentally object to is the conjunction of two claims: (a) the unsettledness of the future (on the open future hypothesis) is a matter of indeterminacy; (b) indeterminacy is to be understood as Barnes in the passage quoted above understands it, following Wright. In the text, I subscribe to (b), rejecting (a). If someone were to object that the hypothesis that the future is open plainly is the

What is more, even if one agrees with Barnes that the sort of ‘third-status’ conception she criticizes fails to capture the phenomenon of indeterminacy, one might well be skeptical about the inferred claim that a classical and bivalent account is *better*. Compare again the case of vagueness. It is familiar that introducing extra truth-statuses does nothing on its own to capture the phenomenon of vagueness. Saying that a vague predicate effects a tripartite division (true/false/other) as opposed to a bipartite one (true/false) is by itself no advance. But then to argue that a bipartite theory *does* suffice to capture the phenomenon of vagueness is very much a further step.

In connection with this, let me bring out a central aspect of Barnes and Williams’ theory that I have not yet touched upon. They propose a ‘modal’ framework of metaphysical indeterminacy. They speak of worlds that are ‘precisificationally possible’, and say that a sentence is determinately true (false) if and only if it is true (false) in all precisificationally possible worlds. But a very natural reaction is to say that if it is the case that *p*, then no world in which it is the case that not-*p* is precisificationally possible: a world *w* is, so to speak, a precisification of our world only if *w* is in no way in conflict with our world. I think it is clear how Barnes and Williams would respond to this worry. They would insist that it is only if it is *determinately* the case that *p* that no world in which it is the case that not-*P* is precisificationally possible. But is there really any recognizable sense in which it can be the case that *p* while in a world that precisifies ours it is not the case that *p*? I will return to this in the next section.

If neither a many-valued nor a classical semantics can serve capture metaphysical indeterminacy, one might worry, again, that metaphysical indeterminacy is not properly intelligible: no framework can make sense of it. A few quick remarks on this worry are in order. First, to stress, I would not take the above remarks to demonstrate that in neither a classical nor in a many-valued framework can indeterminacy be properly represented. At most what has been shown is that indeterminacy is not straightforwardly representable in either framework. Second, the problems, such as they are, are really not peculiar to *metaphysical* indeterminacy. One can raise the same sorts of worries with respect to aims to capture *semantic* indeterminacy. Third, even if no theory can fully respect all elements in our conception of indeterminacy, a theory can still be *good enough* to count as representing indeterminacy.

Barnes also adduces, again following Wright, the following reason for adopting the proposed conception of indeterminacy:

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hypothesis that the future is (as yet) indeterminate, I could be concessive, saying that we have here a use of ‘indeterminate’ not covered by the Barnes-Wright claim.

Positing a distinct state of affairs for indeterminate-p would lose grip on this basic notion of unsettledness, and immediately invite regress. Thus a bivalent semantics – one which can sidestep such ‘third-category’ worries – seems highly desirable.<sup>18</sup>

But, first, about the unsettledness: even given classical logic and bivalence, as on the theory developed in Barnes’ paper and in Barnes and Williams, we do of course still get *some* sort of division into three categories: determinately p; determinately not-p; neither determinately-p nor determinately-not-p. This is not the *same* division as p; not-p; indeterminate. But does the difference matter? It depends on just how we think of the categories, and what the threats are which Barnes mentions.

What Wright says in relevant work is

It is quite unsatisfactory in general to represent indeterminacy as any kind of determinate truth-status—any kind of middle situation, contrasting with both the poles (truth and falsity)—since one cannot thereby do justice to the absolutely basic datum that in general borderline cases come across as hard cases: as cases where we are baffled to choose between conflicting verdicts about which polar verdict applies, rather than as cases which we recognise as enjoying a status inconsistent with both. Sure, sometimes people may non-interactively agree...that a shade of color, say, is indeterminate....; but more often—and more basically—the indeterminacy will be initially manifest not in (relatively confident) verdicts of indeterminacy but in (hesitant) differences of opinion (either between subjects at a given time or within a single subject’s opinions at different times) about a polar verdict, which we have no idea how to settle—and which, therefore, we do not recognise as wrong.<sup>19</sup>

Wright’s example is one of vagueness, and what Wright calls a “basic datum” seems most plausible in cases of vagueness. Open future cases, to use that example again, do not come across as hard cases where we are baffled to choose between polar verdicts, truth and falsity.

As Wright recognizes, his characterization of indeterminacy is basically *epistemic* in nature. He later stresses that borderline claims should not be described as claims which are neither definitely true nor definitely false, but rather as cases where there is *no justification* for the claim that they are definitely true nor definitely false.<sup>20</sup> This goes well with Wright’s own opposition to a third-status conception. But to characterize the indeterminacy associated with for example open future cases in these epistemic terms should seem odd: surely to think of the future as open is to think of it as

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<sup>18</sup> Barnes (forthcoming), ms p. 18.

<sup>19</sup> Wright (2001), p. 70.

<sup>20</sup> Wright (2001), p. 91.

genuinely unsettled. Generally, Wright's specific picture seems hard to reconcile with a metaphysical conception of indeterminacy.

It is natural to think that Wright, whose primary concern is vagueness, is drawn to reject the third-status idea because of concerns regarding higher-order vagueness. If we understand vagueness as inducing a third class, we will have to take it also to induce a fourth and fifth class, for the boundaries between the three classes will themselves be vague; but then it will also induce a sixth, seventh, eighth and ninth class for the same reason, etc. For if there is reason to doubt that 'bald man' induces a sharp cutoff between two exclusive and exhaustive classes, the men it is true of and the men it false of, there is equally reason to doubt that it induces a sharp cutoff between three exclusive and exhaustive classes, the men it is true of, the men that it is 'neuter' of, and the men it is false of, etc. This, it seems, is the kind of regress Barnes refers to in the above passage. But this reason for rejecting a third-status conception does not carry over to other cases of indeterminacy. There is for example no reason to think that postulating that the future is indeterminate should have that sort of consequence. (Perhaps it will also be indeterminate what is future: for perhaps it is indeterminate just what is present. But there is no reason to think that there are *further* iterations.)

What Barnes alludes to when she talks about a regress must be this sort of situation. If the reasoning is more persuasive in the case of vagueness than when it comes to other kinds of indeterminacy, her argument does not seem sufficiently general. Generally, Barnes and Williams' classical and bivalent theory of metaphysical indeterminacy are best motivated by considerations having to do with vagueness. But as discussed above, the idea of metaphysical vagueness may well fail to be in good standing even if the idea of metaphysical indeterminacy is in good standing.

## 6. Metaconsiderations

Barnes and Williams say that their framework is classical and bivalent. Taking them at their word, we arrive at points like those made above. They are committed to the truth of some sentences of the form "p and it is indeterminate whether p", and to it being the case that p while in some precisificationally possible world it is the case that not-p. But what exactly do they mean when saying their framework is classical and bivalent? First: in all precisificationally possible worlds, "p or not p" comes out true, so, determinately, it is the case that p or not p. This is said to be sufficient for excluded middle. Second, given the supposed equivalence of "p" and "True(p)" and of "not p" and "False(p)", "True(p) or False(p)" likewise comes out true in all precisificationally possible worlds. This is said to be sufficient for bivalence.<sup>21</sup>

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<sup>21</sup> Barnes (forthcoming), ms p. 16.

Much of this should be familiar from the literature on supervaluationism.<sup>22</sup> Traditional supervaluationism upholds excluded middle, on the ground that under each precisification of a sentence *S*, “*S* or not *S*” is true, but rejects bivalence, identifying truth as truth under all precisifications. But there are variants of supervaluationism under which it is taken as given that *S* and “*S* is true” are materially equivalent (and correspondingly for falsity). Under such versions of supervaluationism, all instances of “*S* is true or ‘*S*’ is false” are true under all precisifications.<sup>23</sup> These latter versions of supervaluationism tend also to employ a notion of *determinate* truth, such that determinate truth is identified as truth under all precisifications. Barnes and Williams defense of bivalence exactly parallels the latter form of supervaluationism.

It is natural to think that the difference between the two forms of supervaluationism are not very substantive. After all, given the range of precisifications, one can easily introduce one ‘truth’-predicate such that it applies to a sentence only if the sentence is true under all precisifications, and another ‘truth’ predicate which satisfies a principle of bivalence. What, of any substance, hinges on which of these predicates we say is the real truth predicate?

Relatedly, compare the traditional version of supervaluationism with a more straightforward three-valued logic. Of course, given the precisifications, one can have connectives which work the way the supervaluationist says the connectives work, with disjunctions being true without either disjunct being so, etc. But equally clearly one can consistently say both that there are all these precisifications and that the semantics for the logical connectives is precisification-insensitive, and instead obeys, say, the strong Kleene scheme. Here too one may want to say that the nothing much hinges on what we say, so long as we are not confused about the semantics of the expressions we use. The differences between the theories only show up in complex sentences. A proponent of one of the theories ought easily to be able to accept that expressions working like those postulated by another theory are possible. Why should a confirmed friend of a straightforward system of many-valued logic not accept that there are possible expressions which obey the laws of supervaluationism? Why should a confirmed supervaluationist of the traditional variety not accept that there could – liar-related problems aside – be a predicate satisfying the T-schema?

One possible lesson of the above considerations is that the metaphysical picture of Barnes and Williams, even if accepted, does not force classical logic and bivalence upon us. A three-valued, non-classical picture can be equally appropriate. What Barnes and Williams seem to want to say, in passages like those quoted in the previous section, is that only a classical framework captures the unsettledness involved in genuine indeterminacy. But what I have just suggested is that the three-valued logician can respond by saying that she accepts that some sentences are true in all

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<sup>22</sup> See Fine (1975).

<sup>23</sup> See McGee and McLaughlin (1994).

precisificational possible worlds, some are true in some of them, and some are true in none: it is just that she represents this differently – employing a different tripartite division – than Barnes and Williams.

In fact, here is a hypothesis worth considering. Barnes and Williams are essentially right about the *underlying metaphysics*. But nothing decides between a semantic theory according to which our language is classical and the truth predicate of our language is bivalent and a semantic theory according to which our language is not classical and the truth predicate of our language is not bivalent. We have here a kind of semantic indeterminacy. That is to say, it is semantically indeterminate how ontological indeterminacy is to be represented.<sup>24</sup>

Even if this particular piece of speculation should turn out not to be promising, one might suggest the following: Once we have accepted that the metaphysic is what Barnes and Williams say it is – if, that is, we should accept it – we have accepted everything that *matters*. Consistently with this metaphysic there are languages which are classical and whose truth predicates are bivalent and where indeterminacy is represented along the lines of Barnes and Williams' proposal, and there are languages which are non-classical and whose truth predicates are not bivalent, and these languages are equally apt for capturing what the world is like, including how the world is indeterminate. Attention to facts about natural language may then decide what *our* language is like. But that is a mere empirical question.

Generally, what is it to investigate what is the right logic of indeterminacy? What sort of question is it that we are concerned with? And this question is in turn just a specific version of the question: what is to investigate what is the right logic? One kind of answer to this question is a *deflationary* answer, one according to which (a) there are different languages with different logics, and (b) the only questions concerning what is the right logic concern what is the logic of our actual language and what sort of language, and the practical usefulness of (languages with) different logics.<sup>25</sup>

Even should such a deflationary attitude be correct, one certainly need not regard Barnes and Williams' investigation into the logic of indeterminacy as pointless. What the deflationist must be seen as affirming in (a) is that there is a multitude of languages *all equally apt for expressing what the world is like*. Compare perhaps: an intuitionist who holds that one cannot reason classically about infinite domains may well agree that a classical language is perfectly all right so long as we are only reasoning about what is decidable. She thereby believes in different languages with different logics, but only in an irrelevant sense. We should understand (a) as qualified in the way indicated. Given this understanding of (a), one can reasonably worry that classical languages are all right only so long as we

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<sup>24</sup> Recall too the suggestion from above, that no framework can fully respect the intuitive conception of indeterminacy. If that suggestion is right, then it is quite natural if there are some quite disparate frameworks which each do a 'least poor' job of respecting this conception.

<sup>25</sup> For discussion of this kind of deflationism in the philosophy of logic, see my (forthcoming).

are reasoning about determinate matters. Barnes and Williams, developing a classical framework within which one can represent indeterminacy, can be seen as responding to that worry. Note that to achieve that particular aim, Barnes and Williams need not argue either that our language is in fact classical, or that classical languages have any theoretical advantages over non-classical ones.

Of course, the deflationary conception of the question of what is the right logic is not the only one; nor is it the only one for the friend of a classical framework for the representation of indeterminacy. It is possible to hold that a classical framework is the *only* one where indeterminacy can get a proper representation. (Of course there are other problems one may have with classical logic, and other reasons a language can fail to be classical. I am here merely speaking about the representation of metaphysical indeterminacy.)

There are also other possible conceptions of the question of which logic is the right logic. In recent years, it has become fashionable to speak of ‘fundamental’ languages, the expressions of which ‘carve reality at the joints’.<sup>26</sup> Part of the idea is that a fundamental language should in some sense be complete. It should, in some sense, be possible to state the complete true theory of the world – the ‘book of the world’, as Ted Sider puts it – in the fundamental language. (“In some sense”: it may not be statable in a fundamental language what the non-fundamental facts are.) Suppose we take this idea of fundamental languages on board. Then one can raise the question: what is the logic of the fundamental language? Once the idea of fundamentality is introduced, another layer of complexity is added to the question of metaphysical indeterminacy. Is the indeterminacy supposed to be a fundamental or a non-fundamental feature of the world?<sup>27</sup> If we are interested in the fundamental language, the question arises how metaphysical indeterminacy is represented in the fundamental language, and whether the fundamental language can (or perhaps, must) be classical while capable of representing metaphysical indeterminacy.

## 7. Fuzzy logic

When evaluating Barnes and Williams’ classicist conception of metaphysical indeterminacy – and the different ways in which one might take their classicism – it may be useful to compare what others

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<sup>26</sup> See, for example, Sider (2009) and (forthcoming), as well as Cameron (forthcoming)

<sup>27</sup> Barnes and Williams allude to this issue, sometimes speaking of metaphysical indeterminacy as fundamental. But they do not much elaborate.

In fact, there are two subtly different questions concerning indeterminacy and fundamentality. One is whether metaphysical indeterminacy is a fundamental notion, one employed in the fundamental language. Another question is whether sentences of the fundamental language can be indeterminate, and indeterminate due to the world and not representations thereof. (One possibility is that metaphysical indeterminacy is not itself a fundamental notion, and so is not a notion employed in the fundamental language, but in a language that can talk about metaphysical indeterminacy, sentences of the fundamental language can be truly described as indeterminate due to metaphysical reasons.)

have said about logic and indeterminacy. I will close by considering Gideon Rosen and Nicholas Smith (2004) association of fuzzy logic with the idea of metaphysical indeterminacy or vagueness:

...if we think the fuzzy view is the correct semantic theory for vague language, we think that if we use a vague predicate we refer to a particular relation which is inherently vague; and if we think the supervaluationist view is correct, we think that when we use a vague predicate, we do not refer to a particular relation, but all the candidate relations we simultaneously refer to are inherently precise. So if the fuzzy view is correct, there exist vague properties and relations alongside the precise ones. And this is already one sort of metaphysical vagueness.<sup>28</sup>

When Rosen and Smith talk of ‘one sort of metaphysical vagueness’, that is because they later turn to how to make sense of the idea of vague *objects*. It is actually not clear to me on what ground they take the existence of vague properties and relations to be relatively unproblematic, and the existence of vague objects to be more problematic. Why exactly is the situation not symmetric? If we start from the premise that a given sentence ‘F(a)’ has a fuzzy truth-value, between 0 and 1, we don’t have anything that tells us either that what ‘F’ stands for is vague or that what ‘a’ stands for is vague.

According to Rosen and Smith, to think fuzzy logic is correct for vagueness is to be committed to metaphysical vagueness. While they focus on fuzzy logic, it is clear from some of their remarks that they would say the same thing about appeal to three-valued, and generally many-valued logic.<sup>29</sup> They seem to think that it is necessary and sufficient for the thesis of metaphysical vagueness to be true that a deviant logic of the appropriate sort is the logic of vague language. If Barnes and Williams are right, the necessity claim is false. Let me here make a few remarks on the sufficiency claim.

Here is an immediate objection to the sufficiency claim. Even if the world is fully determinate, surely we can artificially introduce expressions with a fuzzy semantics, assuming it is at all intelligible what it is for a sentence to have a truth-value on a continuum of truth-values. I can say: Let someone be tall\* to degree 1 iff at least 190 cm, to degree 0 if no more than 180 cm, and for those in between, let them be tall\* to degree  $(l-180)/10$ , where  $l$  is their length. Assuming the idea of fuzzy truth-values makes sense at all, what is to prevent this introduction of the predicate ‘tall\*’ from being successful?

A different, more theoretical objection to the sufficiency claim is the following. One can motivate a fuzzy approach to vagueness by appeal to a correspondence theory of truth, and by

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<sup>28</sup> Rosen and Smith (2004), p. 186. Williamson (2005) expresses the same sort of view on fuzzy logic as that of Rosen and Smith.

<sup>29</sup> Rosen and Smith (2004), p. 189fn6.



comparison to how, say, 'realistic' paintings represent reality. If I paint a cloudy sky, and what I paint represents pretty well what the sky looks like, but the shapes of the clouds are a little bit off, and the color of the clouds is a little bit off, one can think that my painting is not absolutely accurate but accurate *to a high degree*. Saying that sentences can have truth-values on a continuum can be seen as a generalization of this. But if this is how a fuzzy approach is motivated, there is no connection between the fuzzy approach and metaphysical vagueness. That my painting is accurate to some degree but not absolutely doesn't indicate that the sky I paint is vague. It can rather simply be a matter of deficiency in my representation. Rosen and Smith do not say anything which serves to respond to this kind of objection.

The objection I raise, if good, generalizes beyond the case of fuzzy logic to any deviant logic which may be held to characterize metaphysical indeterminacy. But in another way, the objection has limited application. Even if correct as far as it goes, the objection does nothing to tell against the idea that there is a distinct way in which metaphysical indeterminacy is represented in our language. Maybe, as a matter of natural language semantics, fuzzy logic characterizes metaphysical indeterminacy and supervaluationism characterizes semantic indeterminacy. All that the objection aims to show is that we cannot work backwards from logic to metaphysics. One cannot draw conclusions about metaphysical indeterminacy solely on the basis of the kinds of logico-linguistic considerations Rosen and Smith make use of.

There may be a temptation to respond to my objection to Rosen and Smith by saying that underlying it is the idea that we can compare our conceptualizations to reality with unconceptualized reality; that we can adopt a God's eye point of view; etc. Once we have abandoned this idea, the thought would be, we can only make sense of the debate over whether reality is vague by understanding it as a logico-linguistic debate, over what type of semantics is correct.

I will not even attempt to make further sense of the objection, of the talk of a God's eye point of view and its supposed problem. I think the objection is mistaken for reasons independent of unclarity how to resolve the unclarity. First, even if the premise of the objection is accepted, the conclusion needn't be that the question of the vagueness of reality should be understood as logico-linguistic. The conclusion might rather be that we should abandon the question of the vagueness of reality and instead concern ourselves with tractable logico-linguistic questions. Second, more importantly, even granted the business about the God's eye point of view, there is still the possibility that we can speak of reality using languages with different logics. What should someone defending the Rosen and Smith line by appeal to the impossibility of a God's eye point of view say about that? One possibility is a relativist-sounding thesis: that the question of reality's vagueness is answered different from within different 'conceptual schemes'. Even regardless of what objections there may

be to such theses, this kind of relativism is a far cry from a straightforward defense of the idea of metaphysical vagueness.

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