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# Vagueness and Propositional Content

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# VAGUENESS AND PROPOSITIONAL CONTENT

by

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A dissertation submitted to the  
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This thesis entitled:

*Vagueness and Propositional Content*

written by Benjamin Wayne Rohrs

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The final copy of this thesis has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

## ABSTRACT

Rohrs, Benjamin Wayne (Ph.D., Department of Philosophy)  
*Vagueness and Propositional Content*

Thesis directed by Professor Graeme Forbes.

This dissertation investigates the propositional content of vague sentences. It is a study in analytic metaphysics and analytic philosophy of language. A standard view in those sub-fields is that the content of a sentence is the proposition it expresses. For example, the English sentence ‘Snow is white’ and the German sentence ‘Schnee ist weiss’ have the same content because each expresses the proposition *that snow is white*. It is also standard to assume that propositions are bivalent, which is to say that any proposition P is either true or false in every possible case. However, these assumptions are called into question when we consider the phenomenon of vagueness. Sentences such as, ‘John is an adult’, ‘Johanna is tall’, and ‘This avocado is ripe’, admit of borderline cases in which they are neither clearly true nor clearly false.

The question of the content of vague sentences has not received sufficient attention. The literature on vagueness has largely preferred to work with the sentences of vague languages, setting aside the question of their contents, while the literature on propositional content has largely preferred to bracket off questions of vagueness for later stages of theorizing. I draw upon both bodies of work to construct and evaluate several accounts of the content of vague sentences.

Ch. 1 lays groundwork in the metaphysics of vagueness. I clarify and refine the taxonomy of views on the nature of vagueness, which are the epistemic, linguistic, and ontological views of the phenomenon. Ch. 2 considers prospects for a supervaluationist account of the content of vague sentences, which would accommodate borderline cases with standard bivalent propositions. I conclude that these prospects are dim. Ch. 3 argues for an account of the content of vague sentences as Fregean propositions that are not bivalent. These propositions are highly non-standard, but I argue that the account has significant theoretical advantages over epistemicist and supervaluational alternatives. Ch. 4 compares my preferred account to Russellian alternates constructed from three recent Russellian theories of propositions. I argue that my account is preferable.

## DEDICATION

For my teachers; I have learned from many.

And especially for those who taught me about Frege's distinction between *Sinn* and *Bedeutung*:

Gregg Ten Elshof, Tomis Kapitan, and Graeme Forbes.

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## CHAPTER 1

### *On the Distinction Between the Epistemic, Linguistic, and Ontic Views of Vagueness*

The sorites paradox presents us with the phenomenon of vagueness. The following argument schema is one way to state the paradox:

- P1. 10,000 grains of sand constitute a heap.
- P2. If 10,000 grains of sand constitute a heap, then 9,999 grains of sand constitute a heap.
- P3. If 9,999 grains of sand constitute a heap, then 9,998 grains of sand constitute a heap.
- ...
- P<sub>n</sub>. If 3 grains of sand constitute a heap, then 2 grains of sand constitute a heap.
- C. Therefore, 2 grains of sand constitute a heap.

Using only the principle of *modus ponens*, we can validly deduce the conclusion, (C), from the premises. And the initial premises seem quite plausible. But the conclusion is surely false.

Rejecting the argument seems to require the rejection of some particular premise, but any choice of a premise to reject seems arbitrary. The sorites paradox presents the phenomenon of borderline cases. Some collections of sand are clearly heaps, others are clearly not heaps, and then there are the borderline cases—objects that are neither clearly heaps nor clearly non-heaps. In these borderline cases, it is vague whether the object at hand is a heap. It turns out that most terms in natural languages are vague; ‘red’, ‘bald’, ‘table’, ‘run’, and ‘adult’ are some paradigmatic examples in English.

Vagueness presents philosophers with several interrelated tasks. These include resolving the sorites paradox, providing an account of valid reasoning in a vague language, and developing a semantic theory for vague languages. Another related task is to say what vagueness is, or to explain the *nature* of vagueness. Stephen Schiffer (2010: 109) provides two desiderata for a view

of the nature of vagueness: “saying [1] what kinds of things can be vague and [2] in what the vagueness of each kind consists.” So a view on the nature of vagueness should tell us, for example, [1] whether vagueness is properly predicated of the term ‘red’, or of the property *redness*, or of both, or of neither. A view on the nature of vagueness should go on to tell us [2] what it is for any of these things to be vague.

There is a rough and ready taxonomy of views on the nature of vagueness that has become standard in the recent literature on the topic. According to that taxonomy, there are three views: the epistemic view, the ontic view, and the linguistic view. There is agreement about what these views amount to in broadest outline. These views on the nature of vagueness are interesting in their own right, and they are useful for other tasks related to vagueness. If one is convinced that one of these views is correct, one can assume that view for work on other vagueness-related tasks, such as identifying the correct semantics and logic for vague languages. Or one could work on those other tasks in order to see which view on the nature of vagueness one ends up with. Or, if one of these views is particularly off-putting, one could seek to avoid it while doing related work on vagueness, such as resolving the sorites paradox.

Agreement about the outlines of these three views gives way to disagreement about their details. There is disagreement about which semantics and which logics the views are committed to. There is disagreement about how to define the views. There is even disagreement about whether the three views are mutually exclusive. It has been argued that the linguistic view is a species of the ontic view, and it has been argued that the ontic view collapses into the linguistic view.<sup>1</sup> This disagreement can be seen as a challenge to the utility of the standard taxonomy. If the views that comprise the standard taxonomy are not clearly defined, or if their implications are

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<sup>1</sup> See §§3-4 below.

unknown, or if they are not mutually exclusive, then the taxonomy becomes less useful for its various applications to philosophical problems related to vagueness.

This paper sharpens and defends the standard taxonomy of views on the nature of vagueness. It is argued that, when properly understood, the views that make up the standard taxonomy are individually intelligible and substantive, and that they are mutually exclusive. Along the way, the logical and semantic commitments of the views are clarified. The proposed understanding of the taxonomy should prove useful for adjudicating the debate between these views, and it should prove useful as well for a range of other vagueness-related applications.

The paper proceeds as follows. §§1-5 answer challenges to the standard taxonomy and refine that taxonomy accordingly. Answers to initial challenges are used to sharpen the taxonomy, and the sharpened taxonomy is presented at the end of §3. §6 clarifies the commitments of the three views on the nature of vagueness.

Before moving on, we present the rough and ready taxonomy. Here is a working version:

- The epistemic view is the view that vagueness is ignorance.
- The ontic view is the view that there is vagueness in the world.
- The linguistic view is the view that vagueness is in language.

The standard gloss on these views is as follows. A prominent version of the linguistic view is summarized in this pithy statement from David Lewis:

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 to try to enforce a choice of one of them as the official referent of the word 'outback'. Vagueness is semantic indecision. (1986: 213)

The core idea is that vagueness is a property of language, not of the world. There are not vague objects, properties, or relations in the world. Rather, we use vague terms to refer to the non-

vague entities in the world. There may be no fact of the matter as to where the outback begins or ends, but this is because language fails to specify which fact we are looking for. The application-conditions of some terms are not fully determinate, but this does not entail that the world itself is indeterminate.

The standard gloss of the ontic view is that vagueness in the world amounts to the existence of vague objects. Vagueness is not merely a feature of how we talk and think about things—it is a feature of the things themselves. The linguistic theorist holds that ‘the outback’ is vague; the ontic theorist holds that the outback is vague. If there is no fact of the matter as to where the outback begins and ends, this may be due to a worldly under-determination of the facts, not merely to linguistic under-determination of which fact we are looking for. As seen in the Lewis quotation above, the ontic view has been called unintelligible.<sup>2</sup> This charge usually centers on the intelligibility of the notion of vague objects.

The standard gloss of the epistemic view is that vagueness is not indeterminacy in our language, and is not indeterminacy in the world itself, but is our ignorance of determinate features of language and of the world. We take Williamson’s (1994) view to be the paradigm of the epistemic view. That view predicts that ‘the outback’ precisely denotes the outback and that the outback has precise boundaries, though it is impossible to know where the outback begins and ends. Williamson holds that vague terms create sharp cut-offs that are unknowable. We cannot know where these sharp cut-offs lie because the meanings of vague terms are “unstable” (231). Williamson argues that knowledge requires a margin for error and that borderline cases do not allow us the requisite margin. If Harry is a borderline case of baldness, for example, then Harry is either bald or not bald, but I cannot know which. Even if Harry is in fact bald, and I come to believe that he is, my belief does not count as knowledge because I could have easily

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<sup>2</sup> Dummett (1975) is another example.

been wrong. Had usage of ‘bald’ been slightly different, Harry would not have counted as bald. But I would have failed to notice this miniscule change in the communal usage of the term, so I would have mistakenly believed Harry to be bald. The meaning of bald is “unstable,” and this instability deprives me of the margin for error that knowledge requires.<sup>3</sup> On Williamson’s view, vagueness never produces the result that there is no fact of the matter, but in borderline cases it produces the result that we cannot know the facts of the matter. Classical logic, including bivalence, is universally valid, and classical semantics is in no need of repair—every predicate either determinately applies or determinately does not apply to every object.

*§1: First Challenge: ‘There Are Vague Objects’*

Here is a first problem for the standard taxonomy. It is a problem for defining the ontic view and for distinguishing the commitments of the ontic view from those of the epistemic view. The slogan for the ontic view is that there is vagueness in the world. Many philosophers take this slogan to be equivalent to the claim that there are vague objects, or they at least take it to be the case that commitment to vagueness in the world commits one to the existence of vague objects.<sup>4</sup> The trouble is that Williamson’s theory also predicts that there are vague objects, and we do not wish to classify Williamson’s theory as a version of the ontic view—his theory is the paradigm of the epistemic view.

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<sup>3</sup> The reader may suspect that Williamson would be better served to appeal to a counterfactual about Harry’s hair pattern being slightly different, rather than to this counterfactual about usage. Williamson (1994, esp. §7.4 and §8.4) thinks the counterfactual about usage explains the sort of ignorance that is unique to vagueness, including the reason that we cannot know a truth expressed by a sentence of the form ‘anyone with measurements *m* is thin’. According to Williamson, if any proposition expressed by a sentence of that form is true, then it is necessarily true. He argues that the only counterfactual that explains why we cannot have the requisite margin for error with respect to such a case is a counterfactual about variation in the communal use, and hence the meaning, of ‘thin’.

<sup>4</sup> Sainsbury (1994) seems to be an example of this, though he does consider whether the ontic view can be formulated in terms of vague properties.

Williamson affirms that the Thames exists and that it is vague whether the Thames is more than 209 miles long. An object with a vague boundary seems to qualify as a vague object, so it seems that Williamson can affirm that there are vague objects. Says Williamson,

Suppose that it is unclear whether the river Thames is more than 209 miles long, because it is unclear where exactly it meets the sea. The epistemic view of vagueness is consistent with the commonsense view that many people have seen and heard about the Thames, know which river it is, and sometimes think *de re* about it. From the supposition and those views it follows that it is unclear of the Thames whether it is more than 209 miles long. ... Since the phrase ‘more than 209 miles long’ has no relevant vagueness, in a modest sense the Thames itself is vague. This view is to be contrasted with one on which the expression ‘the Thames’ is indeterminate in reference between a number of precisely defined stretches of water. (1994: 263)

Williamson holds that, “in a modest sense the Thames itself is vague.” And he denies that the vagueness of the Thames’ length is explained by indecision about the application of the term, ‘the Thames’. Thus, it will not do to define the ontic view as the view that there are vague objects—Williamson agrees that there are vague objects.

We seek a way to define the ontic view such that it is clearly distinct from the epistemic view. Stephen Schiffer (2010: 109) makes a useful distinction between two tasks required of views on the nature of vagueness: “saying [1] what kinds of things can be vague and [2] in what the vagueness of each kind consists.” It turns out that Williamson and the ontic theorist disagree about [2]—they disagree about what the vagueness of a vague object consists in. Understanding that disagreement allows us to understand why Williamson and the ontic theorist might seem to agree about [1]—both are willing to assert, ‘there are vague objects’, but they would mean different things by those homophonic assertions.

When Williamson says the Thames is vague, he means that we are ignorant about its boundary. On his view, a vague boundary is a precise but unknowable boundary. Hence, the Thames has a determinate length and a determinate boundary, but we cannot know where the

boundary lies. In contrast, if the ontic theorist says the Thames itself is vague, she means that the Thames is an object that is metaphysically indeterminate in some respect. The ontic theorist has a few options for cashing out the notion of an indeterminate object; we consider several of these in the next section. In the case of the Thames, the likely explanation is that the Thames is an indeterminate object in the sense that it is an object that has an indeterminate spatial boundary. An indeterminate boundary is something to which Williamson, and the epistemic view generally, cannot agree. This reveals the difference between the two views on the question of vague objects. According to the epistemic view, a vague object is an object such that we are irremediably ignorant of some of its features, even though those features are fully determinate. According to the ontic view, a vague object is an object that is metaphysically indeterminate in some respect. Hence, when the ontic theorist asserts that there are vague objects, she disagrees with the epistemic theorist.

We provisionally adopt these definitions:

- The ontic view is the view that vagueness consists in metaphysical indeterminacy.
- The epistemic view is the view that vagueness consists in ignorance.

These definitions answer the first challenge. Both views can affirm that there are vague objects, but they disagree about what vague objects are because they disagree about what vagueness consists in. Hence, the views are mutually exclusive.

## *§2: Second Challenge: Ontic Vagueness is Incoherent*

In the previous section, we distinguished the ontic view from the epistemic view by interpreting the ontic view's endorsement of vague objects as an endorsement of objects with indeterminate boundaries. It has been argued that the notion of a vague object is incoherent, and

it might be argued that our notion of an object with indeterminate boundaries is incoherent. To respond to such challenges, we clarify several types of metaphysical indeterminacy that a proponent of the ontic view might posit as the source of vagueness.

There is a growing literature on metaphysical indeterminacy.<sup>5</sup> Some accounts of it are quite complex. For present purposes, we consider a few basic varieties of metaphysical indeterminacy that enable us to clarify the ontic view of vagueness. In the previous section we considered objects with indeterminate boundaries. We can clarify the notion of indeterminate boundaries by considering it alongside indeterminate parthood. The linguistic vagueness theorist may grant that there is imprecision in the application conditions of the predicate ‘is a part of’, or that statements about the boundaries of objects may be indeterminate in truth-value. One version of the ontic view goes a step further and proposes indeterminacy in the mind-independent parthood relation, as well as mind-independent indeterminacy in the boundaries of objects. Some may balk at talk of mind-independent parthood and boundaries, and there may be good reasons for that reaction, but such talk is the stock-in-trade of the ontic view.<sup>6</sup> The ontic view locates vagueness in the mind-independent, extra-linguistic world, so it is committed to making claims about mind-independent and extra-linguistic objects, properties, and relations.

Here is one way for the ontic theorist to explain indeterminate boundaries and indeterminate parthood. Some objects lack sharp boundaries, and this lack of a sharp boundary has nothing to do with the way anyone thinks or speaks about them. Clouds and rivers are good examples; assume, for the sake of argument, that both sorts of entity exist. For a particular cloud, some particles are part of the cloud, and others are not. Still other particles are indeterminate with respect to being part of the cloud—these are the borderline particles. Likewise for the

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<sup>5</sup> For example, see Rosen and Smith (2004) and Williams and Barnes (2011).

<sup>6</sup> Shapiro (2010) and Sainsbury (1994) are both opposed to the ontic theorist’s claims about mind-independent entities, properties, and relations.

Thames. At any given time, some quantities of water are determinately part of the Thames, while others are determinately not, and still others are indeterminately part of the Thames. This indeterminacy cannot be explained by indeterminacy in the meaning or application-conditions of any terms. Instead, it is a real feature of these mind-independent objects. Those who do not believe that there are clouds and rivers can choose their own examples—macroscopic objects are quite like clouds at the atomic level. Since there is not a sharp line between the determinate parts and the determinate non-parts of the cloud, the cloud does not have a sharp boundary. For any sharp line one draws around the cloud, the statement ‘this is the boundary of the cloud’ will not be true—it will be either false or indeterminate in truth-value.<sup>7,8</sup>

The preceding paragraph offers a picture in which indeterminate parthood creates indeterminate boundaries and indeterminate boundaries require indeterminate parthood. There may be ways to define these notions independently, and there are certainly arguments against the plausibility of the picture given, but that picture is at least coherent. And that picture distinguishes one version of the ontic view of vagueness from its linguistic and epistemic counterparts.

Another version of the ontic view might make use of indeterminacy in properties other than parthood and boundary properties. The idea would be to posit mind-independent properties that admit of indeterminacy. For example, some think that natural properties, or natural kind properties in particular, are mind-independent features of objects—they are denizens of the world that exist independently of how anyone thinks or speaks of them. The ontic theorist who employs natural properties would identify the indeterminate instantiation of a natural property as

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<sup>7</sup> This explanation is the sort that a three-valued logician would give. It could be replaced with an explanation that would be given by a fuzzy logician.

<sup>8</sup> What is a sharp line in this case? A sharp line around the cloud would be such that every water particle in the vicinity is on one side of the line or the other. We could say a sharp boundary line would divide water particles without overlapping any of them.

a case of metaphysical indeterminacy. For instance, if *being a Polar Bear* is a natural property, and if something can indeterminately instantiate that property, then *being a Polar Bear* is an indeterminate property. The proponent of ontic vagueness can then hold that some vagueness consists in indeterminate mind-independent properties.

A puzzle arises. If *being a Polar Bear* is an indeterminate mind-independent property, does this entail that there is an indeterminate object, namely something that is indeterminately a polar bear?<sup>9</sup> This puzzle highlights a difficulty for defining vague properties and vague objects. The following definitions may be tempting. (We use ‘ $\nabla$ ’ as a sentential operator that means ‘it is indeterminate whether’.)

- An object  $o$  is vague iff, for some non-vague property  $F$ ,  $\nabla Fo$ .
- A property  $F$  is vague iff, for some non-vague object  $o$ ,  $\nabla Fo$ .

This pair of definitions is unilluminating. If we had an independent account of a vague property, then it would be useful to define vague objects in terms of non-vague properties. Likewise, if we had an independent account of vague objects, it would be useful to define vague properties in terms of non-vague objects. In the absence of such independent accounts, it seems that the definitions above are uninformative.<sup>10</sup>

For present purposes, we can set the puzzle aside. The version of the ontic view under consideration can grant that the indeterminate instantiation of a mind-independent property entails both that the property is indeterminate and that the object is indeterminate. The idea is that the object in question is indeterminate in respect of the feature it indeterminately instantiates. So, in the case of indeterminate instantiation of the property *being a polar bear*, this

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<sup>9</sup> How might it be that some organism is indeterminate with respect to being a Polar Bear? The species evolved from ancestor species, so there could be an organism such that it's indeterminate whether that organism is a Polar Bear or a member of an ancestor species.

<sup>10</sup> Sainsbury (1994) offers this as an argument against the intelligibility of the ontic view.

view grants that indeterminacy in that property requires that there be an indeterminate object. In this case, the required indeterminate object that is something that is indeterminate in respect of the property *being a polar bear*. This connection between indeterminate properties and indeterminate objects prevents the version of the ontic view under consideration from reductively defining either vague properties or vague objects in terms of the other. But reductive definitions are not required.

It is worth noting that the sort of vague object we have identified here exhibits a different sort of metaphysical indeterminacy than the vague objects mentioned above. If *being a polar bear* is an indeterminate natural property, it must be possible for there to be an entity that indeterminately instantiates that property. So there must be a possible object that is indeterminately a polar bear. But the indeterminate polar bear is not required to have indeterminate boundaries or indeterminate parts. Hence, the ontic theorist has a choice between two sorts of vague objects. On the one hand, there are objects that have indeterminate boundaries or parts; on the other hand, there are objects that indeterminately instantiate mind-independent properties.

A third and final version of the ontic view of vagueness would employ indeterminate identity. This is the most extreme version of the view. Terry Parsons (2000) develops a systematic treatment of indeterminate identity using, among other machinery, three-valued logic and three-valued sets. This system allows Parsons to explain certain puzzles. Take the famous puzzle of Theseus's ship as an example. The ship Theseus owns at the beginning of the puzzle is repaired over time by the replacement of old pieces with new ones until the ship at the end of the puzzle has no parts that the ship at the beginning of the puzzle had. Is the ship at the end of the puzzle numerically identical to the ship at the beginning of the puzzle? Parsons' solution to the puzzle is

that the ship at the beginning of the puzzle is indeterminately identical to the ship at the end of the puzzle. Parsons's system allows him to explain indeterminate boundaries and indeterminate parthood. He can model predicates with sets that admit of indeterminacy in the membership relation. So there are clear explanatory benefits for Parsons's system. However, some find the theoretical costs of this system prohibitive. One option for the ontic vagueness theorist is to appropriate Parsons's system in order to explain the various sorts of metaphysical indeterminacy that vagueness consists in—vague parthood, vague boundaries, vague properties, and vague identity.

There are some well-known arguments that support the conclusion that Parsons's framework is no option at all for the ontic vagueness theorist. These arguments, from Gareth Evans (1978) and Nathan Salmon (1981, 2002), purport to establish that indeterminate identity is impossible. These arguments have become the focal point of discussion of indeterminate identity in the recent literature. Evans and Salmon offer quite similar arguments; Evans uses lambda abstracts, while Salmon employs set theory. Here we focus on the argument from Evans. That argument is a reductio of the claim that it is indeterminate whether two objects are identical. Evans's argument employs the sentential operator ' $\nabla$ ', which can be translated, 'it is indeterminate whether'. It also uses lambda abstracts, where ' $\lambda x[\Phi x]$ ' means, 'the x such that  $\Phi x$ '. Here is Evans's argument:

1.  $\nabla(a=b)$
2.  $\lambda x[\nabla(x=a)]b$
3.  $\sim\nabla(a=a)$
4.  $\sim\lambda x[\nabla(x=a)]a$

5.  $\sim(a=b)$

The argument begins with (1) the assumption that a and b are indeterminately identical. (2) says that b is something such that it is indeterminately identical to a. Evans thinks (2) follows trivially from (1). (3) asserts that it is not the case that a is indeterminately identical to itself. Evans takes (3) to be obvious, and he thinks (4) follows trivially. (4) says that a is not an x such that x is indeterminately identical to a. (5) is derived from (2), (4), and Leibniz's Law—the idea behind this derivation is that a and b are not identical if one, but not the other, has the property  $\lambda x[\nabla(x=a)]$ . Since the assumption that a and b are indeterminately identical allowed us to derive that a and b are not identical, the assumption is rejected.

One can use Parsons's framework to resist the Evans argument.<sup>11</sup> Parsons argues that, if the truth of a lambda abstract requires the existence of the property the abstract stands for, then (2) is false because there is no such property. He then argues that, if the truth of a lambda abstract does not require the existence of the property it stands for, then the move to (5) is invalid because there is no difference in properties that allows us to invoke Leibniz's Law—there is only a difference in empty lambda abstracts. Furthermore, Parsons also rejects the contrapositive version of Leibniz's Law that is actually required for the derivation of (5). This rejection is a principled move in Parsons's system.<sup>12</sup> Parsons's response to Salmon's argument is similar. He argues that Salmon's use of bivalent set theory begs the question.<sup>13</sup> Others have offered similar responses to the Evans/Salmon argument,<sup>14</sup> so there is reason to think that that argument does not show that indeterminate identity is incoherent. There may be quite good reasons to think that the

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<sup>11</sup> Parsons (2000: ch. 4).

<sup>12</sup> Salmon (2002: 245) argues that anyone who rejects the standard versions of Leibniz's Law, including the contrapositive form, must explain how an error as important as accepting the standard versions of Leibniz's Law was ever committed. Forbes (2010: 428-9 n.9) offers such an explanation.

<sup>13</sup> Parsons (2000: §5.3).

<sup>14</sup> Van Inwagen (1988) is an example. See also Forbes (2010).

view is implausible, and it is certainly radical. But the Evans/Salmon argument does not give us reason to omit this version of the ontic view from our taxonomy. We consider the indeterminate identity version of the ontic view a live option.

It's worth asking whether the previous versions of the ontic view lead invariably to this extreme version. In other words, do indeterminate parthood, boundaries, or thick properties, entail indeterminate identity? One might think the doctrine of unrestricted composition has the result that indeterminate parthood and indeterminate boundaries entail indeterminate identity. The doctrine of unrestricted composition is the view that, for any objects whatsoever, those objects have a mereological sum, which itself is an object.<sup>15</sup> Recall the cloud mentioned above. Given unrestricted composition, every precise boundary we could draw around the cloud would demarcate an existing object. If the cloud's boundaries are indeterminate, it seems that the cloud is indeterminately identical to each of these objects. However, this reasoning is incorrect. The cloud we began with has indeterminate boundaries, so it is not identical to any of the precisely bounded cloud-like objects we demarcated.

One might think that indeterminate parthood entails indeterminate identity because an object is identical to the totality of its parts. This is the doctrine of mereological essentialism. Here it seems that the slide from indeterminate parthood to indeterminate identity is unavoidable. But this is not surprising if composition is identity. The ontic theorist should beware that mereological essentialism makes indeterminate parthood inseparable from indeterminate identity.

A general argument for the claim that indeterminate parthood and boundaries entails indeterminate identity is not forthcoming. Parsons (2000: 77) thinks that some cases of indeterminate parthood result in indeterminate identities but that other cases do not. Salmon

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<sup>15</sup> Van Inwagen (1990) refers to this doctrine as "Super-universalism."

(2010: 144-7) argues that indeterminacy in the instantiation of properties, including boundary properties, does not result in indeterminate identity.

In this section we have clarified three sorts of metaphysical indeterminacy that make for three versions of the ontic view of vagueness: (i) mind-independent indeterminacy in boundaries and parthood, (ii) indeterminacy in the instantiation of mind-independent properties, and (iii) indeterminate identity. There may be other distinct forms of metaphysical indeterminacy that are useful to the ontic vagueness theorist. Perhaps there can be indeterminacy in states of affairs, events, or relations, that does not reduce to any of the sorts of indeterminacy discussed here. For the present purpose of taxonomizing views of vagueness and ensuring that they are distinct, the varieties of metaphysical indeterminacy discussed here should suffice.

### *§3. Third Challenge: Vagueness in the World Invites Vague Language*

The remaining challenges to the standard taxonomy concern the division between the linguistic view and the ontic view. The second challenge is that vagueness in the world invites vague language. Suppose that the ontic view is true. It follows that there are vague objects, properties, relations, or states of affairs. On this supposition, it is quite likely that vague language is required to talk about those vague entities. That is, it is likely that talking about vague objects, properties, relations, or states of affairs, requires vague terms, sentences, or propositions. If vagueness in the world is likely to result in vagueness in language, it seems that the truth of the ontic view makes the truth of the linguistic view highly probable. Thus, it seems that the ontic view may be committed to the truth of the linguistic view. If this is the case, then the ontic view does not rule out the linguistic view, but does quite the opposite. Thus, it seems that the two views are not mutually exclusive.

To see the problem more clearly, consider two scenarios. For the first scenario, suppose *baldness* is an indeterminate property (‘property’ in the “thick,” mind-independent sense). Some objects determinately instantiate the property, some determinately do not instantiate the property, and, for some objects, it is indeterminate whether they instantiate or fail to instantiate the property. Suppose further that Harry is a borderline case of baldness, and that the ontic view explains the vagueness of Harry’s baldness in terms of the indeterminate property *baldness*, not in terms of the indeterminacy of the predicate ‘is bald’. We now have a scenario in which the ontic view is true—vagueness consists in non-representational indeterminacy. In this scenario, there is a sense in which ‘bald’ is vague: it picks out a vague property, which is an indeterminate property. But there is also a sense in which ‘bald’ is not vague: it picks out exactly one property, the property *baldness*. The best thing to say here is that ‘bald’ is not semantically indeterminate: it is determinate that the content of ‘bald’ is the property *baldness*, but the content of ‘bald’ is a property that is metaphysically indeterminate.

We can highlight this distinction with the terminology of representational and non-representational indeterminacy. Representational indeterminacy is indeterminacy in the intensions of words, the content or truth-value of sentences, in the application-conditions of concepts, or perhaps even indeterminacy in propositions, on certain views of propositions.<sup>16</sup> Non-representational indeterminacy is what we earlier called “metaphysical indeterminacy,” which is indeterminacy in mind-independent objects, properties, relations, or states of affairs. The linguistic view holds that vagueness consists in representational indeterminacy, while the ontic view holds that vagueness consists in non-representational indeterminacy.

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<sup>16</sup> Fregean theories of propositions seem especially amenable to vague propositions. If a Fregean proposition is a complex of concepts, and if concepts admit of vagueness, then it seems that propositions also admit of vagueness.

Returning to the envisaged scenario, we see that ‘baldness’ determinately picks out *baldness*, which is a non-representationally indeterminate entity. Hence, the vagueness of Harry’s baldness consists in non-representational indeterminacy, and it does not consist in representational indeterminacy.

Now consider a second scenario. Suppose that ‘bald’ is indeterminate in reference between a range of similar properties  $b_1$ — $b_n$ . Suppose further that each  $b_i$  is instantiated in a pattern similar to that of *baldness* in the previous scenario. That is, each  $b_i$  is determinately instantiated by some objects, determinately not instantiated by others, and, for other objects, it is indeterminate whether they instantiate  $b_i$ . Suppose also that the instantiation pattern of each  $b_i$  varies only slightly from the instantiation pattern of *baldness* above. It follows that the term ‘bald’ is indeterminate in reference, and that the candidate referents of ‘bald’ are each non-representationally indeterminate. We have a scenario in which the vagueness at hand consists in both representational indeterminacy and non-representational indeterminacy. Vagueness consists in representational indeterminacy because the vague predicate ‘is bald’ is indeterminate in reference between each of the  $b_i$ ; vagueness consists in non-representational indeterminacy because each  $b_i$  is a metaphysically indeterminate property. In this second scenario, there is both linguistic and ontic vagueness. Does this mean the ontic and linguistic views of vagueness are compatible? Is this a problem for the taxonomy?

To answer this challenge, we begin by noting that the proponent of the linguistic view of vagueness would not be happy with the second scenario. The linguistic theorist holds that representational indeterminacy fully explains vagueness; she thinks that no reference to non-representational indeterminacy is required to explain vagueness. This highlights that the linguistic view holds that *all* vagueness consists in representational indeterminacy. In contrast,

the proponent of the ontic view would be happy with the scenario in which the vagueness of Harry's baldness consists in both representational and non-representational indeterminacy. From the ontic theorist's perspective, it is no problem that some vagueness consists in representational indeterminacy, but she insists that representational indeterminacy is not the whole story. She holds that a complete explanation of all vagueness requires reference to non-representational indeterminacy. Thus, the ontic view holds that *some* vagueness consists in non-representational indeterminacy.<sup>17</sup> To employ a metaphor, the ontic theorist is not troubled by a layer of vagueness due to representational indeterminacy, but she insists that there is a deeper layer of vagueness due to non-representational indeterminacy.

We now arrive at the sharpened taxonomy:

- The epistemic view is the view that vagueness consists in our ignorance about our language and the world.
- The ontic view is the view that some vagueness consists in non-representational indeterminacy.
- The linguistic view is the view that all vagueness consists in representational indeterminacy.

#### *§4. Fourth Challenge: The Linguistic View Collapses Into the Ontic View*

The sharpened taxonomy allows us to answer a third challenge to the three-part taxonomy. This challenge comes from Trenton Merricks (2001) and Nathan Salmon (2010), who argue that the linguistic view collapses into the ontic view. Merricks and Salmon offer quite similar arguments;<sup>18</sup> we focus on Merricks's presentation. Merricks uses the term 'metaphysical

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<sup>17</sup> Barnes (2010: 605) makes this some/all distinction.

<sup>18</sup> Merricks offers the linguistic theorist an epistemic way out. He argues that the linguistic theory collapses into either the ontic view or the epistemic view. The linguistic theorist is better served not to take up the epistemicist option and to instead rebut Merricks's argument that her theory collapses into the ontic theory. Also, Merricks does not refer to "theories" of vagueness, but rather to "types" of vagueness. Nothing is lost by translating his "types" talk into the present talk of "views."

vagueness' for what we have been calling 'ontic vagueness'. Here is Merricks's (2001: 147) version of the argument,

Consider your favorite example of a man who is vaguely bald. For the purposes of our argument, let's name him 'Harry'. Consider now the following sentence:

(1) 'Bald' describes Harry.

Grant, for the sake of argument and only temporarily, that (1) expresses a single proposition. ... One might interpret 'bald's being linguistically vague as amounting to that proposition's not having a determinate truth value. One might also add that this means there is no determinate fact of the matter about whether 'bald' is related by *describing* to Harry, no determinate fact of the matter about whether 'bald' has the property of *describing Harry*, and no determinate fact of the matter about whether Harry exemplifies the property of *being described by 'bald'*. Obviously enough, if this interpretation of the vagueness of 'bald' is correct, then linguistic vagueness is a species of metaphysical vagueness ...

Merricks thinks that, if the linguistic view of vagueness holds that it is indeterminate whether Harry exemplifies the property of being described by 'bald', then the linguistic view thereby posits ontic vagueness. Merricks's reason for thinking this derives from his notion of ontic vagueness. Merricks (2001: 145) thinks the following is sufficient for ontic vagueness: "for some object and some property, there is no determinate fact of the matter whether that object exemplifies that property." The key here is the interpretation of the term 'property'. There is a "thick" sense of property that has been employed throughout this paper. According to the "thick" sense, a property is a mind- and language-independent feature of objects. But there are also thinner notions. One example is the notion that posits a property for every predicate. It turns out that no notion of properties can render Merricks's argument valid. If Merricks's sufficient condition for ontic vagueness is that there be indeterminacy in the instantiation of a *thick* property, it follows that his condition is plausible. But it also follows that the scenario he describes does not meet the condition he proposes. The property of being described by 'bald' is not a thick property. It is a property that essentially involves a word. It is a representational

property that is mind- and language-dependent. If the vagueness of Harry's baldness consists in indeterminacy in the property *being described by 'bald'*, this amounts to indeterminacy in a thin, mind-dependent property, and it does not amount to ontic vagueness. Alternatively, if Merricks's sufficient condition for ontic vagueness is that there is indeterminacy in the instantiation of a thin property, then his sufficient condition for ontic vagueness is implausible. That condition would say that there is ontic vagueness if there is indeterminacy in the exemplification of any property, including semantic, referential, and representational properties. But indeterminacy in the relation between words and what they describe is exactly where the linguistic view expects vagueness to be located. It is no embarrassment for the linguistic theorist that, in the case of Harry, vagueness resides in the semantic relation of satisfaction between the term 'is bald' and an object. Hence, the linguistic view's commitment to vagueness in the designation relation does not commit it to ontic vagueness.

*§5: Fifth Challenge: The Ontic View Collapses Into the Linguistic View*

Mark Sainsbury (1994) argues that the ontic view collapses into either the epistemic view or the linguistic view. Sainsbury considers several attempts to articulate an ontic view that is distinct from the epistemic and linguistic views. He judges that all the attempts fail, and he concludes that there is no substantive thesis of ontic vagueness. We should ask whether Sainsbury's criticisms undermine the account of the ontic view proposed in the sharpened taxonomy.

Sainsbury considers formulations of the ontic view both in terms of the thesis that there are vague objects and in terms of the thesis that there are vague properties. Let us begin with his consideration of the property version of the ontic view. Sainsbury begins by arguing that the

claim that there are vague properties is not a substantive thesis if one holds one of two extreme views of properties. These are the view that there are no properties and the view that “every simple predicate stands for a property” (1994:76). Sainsbury argues that, “[f]rom the perspective of each [extreme] theorist, the question of vagueness in the world will be trivial” (ibid.).

Sainsbury concludes that the property version of the ontic view of vagueness is a substantive thesis only if a moderate theory of properties is assumed. He predicts that debate about such a thesis will center on the principle that determines which properties there are, and he anticipates that there will be further difficulties for articulating a substantive thesis of vague properties, even given the moderate theory of properties.

Employing the proposed taxonomy allows us to resist each step of Sainsbury’s argument. First, Sainsbury argues that the thesis that there are vague properties is insubstantive from the point of view of one who thinks there are no properties. The no-properties theorist will surely think the property version of the ontic view is false—if there are no properties, then there are no vague properties. But on what grounds may this theorist deny that the property version of the ontic view is a substantive thesis? Surely she judges a moderate theory of properties to be a substantive thesis. If Sainsbury is correct, then the property version of the ontic view assumes a moderate theory of properties. It follows that the property version of the ontic view amounts to the substantive thesis of the moderate theory of properties, conjoined with the claim that some of those properties are vague. Surely the conjunction of these claims is substantive, even if the no-properties theorist thinks it is false.

Second, Sainsbury argues that the property version of the ontic view is not substantive from the point of view that every simple predicate stands for a property. Sainsbury’s motivation for this argument seems to be that it is obvious that there are vague simple predicates, so if every

simple predicate stands for a property, then it is obvious that there are vague properties. However, even if the simple property theorist thinks it is obvious that there are vague properties, she faces the further task of saying what that vagueness consists in. That is a substantive task. According to the sharpened taxonomy, the ontic view holds that vagueness consist in non-representational indeterminacy. Hence, when the ontic theorist asserts that there are vague properties, she asserts that there are properties that are non-representationally indeterminate. Sainsbury judges that the property version of the ontic view is insubstantive, given the thesis that every simple predicate stands for a property, because he leaves open epistemic and linguistic readings of 'vague' in the claim 'there are vague properties'. With those options left open, the claim that there are vague properties could amount to the claim that there are properties that induce ignorance in borderline cases (the epistemic reading), or to the claim that there are properties designated by vague terms (the linguistic reading). With these readings left open, the claim that there are vague properties is indeed insubstantive. However, the claim that there are non-representationally indeterminate properties is surely a substantive thesis. And this thesis is substantive even on the assumption that every simple predicate stands for a property.

A third point in response to Sainsbury is that, even if the thesis of vague properties was insubstantive from the points of view of the extreme property theorists, it is substantive from the point of view of any other theory of properties. The extreme views of properties are neither more plausible nor more important than moderate views. It would be no trouble for the ontic theorist, or for the standard taxonomy, if the property version of the ontic view of vagueness were to presuppose a non-extreme theory of properties.

One might object that if we end up with the result that the ontic view is committed to a certain theory of properties, particularly a moderate one, then the view must have been mis-

defined. The objection would make use of the idea that views of vagueness should be ontologically neutral.<sup>19</sup> The response to this objection is that, while it is important to define views of vagueness in a way that is as ontologically neutral as possible, it is also important to recognize the essential ontological commitments of these views wherever those commitments exist. The ontic view of vagueness locates vagueness in the mind-independent world, and not in our representations of the world. Hence, the view is committed to the existence of mind-independent portions of the world, and it is committed to talking about those portions. Some may find this objectionable, but this is the view. The property version of the ontic view asserts that some vagueness reduces to indeterminate non-representational properties. Hence, it is committed to the existence of indeterminate non-representational properties, as well as to non-representational properties generally. We have abandoned ontological neutrality only where the ontic view itself is not ontologically neutral.

We have seen that, *pace* Sainsbury, there is an intelligible formulation of the version of the ontic view that posits vague properties. We now turn to Sainsbury's consideration of versions of the ontic view that posit vague objects. One version of the view Sainsbury considers is the thesis that there are vague objects, where an object  $x$  is vague iff there is a  $y$  such that it is indeterminate whether  $y$  is a part of  $x$ . Sainsbury argues that this would amount only to vagueness in the term 'part of', and that this vagueness could be accounted for by the linguistic or epistemic views. Hence, argues Sainsbury, the thesis that there is vague parthood is not distinctive of the ontic view. The sharpened taxonomy is helpful once again. If the ontic view is the view that some vagueness consists in non-representational indeterminacy, then the parthood version of the view is the thesis that there is indeterminacy in the non-representational parthood relation. That is, the parthood version of the ontic view is the thesis that there is a mind- and

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<sup>19</sup> Barnes (2012), for example, is intent on defining views of vagueness in a way that is ontologically neutral.

language-independent parthood relation, and this relation admits of indeterminacy. As in the case of vague properties, each of the considered views of vagueness can grant that there is vague parthood, but the different views give different accounts of what vague parthood consists in. The ontic account of vague parthood is that parthood is a non-representational relation that admits of indeterminacy. This is a substantive thesis, and it is distinctive of the ontic view of vagueness.

The root of Sainsbury's inability to find a substantive thesis of ontic vagueness is that he does not countenance talk of the mind-independent world. Says Sainsbury (1994: 79), "[w]e cannot think of our world except through our concepts, so there is no intelligible notion of our world independently of our concepts." It is thus no surprise that Sainsbury cannot find an intelligible, substantive thesis that locates vagueness in the mind-independent world, rather than in our representations. But this means simply that Sainsbury should not go in for the ontic view of vagueness. That view is committed to talking about the difference between the non-representational parts of the world and our representations of those parts. Some might balk at the immodesty of this view, but we must recognize the view for what it is. Any attempt to charitably interpret the ontic view of vagueness that makes it more modest in this respect will be an interpretation that distorts the view.

#### *§6: Commitments of the Views*

Having defined the three views of vagueness under consideration, we are in a position to clarify the semantic and logical commitments of each. The commitments of the epistemic view are already clear: Vagueness does not consist in indeterminacy of any sort, representational or non-representational. Vagueness does not result in unsettled facts, and it is consistent with both classical logic and classical semantics.

Turn to the ontic view. Is the ontic view, as such, committed to non-classical logic? The ontic view is committed to non-representational indeterminacy. We have seen that there are several versions of non-representational indeterminacy. It seems likely that each form that non-representational indeterminacy can take will result in truth-value gaps. For example, if there is a property *baldness*, and if it is indeterminate whether Harry bears that property, it seems that ‘Harry is bald’ will come out neither true nor false. So the ontic theorist must ask which logic best accommodates truth-value gaps. One option is multi-valued logic, either three-valued logic or fuzzy logic. Another option is to attempt to preserve classical logic by introducing a non-classical semantics. For instance, Barnes (2010) employs supervaluationist semantics in an ontic theory of vagueness. Would this count as preserving classical logic? We can sidestep that question for present purposes. We have given a clear account of the ontic view, and that account makes it mutually exclusive with the other views, so there is no need to commit the view as such to anything else, whether that be non-classical logic or non-classical semantics. These questions concern the plausibility of the ontic view; they are not required for defining the view and distinguishing it from its competitors. It should be left open for proponents and critics of the ontic view to diverge on the questions of which logic and which semantics pair best with the account of vagueness as non-representational indeterminacy. Furthermore, despite this neutrality in definition, our account of the ontic view preserves the notion that it is likely that the ontic view requires a non-classical logic: the ontic view is committed to non-representational indeterminacy, which is likely to lead to truth-value gaps. The ontic theorist is free to attempt to account for these gaps in a way that preserves classical logic, but she has a great deal of work to do on this score.

Turn now to the semantic and logical commitments of the linguistic view. We proceed by

considering Lewis's picture of the linguistic view and asking which components are obligatory for the linguistic view and which are optional. Recall Lewis's picture: the semantic content of a vague predicate, e.g. 'bald', is indeterminate between a range of equally good candidates, e.g. *baldness*<sub>1</sub> – *baldness*<sub>n</sub>, each of which is perfectly precise. This picture invites supervaluationism. Supervaluationism evaluates sentences that contain the term 'bald' by evaluating precisifications of those sentences. On Lewis's picture, each precisification is formed by assigning one of the candidate properties as the content of 'bald'. If a sentence containing 'bald' is true on every precisification—is true for every assignment of a candidate referent as the content of bald—then the sentence is true. If all the precisifications come out false, then the sentence is false. And if the sentence is true on some precisifications but false on others, the sentence is not assigned a truth-value.

The linguistic view, as such, is not committed to Lewis's ontological picture of a plenitude of objects that are candidates for the content of vague terms. For example, the linguistic view should be open to someone who employs a restricted theory of composition that does not countenance all of Lewis's candidate referents for 'the outback'. So Lewis's ontological picture that backs his view of vagueness is not mandatory for the linguistic view of vagueness—it is optional. Nor is Lewis's ontological picture mandatory for the proponent of supervaluationism. One could employ the semantic apparatus of supervaluation and make no commitments about the metaphysical import of the apparatus. So it is open to a proponent of the linguistic view to adopt Lewis's ontological picture, and to go on to adopt supervaluationism, but this is not the only path that the linguistic view can take.

There are other ways to motivate supervaluationism, so we should ask whether the linguistic view is committed to supervaluationism, even though it is not committed to supervaluationism

for the reason that it is committed to Lewis's ontological picture. The answer is that supervaluationism is not required for the linguistic view. The main reason for this is that there is logical space for versions of the linguistic view that do not employ precisifications in any way. One such theory would employ three-valued logic, assigning some atomic sentences the value indeterminate, rather than true or false, and determining the truth-values of complex sentences according to the Kleene strong tables. Another such theory would employ fuzzy logic in its semantics, assigning degrees of truth on the model of the interval from 0 to 1, where 0 is completely false, 1 completely true, .5 half-true, .6 more true than false, etc.

The final commitment of the linguistic view to be considered concerns the relation between vague sentences and the propositions expressed by those sentences. Salmon (2010: 132) assumes that the linguistic view of vagueness holds that a vague sentence fails to express a single proposition. There are versions of the linguistic view that incorporate this additional thesis, but we should not think it essential to the linguistic view. There is space for a linguistic theory of vagueness according to which a vague sentence expresses a vague proposition. Such a theory would owe an account of what a vague proposition is, but there might be reasons for preferring vague propositions to the failure of vague sentences to express propositions. After all, a sentence that fails to express a proposition is in danger of being meaningless. One might find vague propositions to be the best way of preserving the notion that vague sentences are meaningful. This option should certainly be left open to the linguistic theorist, so we should not define the linguistic view in terms of this relation between vague sentences and propositions. Nor should we assume that the view is so committed.

## *Conclusion*

Several challenges to the standard taxonomy were answered by sharpening that taxonomy. This sharpening required a few steps. First was Schiffer's distinction between what a view says about what kinds of things can be vague and what a view says about what vagueness consists in. Second was the distinction between representational and non-representational indeterminacy, and a clarification of what non-representation, or "metaphysical," indeterminacy amounts to. Third was recognition that the linguistic view makes an "all" claim, while the ontic view makes a "some" claim. With these distinctions in hand, we developed a taxonomy of mutually exclusive views, which should prove useful for a range of applications related to vagueness.

## CHAPTER 2

### *Supervaluationism and Propositional Content*

Orthodox supervaluationism assigns truth-conditions to the sentences of a vague language *L*: a sentence *S* of *L* is true iff supertrue, false iff superfalse, and otherwise neither true nor false, where supertruth is truth on all admissible precisifications of *L*, and superfalsity is falsity on all admissible precisifications. Supervaluation does not resolve all instances of the semantic underdetermination that characterizes vagueness—if Harry is borderline bald, then “Harry is bald” is true on some admissible precisifications and false on others, so the sentence is neither true nor false. But supervaluation does result in a verdict of truth or falsity for a great many vague sentences, including instances of the law of excluded middle (e.g. “Harry is bald or not bald”), as well as instances of penumbral connection (e.g. “If you’re tall and I’m taller, then I’m tall too” and “If the patch is red, then it is not pink”).<sup>20</sup> This supervaluational semantics enables various supervaluational accounts of validity for *L*, as well as the affirmation of some other laws of classical logic.<sup>21</sup>

It has never been made clear what account of propositional content supports supervaluationist semantics. If “Harry is bald” is neither true nor false, does that sentence fail to express a proposition? Or does it express a barrage of propositions, one for each admissible precisification, some of which are true and some of which are false? Or is it indeterminate which proposition, if any, is expressed by the sentence? The canon of supervaluationism has not been especially concerned with accounts of propositional content, but if supervaluationism is compatible only with certain accounts of propositional content, then the theory is wedded to the

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<sup>20</sup> Fine (1975, p. 270).

<sup>21</sup> See Varzi (2007) for a taxonomy of supervaluationist logics.

costs, benefits, and future research projects of those accounts.<sup>22</sup> Some supervaluationists may prefer to abandon talk of propositions altogether, but that is a costly move, and it would be interesting if that move turned out to be forced.

When supervaluationists venture to mention propositions, they usually note that, for any vague S, there exist numerous candidate propositions that are all equally well qualified to be the content of S. That's fine, as far as it goes, but it does not answer the questions of propositional content raised in the previous paragraph. There is much more metasemantic work to be done, and supervaluationists don't agree on how to go about that work. Kit Fine's canonical (1975) doesn't mention propositions explicitly, but it seems to support the view that a vague sentence expresses all of its candidate contents, particularly when Fine says, "to assert a vague sentence is to assert, generally, its precisifications" (p. 282). David Lewis's work is certainly part of the supervaluationist canon. However, Lewis's views do not fall under "orthodox supervaluationism," as I'm using the term, because Lewis does not identify truth with supertruth—he does not equate truth-in-L with truth on every admissible precisification of L. Some of Lewis's work treats supervaluation as a technique of pragmatics (1969, ch. 5; 1975), and some of it considers supervaluation as a semantic technique to be applied locally but not globally (1970; 1975; 1993, p. 30). Insofar as Lewis's views can be made to answer the questions of propositional content under consideration here, those views predict either that a vague sentence fails to express a proposition, or that it is indeterminate what the propositional content of a vague sentence is. Both of those answers to the question will be considered here. Rosanna Keefe's (2000) book-length defense of supervaluationism, a recent addition to the canon, gives scant treatment to propositional content. Keefe (2010), however, is one of the few

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<sup>22</sup> Another way to make the same point, in the terminology of Burgess and Sherman (2014), is that there is work to be done in determining which metasemantic theories support supervaluationist semantics for the object-language.

supervaluationist attempts at a direct answer to the questions of propositional content raised in this paper.<sup>23</sup> Keefe argues that a vague sentence expresses a proposition, though it is indeterminate which candidate proposition is expressed. Supervaluating the relevant metalinguistic statements has the result that each candidate content of a vague sentence S is expressed by S on only one admissible precisification. Thus, “S expresses a proposition” is supertrue, but for no proposition P is it supertrue that P is expressed by S. The expression of a proposition becomes relativized to precisifications.

In addition to divisions within the supervaluationist camp, there have been attacks from without. Steven Schiffer (1998; 2001a; 2001b) has argued that supervaluationism is incapable of giving a satisfactory account of indirect speech reports. Nathan Salmon (2010, pp. 137-147) has argued that no supervaluationist account of the propositional content of vague sentences fits with the semantic indecision view of vagueness, which is a key motivation for supervaluationism.<sup>24</sup>

Suffice it to say that the search for a satisfactory supervaluationist theory of propositional content is ongoing. This chapter attempts to make progress in that search. I argue that orthodox supervaluationists cannot make use of the traditional relation between sentences and propositions in which the truth-conditions of a sentence are determined by the bivalent proposition the sentence expresses. In order to harmonize the traditional account of propositional content with orthodox supervaluationism, one must take a stance on how many candidate propositions are expressed—none, some, all, or it’s indeterminate. But each of those proposals ends up being

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<sup>23</sup> Weatherson (2003) is another direct attempt to address the problems of propositional content raised here. Weatherson (2003, pp. 482-483) says precisification should be applied to a language as a whole, rather than to a single sentence or single term. He thinks this is a point of disagreement with Keefe, but Keefe (2000, pp. 162, 189) in fact agrees that precisification should be applied to the entire language. Weatherson then seems to share Keefe’s commitment to supervaluating “S expresses P” statements in the way that I criticize here. See also note 6 below.

<sup>24</sup> Lewis (1986, p. 212) has become the *locus classicus* for the semantic indecision view, though the view is also present in Fine (1975, p. 265), which says that vagueness is, “a semantic notion,” and that, “roughly, vagueness is deficiency of meaning.”

unworkable in the metalanguage. The upshot is that orthodox supervaluationists must amend or abandon the traditional relation between sentences and propositions.

I suggest that the best option going forward is one that has received only brief consideration in the literature.<sup>25</sup> It is for the orthodox supervaluationist to amend the requirement that propositions be bivalent. Propositions that can be supertrue, superfalse, or neither true nor false, allow supervaluationists to preserve much of the standard determination relation that holds between propositions and the sentences that express them, which is one of the main reasons for positing propositions in the first place. These propositions admit of truth-value gaps, which is controversial, but they aptly fill the roles for propositions in the semantics and metasemantics of vague languages, and they do so better than bivalent propositions. Orthodox supervaluationists unwilling to embrace gappy propositions must seek other amendments to the traditional relation between sentences and propositions, or else they must reconsider their orthodoxy.

The chapter proceeds as follows. §1 defines orthodox supervaluationism, traditionalism about propositional content, and candidate contents for vague sentences. §2 evaluates Keefe's proposal, which relativizes propositional content to precisifications. §§3 – 5 consider the proposals that a vague sentence expresses all, some, or none of its candidate propositions. It is concluded that none of those proposals is workable in the metalanguage. §6 proposes gappy propositions as an amendment to traditionalism about propositional content.

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<sup>25</sup> That brief consideration occurs in the exchange between Schiffer (1998, 2000a, 2000b) and García-Carpintero (2000, 2010). In the course of criticizing supervaluationism's handling of indirect speech reports, Schiffer considers vague (non-bivalent) propositions and argues that they cannot adequately explain *de re* ascriptions such as 'There is where Al said Ben was.' In response, García-Carpintero (2010, p. 349) takes up these propositions that have supervaluational truth-conditions, along with a Frege-inspired doctrine of referential shift, in order to explain the relevant *de re* ascriptions. So, the position I defend here is in agreement with part of García-Carpintero's proposal, though I do not consider the specific problem of *de re* ascriptions. Thanks to an anonymous reviewer at the journal *Synthese* for correcting an oversight on this point.

*§1: Orthodoxy, Traditionalism, and Candidate Contents*

Before evaluating the various proposals, I'll define terms a bit more precisely. For supervenualism, I focus on the version that identifies truth with supertruth, which I take to be the orthodox version,

Supertruth Semantics

A sentence, S, is true iff S is true on all admissible classical models,  
S is false iff S is false on all admissible classical models, and  
S is neither true nor false iff S is true on at least one admissible classical model and false on at least one admissible classical model.

The supertruth view is articulated by Fine (1975) and expanded by Keefe (2000; 2010). It is the version of supervenualism most faithful to van Frassen's (1966; 1968; 1969) original use of the formalism.<sup>26</sup> In the definition above, I have replaced talk of precisifications with talk of models. A classical model of a language, L, assigns truth or falsity to every sentence of L. It does so by assigning objects as the values of singular terms and sets of objects or sets of ordered n-tuples as the extensions of predicates. Supertruth is then defined as truth on all admissible models, and superfalsity is falsity on all admissible models. Hence, it holds that S is true iff supertrue, false iff superfalsity, and otherwise neither true nor false. The admissible models are those that respect the meanings of the terms of L—the idea is that the meanings of vague terms of L are extended or precisified without being changed.<sup>27</sup> For example, no object can be placed in the tall set and the short set on the same model, nor may any admissible model place the same object in both the red set and the orange set.

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<sup>26</sup> There are other views that employ admissible models in the semantics of vague languages, e.g. Asher et al. (2009). Some of my discussion may apply to such views, but some of it may not.

<sup>27</sup> If you think it is impossible to extend or precisify the meaning of a term without changing that meaning, then you have sympathy with Fodor and Lepore (1996), as I do. But this is how supervenualists put things.

The purported advantages of Supertruth Semantics are familiar. It preserves Fine's penumbral connections. For example, if a fruit is borderline orange/yellow, "The fruit is orange" is neither true nor false, and "The fruit is yellow" is likewise neither true nor false. But every admissible model verifies "If the fruit is orange, then it isn't yellow" because every admissible model either verifies the consequent or falsifies the antecedent. For similar reasons, Supertruth Semantics affirms the classical law of excluded middle: instances of the object-language schema "A or not-A" are supertrue.<sup>28</sup> Every admissible model verifies one disjunct or the other, even if neither disjunct is verified by every model.

The purported disadvantages of Supertruth Semantics are familiar as well. The sentence, "That's a heap or it isn't" is supertrue, even when "That's a heap" is not supertrue and "That's not a heap" is not supertrue. Thus, there are true disjunctions that have no true disjuncts. Williamson (1994, §5.4) calls this the "elusiveness" of supertruth. Supertruth is also elusive for true existential statements that lack true instances. For example, the following sentence is supertrue:

1. For some  $n$ ,  $n$  grains of sand is a heap but  $n - 1$  grains is not a heap.

Yet there is no substitution for  $n$  that makes this sentence supertrue:

2.  $n$  is the number such that  $n$  grains of sand is a heap but  $n - 1$  grains is not a heap.

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<sup>28</sup> I'm following Williamson (1994, p. 145) in treating LEM as the object language schema "A or not-A" and the principle of bivalence as the metalinguistic principle that, for any object language statement  $\varphi$ , either  $\varphi$  is true or  $\varphi$  is false. Supertruth Semantics does not affirm bivalence.

Supertruth semantics predicts that there is a sharp line between the bald and the non-bald, but that line is elusive.

The next thesis to define is traditional propositional semantics,

#### Propositional Semantics

- (i) the semantic content of a sentence (in a context) determines the truth-conditions of that sentence (in that context),
- (ii) the semantic content of a sentence (in a context) is the proposition, or propositions, it expresses (in that context), and
- (iii) propositions are bivalent (for any proposition P and every possible case, either P is true or P is false).<sup>29</sup>

This definition creates the familiar picture that the truth-conditions of a sentence are inherited from the truth-conditions of the proposition(s) the sentence expresses. This sort of semantic theory is old-school, but it is a good place to begin addressing the metasemantic questions this paper asks of supervaluationism.

To define candidate contents a bit more precisely, I'll assume a one-one correspondence between candidate contents and admissible precisifications:

#### Candidate Contents

Proposition P is a candidate content of sentence S just in case the truth-conditions of S on some admissible model are identical to the truth-conditions of P.<sup>30</sup>

So,

3. Tek is tall.

will have one candidate content for each admissible precisification. If there is an admissible precisification that gives “is tall” the extension of people 6' or more in height, then one candidate

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<sup>29</sup> For more on this conception of semantic theory, see Soames (1988; 1989, p. 591), Schiffer (2003, ch. 1), King (2007, ch. 1), and Dever (2013).

<sup>30</sup> Here and throughout, I will assume a fixed context for the evaluation of any vague sentence. Most vague sentences will have various candidate contents in various contexts. “In context c” could be added in the appropriate places.

content for (3) is the proposition *that Tek is 6' or more in height*. With a great deal of oversimplification,<sup>31</sup> a toy example of sentence (3)'s candidate contents can be formulated,

3a. The proposition that Tek is at least 6'1"

3b. The proposition that Tek is at least 6'0"

3c. The proposition that Tek is at least 5'11"

3d. The proposition that Tek is at least 5'10"

I will refer back to this toy example throughout, discussing its unrealistic features when they become salient. In what follows I consider the proposals that a vague sentence expresses none, some, or all of its candidate contents, as well as the proposal that the matter is indeterminate. For the toy model, those proposals predict that (3) expresses none, some, or all of (3a-d), or that it is indeterminate which, if any, of (3a-d) are expressed by (3).

## §2: *The Indeterminacy Proposal*

I begin with the Indeterminacy Proposal because it is the one proposal that has been explicitly defended in the literature. Keefe (2000; 2010) takes up Supertruth Semantics as it is formulated in Fine (1975). She adds some further developments to the view and defends it against a host of competing theories of vagueness.

Keefe's most significant development of the view is a stance on the metalanguage for supervaluationism that attempts to accommodate Williamson's arguments that the metalanguage

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<sup>31</sup> One cannot in fact list the candidate contents of (3) because there can be neither a determinately first member nor a determinately last member—if there were either, this would create sharp cut-offs for the extension and antiextension of 'is tall', in which case there would be no higher-order vagueness for that term. Also, the propositions listed in (3a – d) are not necessarily bivalent, as candidate contents must be. It is in fact quite difficult to pick out an individual proposition that is necessarily bivalent that is about anything other than mathematical entities. This is because one cannot use vague terms to pick out such a proposition, and most natural language terms are vague—see the next note.

must be vague. Williamson (1994, §5.6) argues that the metalanguage must be vague because we have no non-vague metalinguistic terminology to work with. Vagueness is ubiquitous in natural languages, so semantic rules formulated with natural language terms are bound to be vague.<sup>32</sup> A prime example is the term “admissible,” as used in supervaluationist statements about admissible models. And there is an additional reason that “admissible,” as used in the formulation of supervaluationism, must be vague. The reason is higher-order vagueness. As Williamson argues, reasons for denying a sharp transition between orange and yellow also motivate that there can be no sharp transition from the indeterminately yellow to the determinately yellow. For supervaluationists this means there cannot be a sharp transition between the x’s for which “x is yellow” is true and the y’s for which “y is yellow” is neither true nor false—there cannot be a first case in which “x is yellow” is supertrue. To prevent the existence of a first yellow case, supervaluationists must posit that it is vague which models are admissible.

Keefe agrees to this. Her solution is to posit that the metalanguage is vague and has a supervaluational semantics. Statements about the admissibility of models are supervaluated: for a model that is borderline admissible, “M is admissible” is true on some models and false on others. Keefe in fact posits an infinite hierarchy of metalanguages, each of which is vague, and each of which has a semantics that obeys Supertruth Semantics (2000, p. 202-208).

Keefe (2000, pp. 157-158) mentions propositions briefly and concludes that the supervaluationist need not take a stance on the issue. The subsequent Keefe (2010) attempts to rebut Stephen Schiffer’s (1998) criticism that supervaluationism cannot give an adequate account of indirect speech reports. Keefe’s rebuttal employs a more defined view of propositional

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<sup>32</sup> In the literature, arguments for the ubiquity of vagueness in natural language are brief. Cf. Williamson (1994, p. 165), Schiffer (2003, p. 4), Keefe (2000, p. 3), and Fine (1975, p. 266). The idea is that one sees the ubiquity of vagueness as soon as one begins to look for it. A fully adequate argument for the point would proceed by exhaustive enumeration; I spare the reader.

content. Schiffer argues that supervaluationists cannot account for the truth of the following sentence:

4. Renata said that Harry is bald.

Keefe argues that Supertruth Semantics predicts that (4) is true because, on each admissible model, there is one candidate content of “Harry is bald” that Renata said. On one precisification, (4) is true because Renata said the proposition *that Harry has fewer than 1,000 cranial hairs*; on another precisification, (4) is true because Renata said the proposition *that Harry has fewer than 999 cranial hairs*; and so on for each admissible precisification. The upshot is that (4) is true on all admissible models, so it is supertrue. This account of indirect speech reports is novel—it relativizes the content of speech reports to admissible models.

Turning to statements of propositional content of the form “S expresses P,” it stands to reason that these will be supervaluated in the same way Keefe supervaluates “ $\alpha$  said that P” reports—each admissible model will employ a different candidate proposition as the content of the complement clause.<sup>33</sup> For the toy example of (3) and its candidate contents, Keefe’s view predicts that, on each admissible model, (3) expresses a different one of (3a – d). On one admissible model, (3) expresses (3a), while on other admissible models it expresses (3b), (3c), and (3d). Since each candidate content is expressed on one admissible model but not expressed on any other models, each of the following metalanguage statements comes out neither true nor false:

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<sup>33</sup> The metalanguage has a semantics that obeys Supertruth Semantics, so the truth of a metalanguage statement is truth on all admissible models. Which models are these? Keefe supervaluates the metalanguage over the same models used to supervaluate the object-language, so I will follow that practice. That seems to be the only practice that fits with the results of Keefe’s supervaluation of speech reports.

3a'. "Tek is tall" express the proposition that Tek is at least 6'1".

3b'. "Tek is tall" express the proposition that Tek is at least 6'0".

3c'. "Tek is tall" express the proposition that Tek is at least 5'11".

3d'. "Tek is tall" express the proposition that Tek is at least 5'10".

Thus, "(3) expresses P" is not supertrue for any substitution of one of (3)'s candidate contents for P. Each substitution of a candidate content into 'P is the proposition expressed by (3)' makes that sentence come out neither true nor false. Thus, the explanation of indeterminate propositional content is that, for each candidate content of a vague S, it is neither true nor false that that proposition is expressed by S. Oddly enough, "S expresses a proposition" is (super)true for a vague S.<sup>34</sup> (3) expresses some proposition or other on each admissible model, so "(3) expresses a proposition" is (super)true. Thus, it is true that vague S expresses a proposition, but there is no proposition for which it is true that *it* is the proposition expressed by S. The propositional content of a vague sentence turns out to be elusive, just as the location of the line between the bald and the non-bald is elusive.

The committed proponent of Supertruth Semantics might not see any problem in elusive propositional content. Supertruth Semantics predicts that an existential statement can be true in the absence of any true instance, e.g. "Someone is the bald person with the greatest number of cranial hairs." If it turns out that "'Harry is bald' expresses some proposition" is a true existential statement with no true instance, this is nothing new. However, this feature of Keefe's view turns out to generate contradictions when combined with Propositional Semantics.

Consider the following sentence:

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<sup>34</sup> Because Supertruth Semantics supports the inference from " $\varphi$  is supertrue" to " $\varphi$  is true simpliciter," I will use the abbreviation " $\varphi$  is (super)true" for the phrase " $\varphi$  is supertrue and therefore true simpliciter." *Mutatis mutandis* for " $\varphi$  is (super>false."

5. (3) expresses a proposition.

As noted above, the Indeterminacy Proposal predicts that sentences such as (5) are (super>true. (5) is (super>true because, on each admissible model, sentence (3), “Tek is tall,” expresses a different one of its candidate contents. At first glance, the truth of (5) seems to be a boon to the Indeterminacy Proposal. (5) is (super>true, and similar results will hold for other vague sentences, so vague sentences generally have propositional content. That bodes well for reconciling Supertruth Semantics and Propositional Semantics: since Supertruth Semantics assigns truth-conditions to vague sentences, and since Propositional Semantics requires that truth-conditions be determined by propositional content, it follows that reconciliation of those views requires that vague sentences have some sort of propositional content.

Unfortunately for the Indeterminacy Proposal, the reasoning that explains how vague sentences indeterminately express their candidate contents, which also explains the (super>true of (5), has further results that are problematic. For instance, the following sentences come out (super>true:

6. (3) expresses exactly one of its candidate contents.

7. (3) expresses one proposition that is necessarily bivalent.

The reasoning is parallel to the reasoning above. On one admissible model, (6) is true because (3) expresses (3a). On another model, (6) is true because (3) expresses (3b). And so on. For each admissible model, there is one candidate content that (3) expresses on that model. Hence,

sentence (3) expresses some candidate content or other on every admissible model, so (6) is (super>true. Furthermore, since every candidate content is by definition necessarily bivalent,<sup>35</sup> (7) is (super>true by the same reasoning. These results are disastrous for the Indeterminacy Proposal. If (6) and (7) are both true, then the vague sentence (3), “Tek is tall,” expresses exactly one of its bivalent candidate contents. By Propositional Semantics, if a sentence expresses exactly one bivalent proposition, then that sentence has bivalent truth-conditions. So (3) has bivalent truth-conditions—it doesn’t admit of the possibility of being neither true nor false. This result is inconsistent with Supertruth Semantics, which predicts truth-value gaps for vague sentences such as (3). Thus, the Indeterminacy Proposal, taken together with Propositional Semantics, contradicts Supertruth Semantics.

Keefe (2010) considers something quite like the argument of the previous paragraph and offers a characteristically supervaluationist reply. Recall Keefe’s explanation that sentence (4), “Renata said that Harry is bald,” is true because on each admissible model Renata said one of the candidate contents of “Harry is bald,” a different proposition for each admissible model. Keefe considers whether that same reasoning makes the following true:

8. Renata said something precise.

It appears that (8) is true for the same reason (3) is true—on one model, Renata said the precise proposition *that Harry has fewer than 1,000 cranial hairs*; on another she said the proposition *that Harry has fewer than 999 cranial hairs*; and so on. Keefe realizes that the (super)truth of (8) would be an unhappy result for her theory, so she attempts to block the inference to (8). She does so by arguing that the proper regimentation of (8) must use the truth predicate or a determinacy

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<sup>35</sup> Recall, from note 11, that I am pretending that (3a-d) are necessarily bivalent, even though they are not.

operator.<sup>36</sup> This is the same strategy Keefe uses to handle sentences such as, “F has borderline cases,” where F is a vague predicate. It appears that “F has borderline cases” is false on every admissible model because each model supplies a sharply bounded set as the extension of F. But Keefe argues that, “the statement that F has borderline cases should be interpreted as ‘for some x, Fx is not true, but nor is  $\sim$ Fx true’” (2000, p. 186). Given that truth is supertruth, Keefe’s regimentation achieves the desired result that “F has borderline cases” is true simpliciter. Call this, “the hidden truth predicate strategy.” Keefe applies the hidden truth predicate strategy to other problematic sentences, such as “F lacks sharp boundaries,” “F is vague,” “F can be made precise in many ways,” and “There is no unique extension to F.”

Keefe’s hidden truth predicate strategy is generally suspect. Even if some problematic sentences should be formulated with a hidden truth predicate, there are similar sentences that are equally problematic that clearly do not admit of such treatment. For instance, even if “F lacks sharp boundaries” can be regimented with a truth predicate such that it comes out true, there is no such regimentation available for “the extension of F is a classical set,” which is true on every admissible model, and which is just as problematic.

Furthermore, the hidden truth predicate strategy fails to apply to the argument at hand. How, exactly, is the hidden truth predicate strategy supposed to apply to (8), “Renata said something precise”? (8) appears to be true for the same reason (3) is true. The best the hidden truth predicate strategy can do is point out that the following sentence is superfalse:

8'. There is a proposition P such that: P is precise and “Renata said P” is supertrue.

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<sup>36</sup> Determinacy operators and the semantics of ‘determinately’ are vexing. For present purposes, the determinacy operator may be ignored because Keefe’s theory makes ‘ $D\phi$ ’ equivalent to ‘ $\phi$  is supertrue’ (2000, pp. 208-211). So we are free to conduct the discussion in terms of supertruth without mentioning D and without losing anything.

But the superfalsity of (8') offers little comfort when the following sentence is supertrue:

8". There is a proposition P such that: P is precise and Renata said P.

For the same reasons that (3) is (super)true, (8") is (super)true as well: (8") is verified by a different candidate content on each admissible model, so (8") is true on every admissible model, so it is supertrue, therefore it is true simpliciter. The same goes for sentences (6) and (7) in the argument above. Employing the hidden truth predicate strategy allows one to point out that sentences similar to (6) and (7) are false:

6'. For some candidate content  $P_i$  of (3), "(3) expresses  $P_i$ " is supertrue.

7'. Some proposition P is such that: P is necessarily bivalent and "(3) expresses P" is supertrue.

(6') and (7') indeed fail to be supertrue. But those results do not aid the dialectical position of the Indeterminacy Proposal. The falsity of (6') and (7') does not change the status of (6) and (7)—the latter metalinguistic sentences are (super)true. Rather, the falsity of (6') and (7'), when paired with the truth of (6) and (7), only serves to highlight the incoherence of the framework for propositional semantics that results from the Indeterminacy Proposal. The hidden truth predicate strategy does not rebut the argument I gave above. The Indeterminacy Proposal verifies (6) and (7), which, combined with Propositional Semantics, contradict Supertruth Semantics. Reconciliation of Supertruth Semantics and Propositional Semantics must be sought in other proposals.

### §3: *The All Proposal*

The next hope for reconciling Propositional Semantics and Supertruth Semantics is the All Proposal, which predicts that a vague sentence expresses all of its candidate contents. Fine (1975, p. 282) endorses something quite like this proposal, though he does not use the terminology of propositions. Recall these metalanguage sentences:

3a'. "Tek is tall" expresses the proposition that Tek is at least 6'1".

3b'. "Tek is tall" expresses the proposition that Tek is at least 6'0".

3c'. "Tek is tall" expresses the proposition that Tek is at least 5'11".

3d'. "Tek is tall" expresses the proposition that Tek is at least 5'10".

The All Proposal predicts that each of (3a'– d') is true. This proposal supports a close analogy between ambiguous sentences and vague ones—an ambiguous sentence expresses multiple propositions, one for each disambiguation, and a vague sentence expresses a great many propositions, one for each of admissible precisification. One reason to endorse this proposal is that it seems to avoid the issues of indeterminate content that arise for the Indeterminacy Proposal. The idea would be that a vague sentence determinately expresses each of its candidate contents.

The objection I made to the Indeterminacy Proposal in the previous section is that it verifies metalanguage statements about propositional content that generate contradictions with Supertruth Semantics. The All Proposal faces similar difficulties.

The first difficulty is that a statement of the All Proposal in the metalanguage seems to come out false. Recall from the previous section that Williamson has argued persuasively that

supervaluationism must “conduct its business in a vague meta-language” (1994, p. 161). Thus, it is incumbent on the proponent of the All Proposal to offer a semantics for the vague metalanguage that verifies a statement of the All Proposal itself, as well as the application of that proposal to the vague object-language. But it is not clear how this can be accomplished.

Keefe’s strategy for conducting supervaluationist business in a vague metalanguage is to posit an infinite hierarchy of metalanguages, each of which is vague, and each of which is governed by Supertruth Semantics. That strategy seems to fit quite well with many of the motivations and mechanisms of supervaluationism, but it generates contradictions when combined with Propositional Semantics. Could the proponent of the All Proposal take up Keefe’s hierarchy of supervaluational metalanguages? Keefe supervaluates the metalanguage by evaluating it across the same models used to evaluate the object-language. So, an admissible model offers precise interpretations of all the object-language terms and sentences, as well as precise interpretations of all the metalanguage terms and sentences, and so on for the infinite hierarchy of metalanguages. A model that precisifies ‘is tall’ and sentences containing it also precisifies “expresses” and sentences of the form “Sentence S expresses the proposition that P.” On this method, it seems unavoidable that, on each admissible model, a vague sentence comes to have the same truth-conditions as one of its candidate contents. For example, on the model that supplies the set of those 6'0" or taller as the extension of “is tall,” sentence (3), “Tek is tall,” comes to have the same truth-conditions as one of its candidate contents, namely (3b), the proposition *that Tek is at least 6'0" tall*. But if (3) on this model has the same truth-conditions as (3b), it seems to follow that “expresses” must be precisified such that (3) expresses (3b) on this model. It would be bizarre if sentence (3) on this model had truth-conditions identical to (3b) but did not express (3b). So (3b) is true on this model, but it will be false on the others. Likewise,

(3a') will come out true on one model and false on the others, and so on for each of (3a' – d'). But if each of (3a' – d') is true on one model and false on the others, then we are back to the Indeterminacy Proposal—(3) indeterminately expresses each of its candidate contents.

So, the proponent of the All Proposal will have to offer a quite different analysis of the semantics of the vague metalanguage, and it is not at all clear how that should go. An *ad hoc* option would posit Supertruth Semantics for the whole of the metalanguage, except for “expresses,” which is given a subvaluational semantics, according to which “S expresses that P” is true iff that sentence is true on *at least one* admissible model. The upshot would be that each of (3a' – d') is true, so a statement of the All Proposal is verified. But the resulting semantics does not affirm Supertruth Semantics, and it is not uniform. So this is not a way to reconcile Supertruth Semantics with Propositional Semantics, which is what we are in search of.

And the metalinguistic problems for the All Proposal get worse. I have been pretending that there is a precisely bounded set of candidate contents for a vague sentence, e.g. (3a – d) for (3). However, if (3a – d) are the only candidate contents for (3), then there are sharp cut-offs between the propositions expressed by (3) and the propositions not expressed by (3). Then the proposition *that Tek is at least 6'1"* is the most demanding candidate content of (3)—it sets the highest boundary for “is tall.” But then any higher boundary for “is tall” is inadmissible, so there is a sharp cut-off between the admissible precisifications of that predicate and the inadmissible ones. And this sharp cut-off turns out to mark the boundary between the determinately tall and the indeterminately tall. For any  $x \geq 6'1"$  or taller, “x is tall” is true on every model, so it is (super)true. For any  $y$  shorter than  $6'1"$ , “y is tall” is either superfalse or neither true nor false. And this means that there is no higher-order vagueness. The latter result is unacceptable,

especially for the supervaluationist who takes Williamson's lesson that metalanguage terms used to talk about vagueness—e.g. “admissible precisification,” “borderline case”—are vague.

To accommodate higher-order vagueness, the proponent of Supertruth Semantics must recognize that there is not a precisely bounded set of candidate contents for a vague sentence. It follows that there are borderline candidate contents that are indeterminate cases of being expressed by a sentence. So the simplified picture of the All Proposal gives way to one in which some candidate contents are determinately expressed and some are indeterminately expressed. What sort of semantics for the metalanguage supports this more complex picture? There seems to be only one way to account for propositions indeterminately expressed, for Supertruth Semantics knows only one sort of indeterminacy—the indeterminacy of mixed valuations on admissible models. If it is indeterminate whether Harry is bald, then by the lights of Supertruth Semantics, this indeterminacy is explained by the presence of some admissible models that verify “Harry is bald” and some admissible models that falsify “Harry is bald.” Likewise, if some candidate contents of “Harry is bald” are indeterminately expressed by that sentence, this must be because, for those propositions, “‘Harry is bald’ expresses P” is true on some admissible models and false on others. It is not difficult to see how to make “S expresses that P” sentences true on some models and false on others—Keefe's approach accomplishes that. However, while Keefe's method gets the desired result for the indeterminately expressed candidate contents, it cannot simultaneously achieve the desired result for the candidate contents that are to be determinately expressed. It is difficult to see what semantics for the metalanguage could predict that “S expresses that P” is (super)true for some candidate contents of a vague sentence and neither true nor false for others. So there seems no way to both accommodate some candidates being indeterminately expressed and others being determinately expressed. So there is no evident way

to accommodate the more complex picture of the All Proposal that accommodates higher-order vagueness. The All Proposal seems not to be workable in a supervaluational metalanguage.

#### *§4: The Some Proposal*

The next option for reconciling Supertruth Semantics and Propositional Semantics is the proposal that a vague S expresses some, but not all, of its candidate contents. No version of this proposal is promising.

One version of the Some Proposal is that a vague S expresses exactly one of its candidate contents. Since candidate contents are necessarily bivalent propositions, if a vague S expresses exactly one of its candidate contents, then by Propositional Semantics, S has necessarily bivalent truth-conditions. This is the result predicted by epistemicist semantics, which does not allow for any possible truth-value gaps, and which is inconsistent with the truth-conditions assigned by Supertruth Semantics.

Another difficulty afflicts any version of the Some Proposal. According to Supertruth Semantics, the truth-conditions of a vague sentence quantify over all of that sentence's admissible precisifications—truth is truth on *all* admissible models. If a vague sentence expresses some, but not all, of its candidate contents, then some but not all of the admissible models contribute to the content of S. It follows that there are models that play a role in determining the truth-conditions of S but do not contribute to the content of S—these are the models that S's truth-conditions quantify over but whose corresponding candidate contents are not expressed by S. But this entails that S's truth-conditions are not determined entirely by its content. Rather, S's truth-conditions are determined by its content—the candidate contents it actually expresses—in addition to some models that do not contribute to its content. A strict

reading of Propositional Semantics requires that the semantic content of a sentence exhaustively determines the truth-conditions of that sentence—there is no room for anything else to play a part in determining the truth-conditions of the sentence. Since the current proposal has the result that some models are not part of the content of S, though they do play a role in determining the truth-conditions of S, this proposal is inconsistent with the strict reading of Propositional Semantics.<sup>37</sup>

A final difficulty is that, if a vague S expresses some but not all of its candidate contents, it is arbitrary which candidate contents are expressed. If the proposal is that a vague S expresses exactly one of its candidate contents, that proposal owes an explanation of why S expresses that particular candidate content instead of all the others. If the proposal is that a vague S expresses many but not all of its candidate contents, that proposal owes an account of which candidate contents are left out and why. But no such explanations seem to be forthcoming.

#### §5: *The None Proposal*

One reaction to the difficulties of the previous proposals is to think that they are too carried away with the candidate contents of a vague sentence. None of a vague S's candidate contents are *actually* expressed by S, goes the reaction. Rather, a vague S's candidate contents represent all the propositions that a vague S *would* express, were it sharpened. These

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<sup>37</sup> There may be an argument that the current proposal is consistent with a weaker reading of Propositional Semantics. But a weaker reading would yield the principle that the proposition expressed by a sentence plays some part or other in determining the truth-conditions of that sentence. That principle is all-encompassing, and is therefore uninteresting. Even proponents of truth-conditional pragmatics can affirm the weak reading of Propositional Semantics, so the weak reading is not an apt criterion for delineating traditional propositional semantics. The interesting version of Propositional Semantics is the strict reading that makes the propositions expressed the exclusive determiners of sentential truth-conditions.

propositions are not in fact expressed by the vague sentence, but they allow us to calculate the truth-value of that sentence in the absence of propositional content. This is the None Proposal.<sup>38</sup>

The None Proposal is one way of cashing out the semantic indecision motivation for Supertruth Semantics. This proposal would explain semantic indecision as the failure of a vague sentence to express any proposition. The idea is that a vague sentence is not sufficiently precise to express any particular proposition, and Supertruth Semantics is seen as a way to assign truth-conditions in the absence of content.

Unfortunately for the None Proposal, assigning truth-conditions in the absence of propositional content is inconsistent with Propositional Semantics. Propositional Semantics says that propositional content determines truth-conditions, so it entails that a sentence has truth-conditions only if it has propositional content. The None Proposal assigns to vague sentences the truth-conditions prescribed by Supertruth Semantics, but it predicts that those sentences do not express any propositions. Since truth-conditions are assigned in the absence of propositional content, it is not the case that propositional content determines truth-conditions—apparently something other than propositional content determines the truth-conditions of vague sentences. This is inconsistent with Propositional Semantics. Hence, the None Proposal does not reconcile Propositional Semantics and Supertruth Semantics.

David Braun and Ted Sider (2007) agree that the None Proposal is incompatible with the conjunction of Supertruth Semantics and Propositional Semantics. In the argument above, I assumed the None Proposal and Supertruth Semantics in order to derive the denial of Propositional Semantics. Braun and Sider take things the other way around, assuming Propositional Semantics and the None Proposal, and then deriving the denial of Supertruth

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<sup>38</sup> One might take Fine's (1975, p. 277) comments on actual meaning and potential meaning to support the None Proposal.

Semantics. Braun and Sider begin with the semantic indecision view. As they interpret that view, it entails that no vague sentence expresses a proposition—this is the None Proposal. Assuming Propositional Semantics, Braun and Sider reason that, since no vague sentence expresses a proposition, no vague sentence is true. Since no vague sentence is true, Supertruth Semantics is false. Surprisingly, Braun and Sider are committed to the semantic indecision view to the extent that they accept all of the conclusions of the argument just given. They accept that no vague sentence expresses a proposition, and they accept that no vague sentence is true. Braun and Sider recognize the ubiquity of vagueness in natural languages, so they accept the further conclusion that nearly all sentences employed by natural language users are untrue. To soften the blow of these radical conclusions, Braun and Sider offer a pragmatic story about how we communicate using false sentences. The story is that we ignore the vagueness of our sentences and pretend that they conform to Supertruth Semantics. Their radical conclusions aside, Braun and Sider’s argument establishes once again that the None Proposal, Propositional Semantics, and Supertruth Semantics, are mutually inconsistent. Reconciliation of Supertruth Semantics and Propositional Semantics must be sought elsewhere than the None Proposal.

In this section and the previous three, I considered the proposals that a vague sentence expresses none, some, or all of its candidate contents, as well as the proposal that it is indeterminate which candidate contents, if any, are expressed by a vague sentence. None of those proposals succeed. If those proposals exhaust the logical space for reconciling Supertruth Semantics and Propositional Semantics, then it is safe to conclude that those theses are incompatible. The proponent of Supertruth Semantics must then decide how to amend or abandon Propositional Semantics. That result may be welcomed by some supervaluationists, but it is an unhappy result for others. There are many options for amending or abandoning

Propositional Semantics, and I will not consider all of them here. But I will give a brief argument in favor of one such amendment in the next section.

### §6: *Gappy Propositions*

There is a way to reconcile Supertruth Semantics with two thirds of Propositional Semantics, and this is to employ propositions that themselves have supervaluational truth-conditions. Such propositions are not bivalent, and non-bivalent propositions are virtually unheard of.<sup>39</sup> The only discussion of this proposal in the vagueness literature occurs in the exchange between Schiffer (1998, 2000a, 2000b) and García-Carpintero (2000, 2010). I argue that the proposal merits further attention, and that it is in fact the best option for the proponent of Supertruth Semantics.

The proposal is as follows. A vague sentence expresses one proposition, so “Harry is bald” expresses the proposition *that Harry is bald*. Likewise, sentence (3), “Tek is tall,” expresses the proposition *that Tek is tall*. The proposition *that Tek is tall* has supervaluational truth-conditions: it is true iff true on every admissible model, false iff false on every admissible model, and otherwise neither true nor false. Hence, the proposition *that Tek is tall* admits of truth-value gaps—it is neither true nor false in some possible cases, namely the cases in which Tek is borderline tall. Since these propositions admit of truth-value gaps, I’ll call them “gappy propositions.”

If a vague sentence expresses a proposition that has supervaluational truth-conditions, then that sentence has the truth-conditions prescribed by Supertruth Semantics, and it has those

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<sup>39</sup> Graham Oddie has brought to my attention that higher-order partial intensional type theory provides a notion of contents that can be neither true nor false. Instead of using a third truth-value, as I do in ch. 3, higher-order partial intensional type theory allows for truth-value gaps by treating some formulae as undefined. See Tichy (1971; 1975; 1978; 1986a; 1986b).

truth-conditions via inheritance from the proposition expressed. Thus, Supertruth Semantics is affirmed. The first two clauses of Propositional Semantics are affirmed as well: (i) semantic content determines truth-conditions, and (ii) semantic content is the proposition expressed. The third clause of Propositional Semantics comes out false, of course—the propositional content of a vague sentence is not bivalent on the current proposal. Thus, relaxing the bivalence requirement for propositions enables a reconciliation of Supertruth Semantics and two of the three components of Propositional Semantics. Proponents of Supertruth Semantics can maintain the semantic framework in which propositional content determines truth-conditions, as long as they abandon the notion that propositions are bivalent.

The All and Indeterminacy Proposals had difficulties with metalanguage sentences about propositional content. The current proposal avoids those difficulties. Consider,

9. “Tek is tall” expresses the proposition that Tek is tall.

(9) is supertrue. On each admissible model, “Tek is tall” expresses the proposition *that Tek is tall*. On some models that proposition is true, on others it is false, and on others it is neither. But the same proposition is expressed by the sentence on every model. In preserving the notion that vague sentences express propositions, this proposal preserves the notion that vague sentences are meaningful and have semantic content. This is fortunate, since most of the natural language sentences that are ever used are vague.

Gappy propositions play all the roles that propositions are meant to play in semantics and metasemantics. They explain how one sentence type can have distinct meanings and differing truth-values across contexts of utterance and circumstances of evaluation. They also explain how

distinct sentence types can have the same meaning. Gappy propositions work quite well for indirect speech reports. If “Renata said that Harry is bald” is true, this is because Renata uttered the gappy proposition that Harry is bald. The vagueness of Renata’s report is reflected in the vagueness of the object reported—the proposition. In similar fashion, the report, “Renata believes that Harry is bald,” is made true by Renata’s propositional attitude, which itself is surely vague. The vagueness of Renata’s attitude is reflected in the vagueness of the proposition Renata is said to believe. Gappy propositions are better suited for playing the propositional roles in a vague language than are bivalent propositions.

There might be arguments from the metaphysics of propositions against the use of gappy propositions, but I do not find such arguments persuasive. One who falsely believes that propositions are sets of possible worlds can construct gappy propositions from three-valued sets of worlds, which admit of membership, non-membership, and indeterminate membership. Terry Parsons (2000) offers a theory of such sets. One who favors Russellian propositions will find that gappy propositions lead straight to ontic vagueness, but that shouldn’t be much of a surprise—Scott Soames (2002, p. 438) accepts ontic vagueness, and it is not difficult to see how he gets there from non-classical semantics and Russellian propositions. For the Fregean, it is especially easy to construct gappy propositions. Propositions are complex senses. Let senses admit of indeterminacy in application, so that the sense {is bald} can apply to objects, or fail to apply, or be indeterminate in application. Harry is then one of those objects such that it’s indeterminate whether he falls under the sense {is bald}, and this explains why the proposition that Harry is bald is neither true nor false.

There is work to be done in developing a theory of gappy propositions. And proponents of Supertruth Semantics who choose not to take up gappy propositions have their own

metasemantic work to do. I hope to have given some direction to that work by showing that it must seek theoretical resources outside of the traditional Propositional Semantics considered here.

## CHAPTER 3

### *Gappy Fregean Propositions as the Contents of Vague Sentences*

Propositions are posited to play several important, interconnected roles in philosophy. They are the meanings of natural language sentences, and they determine the truth-conditions of the sentences that express them. As such, propositions explain the phenomenon of distinct sentences having the same meaning (e.g. ‘Snow is white’ and ‘Schnee ist weiss’), as well as the phenomenon of a single sentence type expressing distinct meanings in various contexts of utterance (e.g. ‘Shamir is waiting for us at the bank’). Propositions are thought to be the objects of attitudes such as belief and doubt. They serve as the things we assert and the things designated by that-clauses. By playing the latter theoretical role, propositions explain quantificational statements and inferences such as,

Amy believes everything Carl said.

Carl said that skiing is hard.

So Amy believes that skiing is hard.<sup>40</sup>

Propositions also ground modal properties. Sentences are not fit to be necessarily or contingently true, but the information contents that sentences encode are apt for that role.<sup>41</sup>

The roles listed above fit together nicely. When I utter a sentence, S, the meaning of S is some proposition, P. Given a normal conversational context, P is also what I assert by my utterance of S, and it is what my audience comes to believe if they agree with me. P can be true

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<sup>40</sup> This example is from King (2014a, p. 7).

<sup>41</sup> King (2014a: p. 6).

or false, and it can be contingently or necessarily true or false. These modal and alethic properties of P are then inherited by any beliefs, assertions, and utterances that have P as their content. In this way, propositions connect semantic content and semantic evaluation with assertoric content, cognitive attitudes, and valid inference.

Standard theories of propositions have it that propositions are bivalent. They assume that, for any proposition P, P is either true or false at every possible circumstance of evaluation. For example, if a proposition is a (classical) set of possible worlds, then every world is either a world where P is true, or a world where P is false. There are no worlds where P is neither true nor false, nor are there worlds where P is both true and false. Thus, the theory that propositions are sets of possible worlds predicts that propositions are bivalent.

At first glance, vague sentences do not seem to be bivalent. Sentences such as ‘Harry is bald’, ‘Talia is tall’, and ‘Russia has invaded the Ukraine’, do not seem to be so precisely defined that they are either true or false at every possible circumstance of evaluation. That would require set-theoretically precise meanings for the predicates ‘is bald’, ‘is tall’, and ‘has invaded the Ukraine’, which seems unrealistic. And it turns out that vagueness is ubiquitous in natural languages—this is one of the few points of consensus in the literature on vagueness.<sup>42</sup> While the sorites paradox is most often presented for obviously vague predicates such as ‘is a heap’ and ‘is bald’, a moment’s reflection reveals just how easy it is to identify a sorites paradox for almost any natural language predicate.<sup>43</sup> If vague sentences seem not to have bivalent truth-conditions, then it seems unlikely that they express bivalent propositions. So vagueness makes trouble for the notion that bivalent propositions are the contents of natural language sentences.

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<sup>42</sup> See ch. 2, n13 of this essay.

<sup>43</sup> After all, the meaning of a predicate is not just its extension at the actual world, but is somehow a function of the extension of the term across possible worlds. If the extension of a predicate is *possibly* vague, then the *meaning* of the term is vague. And nearly all natural language predicates have possible borderline cases.

In the literature there are two prominent responses to the *prima facie* difficulty that vague sentences pose for bivalent propositions. The response from the epistemicist is to bite the semantic bullet and insist that vague natural language sentences do indeed express bivalent propositions. It turns out that ‘is bald’, ‘is a heap’, and ‘has invaded the Ukraine’ have set-theoretically precise meanings. According to epistemicism, there is a sharp cut-off between worlds where Harry is bald and worlds where he is not, as is there a sharp cut-off between worlds where Russia has invaded the Ukraine and worlds where it has not. Williamson (1994: 166) is surely correct that, whatever it turns out to be, “[t]he truth about vagueness must be strange,” but we should hope that the truth of the matter is less strange than the sentence ‘Russia has invaded the Ukraine’ switching from true to false with the change of position of one boot on the ground, or of one particle at the edge of one boot, for that matter.

The second prominent response to the seeming mismatch between vague sentences and bivalent propositions is supervaluationist. The strategy here is to say that, for a given vague sentence, there are numerous bivalent propositions that are all equally well qualified to be the content of the sentence. The sentence, ‘Talia is tall’, for example, has many candidate contents, which are bivalent propositions such as the proposition *that Talia is more than 5'9" in height*.<sup>44</sup> Supervaluationists rarely go on to spell out the relation between a vague sentence and its candidate contents, but the idea is that the candidates somehow serve as the content of the vague sentence.

This chapter presents a non-standard theory of propositions that provides a better account of the content of vague sentences than is provided by these standard theories that use bivalent propositions. On my theory, a proposition is a compound Fregean sense that admits of truth-

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<sup>44</sup> I will pretend that this proposition is bivalent, which requires pretending that it does not admit of possible borderline cases, which is unlikely. Talia’s uppermost spatial boundary seems sharp to the naked eye, but at the microscopic level it is more like the edge of a cloud.

value gaps.<sup>45</sup> I model these propositions in terms of functional application. The sentence ‘Harry is bald’, for example, expresses the compound sense [**bald(harry)**]. That compound sense is true at worlds where Harry is bald, false at worlds where Harry is non-bald, and neither true nor false at worlds where Harry is borderline bald. The vagueness of a sentence is reflected in the vagueness of the proposition it expresses. This allows my theory to affirm unequivocally that a vague sentence expresses a proposition, and hence has content, while allowing that that content is not so precisely defined as to be bivalent. Neither epistemicism nor supervaluationism can accrue these benefits, or so I will argue. Given the ubiquity of vagueness in natural language, it is quite important to affirm that vague sentences have content. If I’m right that my theory has significant advantages in accounting for the content of vague sentences, that is an important advantage in accounting for the semantics of natural language generally.

In addition to these advantages in semantic theory, I will argue that gappy Fregean propositions offer some theoretical advantages in terms of ontology. I compare my preferred theory to an alternative that employs gappy Russellian propositions. The alternative garners many of the benefits of my theory, but it is committed straightaway to ontic vagueness. Gappy structured propositions must have gappy constituents. So, if propositional constituents are just objects, properties, relations, and functions, then gappy propositions entail gappy objects, gappy properties, gappy relations, or gappy functions, any of which constitutes ontic vagueness. My gappy Fregean propositions, on the other hand, posit indeterminacy in sense, which does not lead so directly to indeterminacy in reference. My theory is not committed to ontic vagueness, and this ontological neutrality is an advantage. It turns out that my theory of gappy Fregean propositions also serves as a promising account of the nature of vagueness, a version of the vagueness-in-language view that is not wedded to supervaluationism.

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<sup>45</sup> Frege (1948, 1956).

In the next section I present my theory of gappy Fregean propositions. In the following sections, I argue that it outperforms epistemicism (§2), supervaluationism (§3), and a Russellian alternative (§4).

### *§1: Gappy Fregean Propositions*

The two chief motivations of my account are (i) to affirm that vague sentences have content, but (ii) to deny that the content of vague sentences is bivalent. I will argue that achieving both of these goals is significant because neither of the main approaches to vagueness that employ bivalent propositions achieve both goals—epistemicism achieves (i) but not (ii), while supervaluationism achieves (ii) but not (i).<sup>46</sup> In order to affirm that vague sentence have content without making this content bivalent, my account employs propositions that themselves are not bivalent.

The starting point for my account is the idea that a vague sentence expresses a proposition, and this proposition is neither true nor false in some cases. So, for example, the sentence ‘Harry is bald’ is vague because it contains the vague predicate ‘\_\_ is bald’. The epistemicist insists that ‘Harry is bald’ expresses a bivalent proposition, which is either true or false in every possible circumstance of evaluation, but I think it unrealistic to posit such precise content for this vague sentence. The supervaluationist who uses bivalent propositions holds that the content of ‘Harry is bald’ does not express just one bivalent proposition, but is somehow a function of a great many bivalent propositions. It is incumbent on the supervaluationist to explain that relation between sentence and proposition, and I argue below that such explanations

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<sup>46</sup> In this chapter I assume that supervaluationism employs bivalent propositions, which is standard. In ch. 2 I argued that the most promising options for supervaluationists is to embrace vague propositions, which are propositions that themselves have supervaluational truth-conditions. This approach is quite non-standard, and it has important affinities with my preferred account, but I presently set it aside for the clarity of the comparison.

encounter serious difficulties. In contrast to these two popular approaches, I take up the notion that a vague sentence expresses one vague proposition. So ‘Harry is bald’ expresses the proposition *that Harry is bald*, a proposition that is not bivalent. Rather than being bivalent, the proposition *that Harry is bald* can be true at some circumstances of evaluation, false at others, and neither true nor false at yet other circumstances of evaluation. For instance, suppose that Harry is borderline bald. Let Harry be sitting in a barbershop, considering whether to go with a full shave of his head. If Harry goes through with the shave, then the proposition *that Harry is bald* will be true. If Harry does not go through with the shave, then the proposition *that Harry is bald* will be neither true nor false. And if Harry magically grows a great deal of scalp hair, then that same proposition will be false. Thus, a vague sentence such as ‘Harry is bald’ definitely has content—it expresses a proposition. But that content is not so precise as to be bivalent.

To build on the starting point, I’ll take up Frege’s notion that a sentence expresses a thought, which is a truth-evaluable entity composed of the senses of the parts of the sentence. Instead of calling these “thoughts,” I’ll call them “propositions.” So the proposition *that Harry is bald* is composed of the sense of ‘Harry’ and the sense of ‘\_\_ is bald’. When those two senses combine, they make an entity that is truth-evaluable, and this is the thing I am calling, “the proposition *that Harry is bald*.” Frege took these propositions to be bivalent, but I am in search of an account of propositions that are not bivalent, that admit of truth-value gaps. To that end, I will attempt to modify Frege’s account of propositions as composed of senses.

For further explanation of senses composing to form propositions, I will use a formal model that makes use of type theory and intensional logic. In this way, senses can be modeled by functional application. I will present the standard version of intensional type theory and then modify it to produce a model of gappy Fregean propositions.

The account of the propositions from standard intensional type theory is as follows.<sup>47</sup> A model,  $M$ , is made up of a domain of individuals,  $D$ , and a set of possible worlds,  $W$ . Let us assume the following model,

M1

$D$ :  $\alpha, \beta$

$W$ :  $@, u$

For baldness-related reasons, let us say that  $\alpha$  is Mick Jagger and  $\beta$  is Patrick Stewart. Add to M1 that all the individuals exist at all the worlds. Expressions of type  $i$  refer to individuals that are members of  $D$ . Expressions of type  $b$  refer to truth-values. For now, let the truth-values be T and F, though a third value will be added below. Expressions of type  $\langle s, t \rangle$  are functions from possible worlds to the referents of type  $t$  expressions.<sup>48</sup> All well-typed expressions in the object language are built out of functions over worlds, individuals, and truth-values.

Senses are modeled as functions over possible worlds and references at those worlds. Let the name **mick** refer to  $\alpha$  at both worlds in the model,  $@$  and  $u$ . And let the name **pat** refer to  $\beta$  at both worlds. We then have the following senses for both names:

$$\text{sense}[\mathbf{mick}] = [ @ \mapsto \alpha, u \mapsto \alpha ]$$

$$\text{sense}[\mathbf{pat}] = [ @ \mapsto \beta, u \mapsto \beta ]$$

The names **mick** and **pat** are thus defined to be rigid designators, but the machinery allows deviation from that practice—a name could refer to different objects at different worlds. So the

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<sup>47</sup> The standard account is found in L.T.F. Gamut (1991). ‘L.T.F. Gamut’ is a pseudonym for J.F.A.K. van Bentham, J.A.G. Groenendijk, D.H.J. de Jongh, M.J.B. Stokhof, and H.J. Verkuyl. The notation I use here, which I learned from Graeme R. Forbes, differs slightly from the notation in Gamut (1991).

<sup>48</sup> Here I use  $t$  as a variable for types.

sense of a name is of type  $\langle s, i \rangle$ , a function from possible worlds to individuals, which is also called an individual concept. The sense of a first-order monadic predicate is of type  $\langle s, ib \rangle$ , a function from worlds to individuals-to-truth-value functions. The idea is that an expression for a predicate takes as input a possible world, and the output is the function that maps to T the individuals who are bald at that world and maps to F the individuals who are not bald at that world. Let Mick ( $\alpha$ ) be not bald at  $@$  and bald at  $u$ . Let Patrick ( $\beta$ ) be bald at both  $@$  and  $u$ . We then get the following sense for ‘\_\_ is bald’ in M1:

$$\text{sense}[\mathbf{bald}] = [ @ \mapsto [ \alpha \mapsto F, \beta \mapsto T ], u \mapsto [ \alpha \mapsto T, \beta \mapsto T ] ].$$

Reference becomes a world-bound feature, such that there is no such thing as the referent of ‘\_\_ is bald’ full stop. Instead, there is the referent of ‘\_\_ is bald’ at  $@$ , which is  $[ \alpha \mapsto F, \beta \mapsto T ]$ , and the referent of ‘\_\_ is bald’ at  $u$ , which is  $[ \alpha \mapsto T, \beta \mapsto T ]$ .

A sentence also has a sense and a reference. The reference of a sentence is its truth-value; the sense of a sentence is a function of type  $\langle s, ib \rangle$ , from worlds to truth-values. The sense of a sentence is a proposition—it’s what the sentence means, and it’s what determines the truth-condition of a sentence. The sentence ‘Mick is bald’ expresses the proposition,  $\text{sense}[\mathbf{bald}(\mathbf{mick})]$ . We can derive the truth-condition for that sentence in M1 in the following steps:

1.  $\text{sense}[\mathbf{bald}(\mathbf{mick})] = [ @ \mapsto \text{ref}_@[\mathbf{bald}(\mathbf{mick})], u \mapsto \text{ref}_u[\mathbf{bald}(\mathbf{mick})] ]$
2.  $\text{ref}_@[\mathbf{bald}(\mathbf{mick})] = \text{ref}_@[\mathbf{bald}](\text{ref}_@[\mathbf{mick}])$
3.  $\text{ref}_@[\mathbf{bald}](\text{ref}_@[\mathbf{mick}]) = [ \alpha \mapsto F, \beta \mapsto T ](\alpha) = F$
4.  $\text{ref}_u[\mathbf{bald}(\mathbf{mick})] = \text{ref}_u[\mathbf{bald}](\text{ref}_u[\mathbf{mick}])$

$$5. \text{ref}_u[\mathbf{bald}](\text{ref}_u[\mathbf{mick}]) = [\alpha \mapsto T, \beta \mapsto T](\alpha) = T$$

$$6. \text{sense}[\mathbf{bald}(\mathbf{mick})] = [@ \mapsto F, u \mapsto T]$$

Thus, the sense of  $[\mathbf{bald}(\mathbf{mick})]$  is the function  $[@ \mapsto \text{ref}_@[\mathbf{bald}(\mathbf{mick})], u \mapsto \text{ref}_u[\mathbf{bald}(\mathbf{mick})]]$ , which returns the value F for  $@$  and T for  $u$ . This is a welcome result, as Mick is bald at  $u$  but not  $@$  in M1.

Since my aim is to construct propositions that admit of truth-value gaps, I'll modify the standard theory by adding the truth-value I, which stand for 'indeterminate', or 'neither true nor false', which I use equivalently here. And I'll add an individual,  $\gamma$ , who I stipulate to be Harry. Let Harry exist at both  $@$  and  $u$ . Let Harry be bald at  $u$  but indeterminate with respect to baldness at  $@$ . We then have the following model and these modified definitions for senses:

M2

$D: \alpha, \beta, \gamma$

$W: @, u$

$\text{sense}[\mathbf{mick}] = [@ \mapsto \alpha, u \mapsto \alpha]$

$\text{sense}[\mathbf{pat}] = [@ \mapsto \beta, u \mapsto \beta]$

$\text{sense}[\mathbf{harry}] = [@ \mapsto \gamma, u \mapsto \gamma]$

$\text{sense}[\mathbf{bald}] = [@ \mapsto [\alpha \mapsto F, \beta \mapsto T, \gamma \mapsto I], u \mapsto [\alpha \mapsto T, \beta \mapsto T, \gamma \mapsto T]]$

$\text{ref}_@[\mathbf{bald}] = [\alpha \mapsto F, \beta \mapsto T, \gamma \mapsto I]$

$\text{ref}_u[\mathbf{bald}] = [\alpha \mapsto T, \beta \mapsto T, \gamma \mapsto T]$

The sense of the sentence 'Harry is bald' is  $\text{sense}[\mathbf{bald}(\mathbf{harry})]$ . We can derive the truth-condition for that sentence in M2 in the following steps:

1.  $sense[\mathbf{bald}(\mathbf{harry})] = [@ \mapsto ref_{@}[\mathbf{bald}(\mathbf{harry})], u \mapsto ref_u[\mathbf{bald}(\mathbf{harry})]]$
2.  $ref_{@}[\mathbf{bald}(\mathbf{harry})] = ref_{@}[\mathbf{bald}](ref_{@}[\mathbf{harry}])$
3.  $ref_{@}[\mathbf{bald}](ref_{@}[\mathbf{harry}]) = [\alpha \mapsto F, \beta \mapsto T, \gamma \mapsto I](\gamma) = I$
4.  $ref_u[\mathbf{bald}(\mathbf{harry})] = ref_u[\mathbf{bald}](ref_u[\mathbf{harry}])$
5.  $ref_u[\mathbf{bald}](ref_u[\mathbf{harry}]) = [\alpha \mapsto T, \beta \mapsto T, \gamma \mapsto T](\gamma) = T$
6.  $sense[\mathbf{bald}(\mathbf{harry})] = [@ \mapsto I, u \mapsto T]$

Thus, the sense of ‘Harry is bald’ is the function,  $[@ \mapsto ref_{@}[\mathbf{bald}(\mathbf{harry})], u \mapsto ref_u[\mathbf{bald}(\mathbf{harry})]]$ , which maps  $@$  to I and  $u$  to T. This is a welcome result: the proposition is neither true nor false at  $@$ , but it is true at  $u$ . The sentence ‘Harry is bald’ then inherits this truth-condition from its propositional content:  $[@ \mapsto I, u \mapsto T]$ .

Though  $sense[\mathbf{bald}(\mathbf{harry})]$  is a promising candidate for being the gappy Fregean proposition *that Harry is bald*, there is still room for improvement. Note that  $sense[\mathbf{bald}(\mathbf{harry})]$  is a function that maps a world,  $w$ , to  $ref_w[\mathbf{bald}(\mathbf{harry})]$ . This does not quite capture the notion that a proposition is composed of component senses. To better model that, we seek a version of  $sense[\mathbf{bald}(\mathbf{harry})]$  that decomposes into  $sense[\mathbf{bald}](sense[\mathbf{harry}])$ . To do this, we must define a directly composing sense of ‘\_\_ is bald’ that takes  $sense[\mathbf{harry}]$  as input. Employing a directly composing sense, or *d-sense*, is yet another deviation from standard intensional type theory. It can be accomplished as follows. Let  $c^{si}$  be an arbitrary individual concept. Then *d-sense*  $sense[\mathbf{bald}](c^{si})$  is the proposition  $p$  such that for every  $w$ ,  $p(w) = ref_w[\mathbf{bald}](ref_w(c^{si}))$ . In M2,

$d\text{-sense}[\mathbf{bald}] =$

$\text{sense}[\mathbf{mick}] \mapsto [ @ \mapsto \text{ref}_{@}[\mathbf{bald}](\text{ref}_{@}[\mathbf{mick}]), u \mapsto \text{ref}_{u}[\mathbf{bald}](\text{ref}_{u}[\mathbf{mick}])],$

$\text{sense}[\mathbf{pat}] \mapsto [ @ \mapsto \text{ref}_{@}[\mathbf{bald}](\text{ref}_{@}[\mathbf{pat}]), u \mapsto \text{ref}_{u}[\mathbf{bald}](\text{ref}_{u}[\mathbf{pat}])],$

$\text{sense}[\mathbf{harry}] \mapsto [ @ \mapsto \text{ref}_{@}[\mathbf{bald}](\text{ref}_{@}[\mathbf{harry}]), u \mapsto \text{ref}_{u}[\mathbf{bald}](\text{ref}_{u}[\mathbf{harry}])].$

On the standard intensional type theory,  $\text{sense}[\mathbf{bald}]$  takes a world as input and returns the reference at that world of  $\mathbf{bald}(\mathbf{pat})$ . Alternatively, the directly composing sense,  $d\text{-sense}[\mathbf{bald}]$ , takes an individual concept as input, and it returns a function from worlds to truth-values.  $d\text{-sense}[\mathbf{bald}]$  takes the sense of a name as input. It outputs a function that maps to T worlds where the referent of the name is bald and maps to false worlds where the referent of the name is not bald. This is a better representation of Frege's idea that senses compose to form the thought expressed by a sentence. The sentence 'Harry is bald' expresses the proposition  $\text{sense}[\mathbf{bald}(\mathbf{harry})]$ , which decomposes into  $d\text{-sense}[\mathbf{bald}](\text{sense}[\mathbf{harry}])$ . We can derive that proposition's truth-condition in M2 as follows:

1.  $\text{sense}[\mathbf{bald}(\mathbf{harry})] = d\text{-sense}[\mathbf{bald}](\text{sense}[\mathbf{harry}])$
2.  $d\text{-sense}[\mathbf{bald}](\text{sense}[\mathbf{harry}]) = [ @ \mapsto \text{ref}_{@}[\mathbf{bald}](\text{ref}_{@}[\mathbf{harry}]),$   
 $u \mapsto \text{ref}_{u}[\mathbf{bald}](\text{ref}_{u}[\mathbf{harry}])]$
3.  $\text{ref}_{@}[\mathbf{bald}](\text{ref}_{@}[\mathbf{harry}]) = [ \alpha \mapsto F, \beta \mapsto T, \gamma \mapsto I](\gamma) = I$
4.  $\text{ref}_{u}[\mathbf{bald}](\text{ref}_{u}[\mathbf{harry}]) = [ \alpha \mapsto T, \beta \mapsto T, \gamma \mapsto T](\gamma) = T$
5.  $\text{sense}[\mathbf{bald}(\mathbf{harry})] = [ @ \mapsto I, u \mapsto T]$

Thus, we get the desired result that  $sense[\mathbf{bald}(\mathbf{harry})]$  is an entity that returns the value I at the actual world and the value T at  $u$ . It appears that  $sense[\mathbf{bald}(\mathbf{harry})]$  is an apt candidate for the proposition expressed by ‘Harry is bald’, which is to be composed of the sense of ‘\_\_ is bald’ and the sense of ‘Harry’. We get a proposition that can be true, false, or neither. It turns out that @ is a circumstance of evaluation where ‘Harry is bald’ expresses a proposition, but that proposition is itself neither true nor false. And this is what we wanted in a borderline case—the vague sentence has content, but that content is neither true nor false. In what follows, when I refer to the proposition *that Harry is bald*, as my account takes that proposition to be, I’ll refer to it as  $sense[\mathbf{bald}(\mathbf{harry})]$ .

This theory preserves the notion that vague sentences have content, while allowing that this content is not so precise as to be bivalent. Thus, each of the vague sentences ‘Tesh is an adult’, ‘Talia is tall’, and ‘Great Britain is a constitutional monarchy’, has a meaning because it expresses a proposition. But each proposition expressed allows for borderline cases in which that meaning is neither true nor false. Furthermore, these meanings determine the truth-conditions of the sentences that express them in the standard way. ‘Harry is bald’ inherits its truth-conditions from the proposition  $sense[\mathbf{bald}(\mathbf{harry})]$ .  $sense[\mathbf{bald}(\mathbf{harry})]$  also serves nicely as the content of beliefs, desires, and doubts, when anyone believes, desires, or doubts that Harry is bald.<sup>49</sup>

Entertaining the proposition *that Harry is bald* is a matter of thinking of Harry as bald, which is explained here as applying the concept  $d-sense[\mathbf{bald}]$  to the individual concept  $sense[\mathbf{harry}]$ .

When it comes to accounting for the content of vague sentences, we can keep everything in the traditional picture of propositions, as long as we give up the bivalence of propositions. Gappy

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<sup>49</sup> There is a hitch here. If I assert the proposition *that Harry is bald*, and you say, “That’s true,” what is it you have affirmed? The most natural answer is that you’ve said the proposition is true. On my account, a proposition is a function from worlds to truth-values, so a proposition does not have a truth-value simpliciter. So the account must interpret your affirmation in a world-indexed way: you affirm that the proposition *that Harry is bald* is true at the actual world. I think this is acceptable, but there may be grounds for a more serious objection here.

Fregean propositions allow us to harmonize the notion that vague sentences have content with the conviction that the contents of vague sentences cannot be so precise as to draw sharp lines between worlds where they are true and worlds where they are false.

## *§2: Epistemicism*

In contrast to my preferred account, epistemicism has no place for truth-value gaps. Epistemicism holds that vagueness is not indeterminacy—neither indeterminacy in linguistic or mental entities, nor indeterminacy in the extra-mental, extra-linguistic parts of the world. Instead, says epistemicism, vagueness is our irremediable ignorance of the precise facts. Epistemicism is committed to classical logic and classical semantics. Thus, every sentence eligible for semantic evaluation is either true or false in every circumstance of evaluation, and the extension of any predicate at any circumstance of evaluation is a precisely bounded set. For the epistemicist, a borderline case is not a matter of a predicate being indeterminate in application to an object—the predicate either determinately applies or determinately fails to apply, though we cannot know which is the case. For example, ‘The blob is pink’ is either true or false, even if the blob of color in question is borderline pink/red. Vagueness is the phenomenon of our being unable to know whether the blob is pink, or whether it is red, though it must be one of the two. Likewise, even if Harry is a borderline case of baldness, he is either bald or not bald. Vagueness is our inability to know whether Harry is bald when he is a borderline case. A final example is that the word ‘adolescent’, if it denotes anything, denotes a classical set—every object in the universe is either a member or a non-member of the predicate’s extension. So there is no indeterminacy in the application conditions of the term; nothing could be indeterminate with respect to its status as an adolescent. It’s just that we are unable to know the adolescent status of some borderline objects.

What does epistemicism predict about propositional content? Epistemicists have not focused on this question, but they have good reason for this. Propositions are easy for the epistemicist. Given the view's use of classical semantics, the contents of sentences—the things that are meanings and determine truth-values—can only be evaluated as true or false. There is no third value, nor are there degrees of truth, nor is there any such thing as an evaluation of “neither true nor false.” Since the epistemicist holds that sentences are bivalent, she is free to use any of the standard accounts of bivalent propositions to explain the content of vague natural language sentences.

So, epistemicism predicts that a vague sentence expresses a bivalent proposition. For example, the sentence, ‘Harry is bald’ expresses the proposition that Harry is bald, which I represent as, ‘<Harry is bald>’. <Harry is bald> is either True or False at every circumstance of evaluation. For simplicity, let us assume that circumstances of evaluation are just possible worlds. In keeping with the epistemicist picture, there is a sharp boundary between the worlds where <Harry is bald> is true and worlds where it is false. That line might lie between the worlds where Harry has 998 or fewer cranial hairs and the worlds where he has 999 or more. The epistemicist says we cannot know where this cutoff lies, but she insists that the cutoff exists.

It is fortunate that epistemicism can make use of standard, bivalent propositions, but other consequences for the view are less fortunate. On epistemicism, it turns out that the proposition <Harry is bald> has the very same truth-values across all possible worlds as some proposition of the form <Harry has fewer than 999 hairs>. We cannot know which of these precise propositions about the cardinality of Harry's cranial hairs turns out to have the same values across all worlds as <Harry is bald>, but one of them does, and this is surprising. Whatever we thought about the content of ‘Harry is bald’, we did not expect it to express a

proposition of the form <Harry has fewer than  $n$  cranial hairs>. That content seems too precise to be the meaning of the vague sentence, 'Harry is bald'. One might be tempted to appeal to context here and insist that, in various contexts, 'Harry is bald' expresses various propositions of the form <Harry has fewer than  $n$  cranial hairs>. But that does not improve the situation. The reason it is implausible that 'Harry is bald' expresses <Harry has fewer than 999 hairs> in every context is that the meaning of the sentence just isn't as precise as that proposition. As Keefe (2000: p.76ff) argues, nothing in our use of the predicate 'is bald', nor in the extra-mental, extra-linguistic parts of the world, could conspire to give such a precise truth-condition to a sentence about baldness. For the same reasons, adding context-sensitivity does not help. There is no forthcoming explanation of how the mechanisms of conversational context could be so precise as to dictate that, for a given context, 'Harry is bald' expresses <Harry has fewer than 999 hairs> and does not express <Harry has fewer than 998 hairs>.

This is not a new criticism of epistemicism, but in my view it is a decisive criticism. And it is worth noting that this problem for epistemicism can be seen in the sentence-proposition relationship. And it is reasonable to expect that similar difficulties will arise for any view that employs only bivalent propositions. If a proposition must divide all cases into T or F without remainder, then there are bound to be problems resulting from the mismatch between the imprecision or indeterminacy of vague sentences, on the one hand, and the precise determinacy of the bivalent propositions, on the other.

### §3: *Supervaluationism*

The other prominent proposal in the literature for accounting for the content of vague sentences with bivalent propositions is supervaluationism. Epistemicism had the issue that its

bivalent propositions didn't fit well with vague sentences. To say that a vague sentence expresses one bivalent proposition is to posit content that is unrealistically precise. Supervaluationism uses the alternative strategy of using a plurality of bivalent propositions to account for the content of a single vague sentence. Supervaluationism holds that a sentence, *S*, is true iff it is true on every admissible precisification. The precisifications of 'Harry is bald', for example, sharpen the vague predicate 'is bald' by supplying it with precise meanings. Let's assume the precise meanings of 'is bald' are of the form 'has fewer than *n* cranial hairs'. It turns out that each admissible precisification of 'Harry is bald' is equivalent to a proposition of the form <Harry has fewer than *n* hairs>. We can create the following toy model of the propositions that correspond to the admissible precisifications of 1:

- 1a. <Harry has fewer than 999 cranial hairs>
- 1b. <Harry has fewer than 998 cranial hairs>
- 1c. <Harry has fewer than 997 cranial hairs>
- 1d. <Harry has fewer than 996 cranial hairs>

So supervaluationism predicts that 'Harry is bald' is true iff all of (1a-d) are true, that (1) is false iff all of (1a-d) are false, and that (1) is neither true nor false if some of (1a-d) are true and some false. This gives us a model for how the candidate contents of a vague sentence determine supervaluational truth-conditions for the sentence. In some cases the sentence comes out neither true nor false, so the sentence does not have the precise truth-conditions that were posited by epistemicism. We have allowed for truth-value gaps, and that seems to be an improvement.

But what is the content of (1) on this model? What is the relation between the sentence (1) and the propositions (1a-d)? Does (1) express any of (1a-d)? Does it express all of them? Here supervenionists rarely take a stand. This is an important question that hasn't received enough attention. It's not open to the supervenionist to hold that (1) expresses exactly one of (1a-d) – that's what epistemicism predicts, and it results in bivalent truth-conditions for (1), and bivalent truth-conditions are inconsistent with the supervenionist truth-conditions we're attempting to use. The supervenionist might be tempted to say (1) doesn't actually express any of (1a-d), but instead that we simply use those propositions to calculate the truth-value of the sentence. That won't work out well because it predicts that vague sentences don't express propositions, and yet some vague sentences are either true or false. But if propositions are the meanings and contents of sentences, and if vague sentences don't express propositions, then vague sentences don't have meanings, contents, or truth-conditions. There would be an option here of pushing everything off to pragmatics and endorsing a strong semantic error theory, but that would be theoretically costly.

The only live options for the supervenionist are the view that (1) expresses all of (1a-d) and the view that it is indeterminate which of (1a-d), if any, are expressed by (1). In ch. 2, I argued that neither of these options is workable. Here I will briefly review those difficulties in order to argue that my favored account avoids them.

Consider first the view that a vague sentence expresses all of the propositions that correspond to its admissible precisifications. This is the view that predicts that (1) expresses all of (1a-d) (though recall that a more realistic model will employ *many* more than four such propositions). One issue for this view is that it posits a strong sort of semantic blindness. According to the view, a sentence such as 'Tammy is tall', 'Olga is an adult', and 'Jerry is a

‘jerk’, expresses a large number of very precise propositions. Some philosophers may find this a costly consequence of the view; others may not. But anyone who judges the above criticism of epistemicism to be plausible should have some sympathy for this criticism of this version of supervaluationism. If epistemicism is guilty of positing content that is unrealistically precise for a vague sentence, then this version of supervaluationism seems guilty as well. Instead of one bivalent proposition expressed by ‘Harry is bald’, we have a great many of them.

According to the epistemicist, a vague sentence expresses a bivalent proposition, but we cannot know which bivalent proposition is expressed. The present version of supervaluationism predicts that a vague sentence expresses a great many propositions, and presumably we cannot know exactly which propositions these are. Thus, it turns out that the supervaluationist who takes up the current version of the theory must posit a similar sort of ignorance to that posited by the epistemicist. The notion that the content of a vague sentence is a barrage of precise propositions turns out to be not all that different from the notion that the content of a vague sentence is a single bivalent proposition. Furthermore, this problem becomes more pressing when we remember that natural languages are shot through with vagueness. ‘Is bald’ and ‘is a heap’ are obviously vague, but most other predicates in English turn out to be vague when we look closely enough. So, if the proponent of this version of supervaluationism must posit semantic blindness for the content of vague sentences, she must posit semantic blindness for most of the sentences that natural language users encounter.

A further difficulty for the view that a vague sentence expresses all of its candidate contents arises from issues related to higher-order vagueness. Suppose that vague S expresses a precisely bounded set of propositions. It follows that we can order these propositions along one or more dimensions of the vague predicate they precisify. For example, the candidate contents of

‘Harry is bald’ can be ordered by the  $n$  they substitute for ‘Harry has fewer than  $n$  cranial hairs’. It follows that there is a member of the set that sets the lowest threshold for baldness, as well as a member of the set that sets the highest threshold for baldness. But if that is the case, then there is a determinately greatest number of hairs that is an admissible precisification of ‘is bald’, as well as a least number of hairs that is an admissible precisification of ‘is bald’. This creates a sharp cutoff between the bald and the indeterminately bald, as well as a sharp cutoff between the indeterminately bald and the determinately non-bald. It turns out that it must be vague which precisifications are admissible, and so it must be vague which propositions are the candidate contents of a given vague sentence. As Williamson has noted, supervenionism must “conduct it’s business in a vague meta-language,” including statements about admissible precisifications. The set of candidate contents cannot be a precisely bounded set—it must have ragged edges, so to speak. But then this version of supervenionism must hold that the propositions expressed by a vague sentence are a plurality with ragged edges. It seems that there must be some explanation in terms of some propositions determinately expressed by  $S$  and other propositions indeterminately expressed. But it is far from clear how this could be accomplished in a supervenional metalanguage.<sup>50</sup>

So the strategy of affirming that a vague sentence expresses all of its candidate contents encounters some serious difficulties. This strategy requires a great deal of further development if it is to give any clear answer to the question of what the content of a vague sentence is.

The second live option for the supervenionist is to posit that the content of a vague sentence is indeterminate. This option seems to fit especially well with the spirit of supervenionism, and it is the option that Rosanna Keefe (2000, 2010) takes up. Keefe recognizes that a supervenional object language must be paired with a supervenional

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<sup>50</sup> This objection is pressed a bit further in ch. 2.

metalanguage. To make sense of indeterminacy in content, Keefe posits that a vague sentence expresses various candidate propositions on various precisifications. In our toy model, the sentence ‘Harry is bald’ expresses (1a) <Harry has fewer than 999 cranial hairs> on one precisification, (1b) <Harry has fewer than 998 cranial hairs> on another precisification, and so on for each candidate content of the sentence. The upshot is that statements about the propositional content of vague sentences can be supervaluated. Thus, the following metalanguage sentence,

‘Harry is bald’ expresses <Harry has fewer than 999 cranial hairs>

is true on one admissible precisification and false on the others, so it is neither true nor false. And the same result will hold for each of a vague sentence’s candidate contents—that proposition is expressed on one precisification but no others, so the metalanguage statement ‘S expresses P’ is neither true nor false. In this way Keefe is not committed to the notion that a vague sentence determinately expresses any of its candidate contents, and she is able to affirm the metalanguage sentence, ‘‘Harry is bald’ expresses a proposition’. The latter result holds because, on each admissible precisification, that sentence expresses one of its candidate contents, so it is supertrue that the sentence expresses some proposition or other. But this alleged advantage of the theory incurs serious consequences. Also true is the metalanguage sentence, ‘‘Harry is bald’ expresses exactly one of its candidate contents’. But that sentence is the hallmark of the epistemicist view, the view that a vague sentence expresses exactly one bivalent proposition. And if a vague sentence expresses exactly one bivalent proposition, then the sentence has bivalent truth-conditions, which is contrary to the truth-conditions posited by

supervaluationism.<sup>51</sup> Ultimately, this version of supervaluationism, like the previously considered version, requires much further development if it is to offer coherent answers to the pressing questions of propositional content.

Both of the live options for using supervaluationism and bivalent propositions to explain the content of vague sentences ran afoul of serious difficulties in the metalanguage. My preferred theory of gappy Fregean propositions avoids those difficulties. On my theory, the following metalanguage sentence is simply true:

‘Harry is bald’ expresses the proposition *sense*[**bald(harry)**].

Hence, my theory unequivocally affirms that vague sentences have propositional content. And we must remember that it is quite important to affirm that vague sentences have propositional content because most of the sentences we use are vague. Such a simple affirmation of the meaningfulness of vague sentences is not available to the supervaluationist who employs bivalent propositions, and this is a significant advantage for my theory.

#### *§4: The Russellian Alternative*

One cannot plump for Fregean propositions without arguing against Russellian alternatives, and comparison of my theory with Russellian alternatives also serves to highlight an important feature of the theory. Fregean propositions are structured complexes whose constituents are senses, which are concepts or modes of presentation, and which I have modeled as intensions. Russellian propositions are structured complexes whose constituents are objects, properties, relations, and functions. The chief difference is that Russellian propositions are made

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<sup>51</sup> Keefe (2010) considers this objection and replies to it. I critique that reply in ch. 2.

up of the mind- and language-independent entities that sentences are about, whereas Fregean propositions are made up of senses, which represent objects, properties, relations, and such. The building blocks for Fregean propositions are representational entities, while the building blocks of Russellian propositions are non-representational entities. For example, Russell held that the proposition expressed by ‘Mont Blanc is over 4,000 meters high’ was a complex made up of Mont Blanc and the property of being over 4,000 meters high. Frege responded that the mountain itself, with all of its snowfields, was surely not *in* the proposition. Instead, said Frege, the proposition expressed by ‘Mont Blanc is over 4,000 meters high’ is a complex made up of a sense of Mont Blanc—a way of thinking of Mont Blanc—and a sense of the property of being over 4,000 meters in height.

Thus, the Russellian alternative to my theory would posit gappy Russellian propositions, which are complexes made of objects, properties, relations, and functions, which serve as the contents of sentences. These propositions are gappy in the sense that they can be neither true nor false in some borderline cases. Like my preferred theory, the Russellian alternative predicts that ‘Harry is bald’ expresses the proposition *that Harry is bald*, and this proposition is neither true nor false if Harry is a borderline case of baldness. In contrast to my theory, the Russellian alternative predicts that the proposition that Harry is bald is a complex made up of some extra-mental, extra-linguistic stuff, namely the individual Harry and the property of being bald. We can represent that proposition as the pair,  $\langle 0_1, B \rangle$ , where  $0_1$  is the individual Harry and B is the property of being bald. Suppose again that Harry is a borderline case of baldness at the actual world. Then  $\langle 0_1, B \rangle$  is neither true nor false at the actual world—it has the truth-value I. Since the Russellian proposition  $\langle 0_1, B \rangle$  has the value I, it is indeterminate whether Harry has the property of being bald. It seems correct to say that Harry indeterminately instantiates the

property of baldness—he neither determinately instantiates it nor determinately fails to instantiate it.

The Russellian alternative is thus committed to ontic vagueness. By ‘ontic vagueness’, I mean vagueness that consists in non-representational indeterminacy. The view that vagueness is “in the world” is the view that some vagueness consists in non-representational indeterminacy. In contrast, the vagueness-in-language view, which is really the vagueness in language *or thought* view, holds that all vagueness consists in representational indeterminacy—indeterminacy in entities such as sentences, thoughts, words, patterns of linguistic usage, etc.

The case of Harry’s baldness is a case of vagueness consisting in an object that indeterminately instantiates a property. If properties are thin—if they are mere reifications of predicates—then this need not constitute ontic vagueness. But Russellians hold that propositions are made of mind- and language-independent stuff. They hold that propositions are made up of building blocks that are non-representational entities. Russell (1904) says that Mont Blanc must indeed be in the proposition that Mont Blanc is over 4,000 meters high, or else that proposition would not be about Mont Blanc. Likewise, the Russellian holds that the proposition *that Harry is bald* must contain the extra-linguistic, extra-mental property that the proposition is about—the property of baldness. Just as the Russellian is a Millian about names, holding that the propositional contribution of a name is the real-world object the name denotes, so the Russellian holds that the property mentioned in a singular proposition is a thick, real-world property that is said to be instantiated by the subject.

In contrast, my preferred theory of gappy Fregean propositions is not committed to ontic vagueness. My theory and the Russellian alternative both identify vagueness as indeterminacy in propositions. However, my Fregean propositions are compound senses, so my theory locates

vagueness in indeterminacy in sense. By “indeterminacy in sense,” I do not mean that, for a vague term  $\phi$ , it is indeterminate which sense  $\phi$  expresses. That sort of indeterminacy may indeed occur—I see no reason to rule it out. But the sort of indeterminacy that constitutes vagueness is, on my theory, a sense that maps some individual concepts and some worlds to the value I, which is neither true nor false. The predicate ‘\_\_ is bald’ is vague, and the sentences ‘Harry is bald’ and ‘Patrick is bald’ are vague. This is because ‘\_\_ is bald’ has the sense, *d-sense*[**bald**], and that sense maps some individual concepts and worlds to I. In terms of the “location” of vagueness, my theory predicts that vagueness is located in senses. It might also be right to say that some vagueness is located in relations between senses—when we apply *d-sense*[**bald**] to *sense*[**harry**], we get an indeterminate truth-value. Senses are representational entities, so my theory locates vagueness in representational indeterminacy. Hence, my theory is properly a version of the vagueness-in-language view.

This sort of indeterminacy in senses does not entail ontic vagueness. Whether indeterminacy in sense results in indeterminacy in non-representational entities depends on the relation between senses and what they represent. This relationship may be complex, and it must be worked out, but it has sufficient flexibility to avoid ontic vagueness if that is desired. One could be a nominalist about properties and employ my theory of senses and Fregean propositions. Given nominalism, indeterminacy in sense of ‘\_\_ is bald’ does not entail indeterminacy in the non-representational property of baldness because there is no such thing as the non-representational property of baldness. Ontic vagueness is clearly avoided. Alternatively, one might take up my theory of gappy Fregean propositions and combine it with an ontic view of vagueness. This would amount to reifying indeterminate predicate senses as indeterminate

properties in the thick sense of “properties.” My theory is compatible with ontic vagueness, but it does not entail ontic vagueness. This flexibility is an advantage.

## CHAPTER 4

### *Vagueness and Some Recent Russellian Theories of Propositions*

In the previous chapter I defended an account of gappy Fregean propositions as the contents of vague sentences. I argued briefly that my Fregean theory has an ontological advantage over Russellian alternatives. The advantage is that my theory, which explains vagueness as indeterminacy in the application of senses to objects, can posit vague propositions without positing ontic vagueness. For Russellian alternatives, to posit vague propositions is, *ipso facto*, to posit ontic vagueness. In this chapter I extend that argument by considering the recent Russellian theories of propositions put forth by Jeff King, Jeff Speaks, and Scott Soames in their co-edited volume *New Thinking About Propositions* (2014). I discuss how each of these theories might be used to explain the content of vague sentences. I argue that each of these theories is committed to ontic vagueness, and I argue that my preferred account has further explanatory advantages as well. In the course of comparing my account to these Russellian alternatives, I give further consideration to the question of how theoretically costly it is for a theory of propositions to posit ontic vagueness.

To recap, my preferred account is that vague sentences express gappy Fregean propositions. These propositions are Fregean because they are made of constituent senses, which are concepts—shared mental entities. I modeled these propositions with a modified intensional type theory. These propositions are gappy because they can be neither true nor false at some circumstances of evaluation. For example, the sentence ‘Han is an adolescent’ expresses the proposition composed of the sense of ‘\_\_ is an adolescent’ and the sense of ‘Han’. The proposition expressed is *sense[adolescent(han)]*, which decomposes into

*d-sense*[adolescent](*sense*[han]). Assuming that Han goes through adolescence in the normal way, and allowing time as a parameter of circumstances of evaluation, the proposition *sense*[adolescent(han)] is evaluated as T at some circumstances of evaluation, F at others, and I at others. The vague sentence ‘Han is an adolescent’ expresses content, but that content is neither true nor false in some possible cases. In this way, vagueness is explained as indeterminacy of sense. This is a variety of the linguistic view of vagueness, as defined in ch. 1, because it takes vagueness to consist in indeterminacy in representational entities. Hence, my account is not committed to ontic vagueness, which is vagueness that consists in indeterminacy in non-representational entities. My account is not strictly inconsistent with the ontic vagueness view. The indeterminacy in sense posited by my account could be paired with an ontology that posits exactly parallel indeterminacy in the referents of those senses, but this choice is not forced.

Russellian alternatives would agree with much of my account. Like my account, Russellian alternatives would attempt to explain the content of vague sentences using propositions that admit of indeterminacy in truth-value (can be neither true nor false). The key difference is that, whereas my Fregean propositions are built out of senses, Russellian propositions are made up of non-representational entities. The building blocks for Russellian propositions are the very things those propositions are about. For the Russellian, if ‘Han is an adolescent’ expresses one proposition, it expresses the proposition *that Han is an adolescent*, which is a complex whose constituents are the object Han and the property *being an adolescent*.<sup>52</sup> If this proposition is neither true nor false at some possible circumstance of evaluation, it seems unavoidable that this is due to ontic vagueness—either Han is an indeterminate object in some respect, or the property of being an adolescent is indeterminate in

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<sup>52</sup> Here I italicize the name of a property to emphasize that this property is supposed to be a mind- and language-independent entity. I am attempting to follow the style of Soames, Speaks, and King. I hope the reader is not confused with the parallel device of italicizing ‘that’-clauses to highlight references to propositions.

some respect, or both. To gain more traction on the questions of whether and how such a Russellian alternative to my account results in ontic vagueness, I will consider three particular Russellian accounts of propositions and how they might accommodate vague sentences.

Before moving on to the three particular Russellian theories, another brief word about ontic vagueness is in order. Recall from ch. 1 that I define the ontic view of vagueness as the view that some vagueness consists in non-representational indeterminacy, while the linguistic view is the view that all vagueness consists in representational indeterminacy. My chief argument against Russellian alternatives to my account is that they are committed to ontic vagueness and my account is not. In my estimation, this argument has some merit even before a detailed consideration of the virtues and vices of ontic vagueness has been undertaken. One reason for thinking so is that it is advantageous for any philosophical theory to have fewer ontological commitments than its rivals. But an even better reason to think my account gains an advantage by not committing to ontic vagueness is that semantic theory in particular should not posit any more ontology than is necessary for achieving its characteristic tasks. The goal of semantic theory is to explain the meaning of natural language sentences. Surely such a theory could fully explain the meanings of the sentences of a natural language without providing an exhaustive ontology of the whole world. For instance, the meaning of the English term ‘orange juice’ can be explained without full exegesis of the behavior of the quarks and leptons in the atoms that make up the molecules and compounds at the microscopic level of typical orange juice. Semantic theory should make use of the entities it requires for adequately explain meaning, including truth-conditions, but it should do no further ontological work—a semantic theory needn’t be a theory of everything. If this view of methodology is accurate, then avoiding commitment to ontic vagueness incurs not only the general advantage of ontological parsimony,

but also the particular advantage of semantic theory limiting its incursions into ontology. Thus, I think the previous chapter gave an adequate argument for the conclusion that my theory of gappy Fregean propositions has an advantage over Russellian alternatives.

But there is more to say on the question of how significant an advantage my account has in not positing ontic vagueness. The significance of that advantage depends largely on one's metaphysical scruples, but it also depends on the nature of the particular sorts of ontic vagueness to which the alternatives are committed. Some sorts of ontic vagueness are more palatable than others. For example, there exists a body of water, the river Thames. It is plausible that this body of water does not have a precise boundary that divides, without remainder, the molecules that are part of the Thames from the ones that are not. It is fairly plausible that the Thames has a boundary that admits of some indeterminacy. But there are other sorts of ontic vagueness that are more controversial than indeterminacy in spatial boundaries. For instance, Terence Parsons (2000) gives an account of indeterminate identity that allows for it to be indeterminate whether the physical object at time  $t_1$  is identical the object in the same location at time  $t_2$ . Elizabeth Barnes (2010) offers an account of ontic vagueness that reifies the mechanisms of supervaluationism—if it is indeterminate whether the apple is red, this is because it is indeterminate which possible world is actualized, as all of the best qualified candidate worlds do not agree on whether the apple is red or not red. Jessica Wilson's (2013) account explains metaphysical indeterminacy in terms of a determinable property being instantiated though none of its determinate properties are instantiated. In my estimation, ontic vagueness of the sorts discussed by Parsons, Barnes, and Wilson, are quite costly theoretical commitments, whereas commitment to indeterminacy in spatial boundaries might be accounted for in ways that are not so theoretically costly. Hence, it is worth investigating the exact nature of the ontic vagueness to

which Russellian alternatives to my theory are committed, in order to better estimate the theoretical costs or benefits thereof.

*§1: Speaks: propositions as properties of everything*

In the volume *New Thinking About Propositions*, Speaks, King, and Soames each offer Russellian theories of propositions and critique one another's theories. Each of these theories faces significant difficulties, some of which may prove insurmountable, and many of which these authors identify for each other. For present purposes, though, I focus on the question of how these theories might attempt to explain the content of vague sentences.

Speaks's theory of propositions is quite true to Russellian motivations. He succinctly characterizes those motivations thus,

Russell's idea seems to have been that when we ascribe a property to an object, there is the object, the property ascribed, the act of property ascription, and, if the object instantiates the property, the fact of the thing's having the property; but there is no room for some *other* thing, the proposition that the object has the property. To be sure, Russell's worry here rests on a bare metaphysical intuition: that once we cross the relevant objects, properties, and facts off the list, there's no room left for entities of some other kind, which are "about" the relevant situation, to squeeze their way in. But, unargued as it is, the intuition seems to me to be a powerful one... (Speaks, pp. 71-2)

Like Russell, Speaks is intent on somehow reducing propositions to objects, properties, or facts. Speaks aims to craft propositions out of non-representational entities, denizens of the world that have antecedently earned their place in the best ontology.

Speaks chooses properties as the best type of entity to serve as propositions. He intends to follow Lewis (1979) and Chisholm (1981) in this respect. Speaks holds that a proposition is a property of everything or nothing. That is, a true proposition is a property of everything, while a false proposition is a property of nothing. The sentence 'Amelia talks' expresses the property

*being such that Amelia talks*. If the sentence is true at a world,  $w$ , this is because  $w$  instantiates *being such that Amelia talks*. If the sentence is false at  $w$ , this is because  $w$  does not instantiate that property. It is not just the world as a whole that instantiates this property that is a proposition. If I exist at  $w$  and ‘Amelia talks’ is true at  $w$ , I am such that Amelia talks, so I also instantiate the property/proposition *being such that Amelia talks*. Speaks makes propositions out to be Cambridge sorts of properties. There are no grounds for claiming that these properties will be natural properties, or that they will be otherwise well behaved. Some of these properties are uninstantiated, e.g. *being such that a woman is President of the United States*. Some are necessarily uninstantiated, e.g. *being such that  $2+2=5$* . Since there are negative and disjunctive propositions, there will be negative and disjunctive properties that play the role of propositions in Speaks’s theory. Those who take properties to be mind- and language-independent features of the world are usually hesitant to posit properties that are negative or disjunctive, and many shy away from uninstantiated properties as well. In one sense Speaks has satisfied the Russellian motivation for his theory because he has reduced propositions to entities on his acceptable list, namely properties. In another sense, however, Speaks seems not to have satisfied the Russellian motivation of reducing propositions to entities that are metaphysically respectable, or that otherwise earn their place in the best ontology, because some of these properties are suspect sorts of properties.

How might Speaks’s theory explain the content of vague sentences? Let ‘Oscar’ be the name of a particular Red Delicious apple. The sentence ‘Oscar is red’ expresses the proposition that is the property *being such that Oscar is red*. If I inhabit a world,  $w_1$ , in which Oscar is ripe and red, then I instantiate *being such that Oscar is red*, and  $w_1$  as a whole instantiates that property too, so the proposition that Oscar is red is true at that  $w_1$ . Alternatively, if I inhabit a

world  $w_2$  where Oscar is rotten and brown, then neither I nor  $w_2$  instantiate the property *being such that Oscar is red*, so the proposition that Oscar is red is false at  $w_2$ . But what about a world,  $w_3$ , where Oscar is borderline red? At  $w_3$  the sentence ‘Oscar is red’ has the value I—it is neither true nor false. And it seems that the only explanation for this indeterminacy in truth-value is that it is indeterminate whether  $w_3$  instantiates the property *being such that Oscar is red*. If I inhabit  $w_3$ , then it is also indeterminate whether I instantiate the property *being such that Oscar is red* at  $w_3$ . Unfortunately, Speaks’s theory has no further resources to explain the indeterminate instantiation of a proposition/property. These properties are oddly Cambridge to begin with, so there seems to be no forthcoming explanation of what it would be for such a property to be indeterminately instantiated.

Speaks’s theory is pure in its Russellianism, and it fittingly entails ontic vagueness. Whatever it is for a proposition/property to be indeterminately instantiated, it is certainly ontic vagueness. That is, indeterminate instantiation of one of Speaks’s proposition/properties amounts to vagueness that consists in non-representational indeterminacy. Speaks is explicit that his proposition/properties are not linguistic, mental, or otherwise representational. Rather, they are explicitly intended to be extra-mental, extra-linguistic entities. Thus, indeterminacy in the instantiation of one of them constitutes ontic vagueness. And it is a particularly strong sort of ontic vagueness. Speaks sought to construct propositions out of entities that have otherwise earned their place in the best ontology. He begins with a short list of categories that fit this bill, properties make it onto that list. Properties are among the entities that Speaks takes to be basic—properties are properly used to explain, or reduce, other sorts of entities, whereas other entities are not needed to reduce or explain properties. So, for Speaks, indeterminacy in the instantiation

of a property amounts to indeterminacy in metaphysically basic entities. This is a strong sort of ontic vagueness, and it is a significant theoretical commitment.

The only other theoretical resource Speaks has for explaining vagueness is indeterminacy in the relation between sentence and proposition. Speaks could insist that properties do not admit of indeterminacy in instantiation, and that vagueness is indeterminacy in which property/proposition is expressed by a vague sentence. This application of Speaks's theory to the content of vague sentences would be much less similar to my preferred account. Instead of allowing non-bivalent propositions to serve as the contents of vague sentences, this move would amount to explaining the content of vague sentences in terms of numerous bivalent propositions. The notion that it is indeterminate which proposition a sentence expresses may be useful for some purposes. But, as I argued in ch. 2, that notion encounters significant difficulties as a general explanation of the phenomenon of vagueness. If one advocates that it is indeterminate which P is expressed by vague S, the advocate owes an explanation of what exactly that comes to. If the view is that S does not express any P, then S has no content. But it is surely incorrect that all vague sentences, which include most of the natural language sentences we use, have no content. If the view is that S expresses a great many propositions, then one must explain how that works, both in terms of content relations and truth-conditions. If the view is that it is indeterminate whether S expresses any proposition, then an account is owed of whether and how S comes to have truth-conditions. My arguments from ch. 2 demonstrate that constructing such accounts is a highly non-trivial task. Difficulties abound.

Ultimately, my account of gappy Fregean propositions has some distinct advantages over Speaks's theory of properties as propositions. Sense is a layer of meaning that creates a buffer between indeterminate linguistic entities and the stuff those entities are about. Sense allows

indeterminacy in the meanings and truth-conditions of sentences using the word ‘red’, and in the application-conditions of the concept RED, without *ipso facto* indeterminacy in the extra-mental, extra-linguistic bits of the world that our sentences and concepts are about. Not having to posit indeterminate property instantiation for thick properties is an advantage for my account.

Furthermore, my account has the advantage that it can, in principle, recognize more types of vagueness than Speaks’s theory can. Both theories can acknowledge ontic vagueness. My account could allow for some ontic vagueness by making the additional posit of referent entities that are ontically indeterminate in ways that mirror the indeterminacy of the senses that represent them. Both theories can acknowledge indeterminacy in the sentence-proposition relation. I haven’t made use of that sort of indeterminacy in this essay, but the account can recognize it. Only my account, though, can recognize indeterminacy in meaning that is not ontic vagueness and is not indeterminacy in the sentence-proposition relationship. My account has the ability to recognize vagueness in sense, which is vagueness constituted by indeterminacy in concepts, meanings, and the relations that hold among concepts and meanings. Speaks’s theory does not have the theoretical resources to talk about this sort of vagueness. Vagueness in sense is at least conceivable, so I think it is an advantage that my theory can talk about it. Furthermore, the level of sense is an eminently reasonable place to posit vagueness. Vagueness is taken to be indeterminacy in the concepts we use to think about and to talk about the world—it is sometimes indeterminate whether those concepts apply to borderline objects. I suspect that anyone who has any sympathy whatsoever for the linguistic view of vagueness will find this a significant advantage for my account over Speaks’s.

§2: King: propositions as semantic facts

Jeff King (2014a: 48) also hopes to give a theory of propositions that is Russellian insofar as propositions, “are complex, structured entities with individuals, properties, and relations as constituents.” King takes as a starting point that, “[t]he proposition that Michael swims ... has Michael and the property of swimming as constituents; the proposition that Barry loves Michelle has Barry, the loving relation and Michelle as constituents; and so on” (48). But another important motivation for King’s theory runs contrary to the tradition of Russellian propositions. In King’s estimation, Russellian theories that took propositions to be sets, or ordered tuples, left unexplained how those entities could be representational, which propositions must be. In King’s view, the notion that propositions could be intrinsically representational is dubious. He hopes to do better by grounding the representational features of propositions in the acts of agents. King thus has two goals for his theory of propositions: (i) that it build propositions out of objects, properties, and relations, and (ii) that it explain the representational features of propositions in terms of the actions of agents who make use of them.

King’s solution is to identify propositions with facts of a certain sort. These facts are partially linguistic. For example,

... the proposition that Michael swims is the following fact: *there is a context  $c$ , assignment  $g$  and language  $L$  such that for some lexical items  $a$  and  $b$  of  $L$ , Michael is the semantic value of  $a$  relative to  $g$  and  $c$  and the property of swimming is the semantic value of  $b$  relative to  $g$  and  $c$  and  $a$  occurs at the left terminal node of syntactic relation  $R$  that in  $L$  encodes ascription and  $b$  occurs at  $R$ ’s right terminal node.* (King 2014a: 56, original emphasis)<sup>53</sup>

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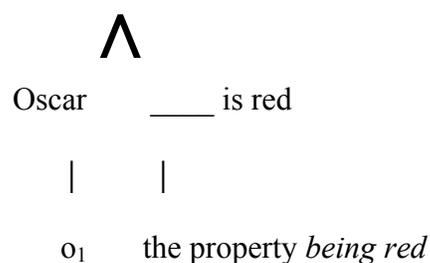
<sup>53</sup> Speaks (2014: 75) offers this perspicuous summary of King’s view: “[King] suggest that we think of the semantic significance (in English) of the relation between ‘Amelia’ and ‘talks’ in ‘Amelia talks’ as the following instantiation function from objects, properties, and worlds to truth values: the function which, given as argument an object  $o$  and property  $F$ , determines the truth value true at  $w$  iff  $o$  instantiates  $F$  at  $w$ . He then embeds this view of the semantic significance of syntax in a view that propositions are a certain kind of fact. We can, in King’s view, describe the proposition expressed by ‘Amelia talks’ as follows: it is the fact of there being words  $x$  and  $y$  of some language such that  $x$  has Amelia as its content,  $y$  has the property of talking as its content,  $R(x,y)$ , and  $R$  encodes the instantiation function.”

In other words, the proposition that Michael swims is the fact that Michael and the property of swimming stand in a certain relation to a parse tree of some language. The certain relation is that Michael is the value of the term at the left node of the tree, the property of swimming is the value at the right node, and the tree ascribes the right value to the left one.

Thus, the facts that King identifies with propositions are facts about objects, properties, and relations in the extra-linguistic parts of the world, but they are also facts about syntactic relations and semantic values in an arbitrary language. The fact that serves as the proposition *that Michael swims* is a fact about Michael, and it is a fact about the property of swimming. But it is also a fact about terms in an arbitrary language that signify Michael and the property of swimming. And it is also a fact about the syntax of an arbitrary language, particularly that the tree having Michael and the property of swimming at its terminal nodes is one that encodes the relation of instantiation. In this way, King's propositions are tied very closely to the sentences that express them. One might argue that these propositions are tied too closely to the languages that express them, but I set this objection aside.

How might King's theory explain the content of vague sentences? Returning to Oscar, the Red Delicious apple, King's theory predicts that the proposition *that Oscar is red* is the fact that some language L includes the parse tree,

Oscar is red.



where ‘ $\wedge$ ’ encodes ascription. As for truth, the proposition *that Oscar is red* is true just in case (i) Oscar and *being red* are values of terms in some language that occupy the left and right (respectively) terminal nodes in a tree that encodes the instantiation relation, and (ii) Oscar instantiates the property *being red*. If either of these conditions are false, then the proposition that Oscar is red is false, which King will explain as the non-obtaining of a fact of the sort just explained. There is an odd proliferation of facts here. Since the proposition is a fact, and since there’s the fact of the proposition being true, the truth of a proposition ends up being a complex, double-fact. There is the fact that is the proposition (e.g. the fact that Michael and swimming have the right relationship to the right sort of tree in some language), and then there is the extra-linguistic fact that makes the proposition true (e.g. the fact that Michael instantiates the property of swimming), and these together constitute the fact that the proposition is true.

What if Oscar is borderline red? How could King’s theory of propositions explain the content of vague sentences? An epistemicist version of King’s theory would insist that every fact either obtains or fails to obtain in every possible situation, with no room for indeterminacy. But we can also construct a version of King’s theory that rivals my account of gappy Fregean propositions. An account of gappy Russellian propositions using King’s theory must explain how a proposition can be neither true nor false in some borderline cases, and it would do so in terms of the facts that King identifies with propositions. If true propositions are facts that obtain and false propositions are facts that fail to obtain, it stands to reason that propositions that are indeterminate in truth-value are facts that are indeterminately instantiated, or indeterminate with respect to whether they are instantiated. On King’s theory, the truth of a proposition is the obtaining of double-fact, which is partly extra-linguistic and partly linguistic. A proposition’s

being neither true nor false would then be explained as indeterminacy with respect to whether the relevant double-fact obtains. Thus, on King's theory, if the proposition *that Oscar is red* is neither true nor false at  $w$ , it is indeterminate whether the following fact obtains:

- (i) there is a context  $c$ , assignment  $g$  and language  $L$  such that for some lexical items  $a$  and  $b$  of  $L$ , Oscar is the semantic value of  $a$  relative to  $g$  and  $c$  and the property of being red is the semantic value of  $b$  relative to  $g$  and  $c$  and  $a$  occurs at the left terminal node of syntactic relation  $R$  that in  $L$  encodes ascription and  $b$  occurs at  $R$ 's right terminal node, and (ii) Oscar instantiates the property of being red.

Indeterminacy in the obtaining of a fact sounds odd. But for non-epistemicists, perhaps this is the sort of thing we have to learn to live with in the semantic theory of vague languages. Is indeterminacy in the obtaining of Kingian facts an innocuous sort of ontic vagueness, or is it a more troubling sort? In the previous section I argued that an account of gappy Russellian propositions based on Speaks's theory leads directly to ontic vagueness. One might hope that gappy propositions based on King's theory would have more options for avoiding ontic vagueness, as King's theory is not so purely Russellian. King diverges from Speaks and traditional Russellian theories of propositions by incorporating linguistic objects and relations into his account of what a proposition is. Perhaps this difference will allow King to maneuver around ontic vagueness in some way that is unavailable to Speaks and the traditional Russellians.

There are a few different ways that one of King's proposition/facts could be indeterminate with respect to whether or not it obtains. So, perhaps there are a few different ways that an account based on King's theory could explain vagueness. Recall that the truth of the proposition *that Oscar is red* has two requirements: (i) Oscar and the property of redness stand in the specified relations to the parse tree of some language, and (ii) Oscar instantiates the property of redness. Clause (i) is about how Oscar and *being red* relate to the syntax and semantics of an

arbitrary language; clause (ii) is about the extra-mental, extra-linguistic relationship between Oscar and the property *being red*. So, it could be indeterminate whether the double-fact obtains because it is indeterminate whether (i) is the case, or it could be indeterminate whether the double-fact obtains because it is indeterminate whether (ii) is the case (reading ‘or’ inclusively). If it is indeterminate whether Oscar instantiates the property *being red*, then it is indeterminate whether clause (ii) holds, so it is indeterminate whether the conjunction of clauses (i) and (ii) holds. The proposition *that Oscar is red* would then be indeterminate in truth-value. The reason for this indeterminacy in truth-value would be that it is indeterminate whether Oscar instantiates redness, which is also indeterminacy in whether the fact that Oscar is red obtains. I return to this explanation below.

The other sort of indeterminacy that could arise for the proposition *that Oscar is red* is that it could be indeterminate whether (i) obtains, which would be indeterminacy in whether some language has the appropriate parse tree for terms that stand for Oscar and *being red*. How could it be indeterminate whether there is a language L whose syntax and semantics put terms for Oscar and *being red* in a tree that encodes instantiation? One possibility is that there is only one language that has the right sort of tree, and it is indeterminate whether the term at the left terminal node really has Oscar as its value, or it is indeterminate whether the term at the right node really has *being red* as its value. This would be indeterminacy in the semantic relations of L. Another possibility is that there is only one language that has a tree with terms whose values are Oscar and *being red*, and it is indeterminate whether this tree encodes instantiation. This would be indeterminacy in the syntax of L. One might hope that King’s theory could use these sorts of indeterminacy, semantic or syntactic, to offer an explanation of vagueness that falls under the linguistic theory of vagueness, hence avoiding ontic vagueness.

However, the semantic and syntactic sorts of indeterminacy just mentioned do not deliver the result that is hoped for. Suppose it is indeterminate whether Oscar and *being red* stand in the specified relations to the parse tree of an arbitrary language. It follows that Oscar and *being red* do not determinately stand in the specified relation to a tree of English, so it is not true that Oscar is the value of ‘Oscar’ and *being red* is the value of ‘\_\_ is red’. It is either indeterminate or false that Oscar is the value of ‘Oscar’ and *being red* is the value of ‘\_\_ is red’. But then we cannot (determinately) express the proposition *that Oscar is red* in English. The proposition *that Oscar is red* is a proposition such that, if we try to express it in English, it is indeterminate or false that we so express it. This analysis may be useful for some phenomena. Perhaps there are some propositions such that when we try to express them in English, the best we can do is make it indeterminate whether we express them or not. But this analysis will not serve as an account of gappy Russellian propositions as the contents of the vague sentences language-users so often employ. That is, semantic indeterminacy of the type under consideration does not explain the phenomenon of a language user successfully expressing a proposition, P, such that P can be neither true nor false in some cases. So, this sort of semantic indeterminacy does not serve as the basis for an account that is truly a rival to my preferred account of gappy Fregean propositions. Similar remarks apply to syntactic indeterminacy. If it is indeterminate whether Oscar and *being red* stand in the specified relation to the parse tree of some language, and if this is because the best candidate tree is indeterminate with respect to whether it encodes instantiation, then language users cannot determinately express the proposition *that Oscar is red* in their language who’s trees use ‘ $\wedge$ ’ to encode ascription. That may be an interesting analysis of some propositions we are unable to express, but it does not provide an analysis of the content of vague sentences that are in fact used to express vague content.

Thus, the linguistic entities King employs in his account do not serve as the basis of any account of gappy Russellian propositions that was unavailable to Speaks. Like Speaks's theory, King's theory has two options for explaining indeterminate truth-values for Russellian propositions. The first option is to exploit indeterminacy in the sentence-proposition relationship, a strategy I have argued against in this essay. The second option is to explain indeterminate truth-values for Russellian propositions as indeterminacy in non-representational entities. In King's case, the non-representational entities that end up being indeterminate are facts. King's only remaining option is to explain the indeterminate truth-value of the proposition *that Oscar as red* as indeterminacy with respect to whether the fact that Oscar is red obtains, which is in turn explained as indeterminacy with respect to whether Oscar instantiates the property *being red*.

Thus, an account of the content of vague sentences built upon King's theory of propositions has the result that vagueness consists in indeterminacy in the obtaining of facts, which is explained by indeterminacy in the instantiation of properties. And these are "thick" properties—they are mind- and language-independent. Thus, the result is a strong sort of ontic vagueness, once again.

### §3: Soames: *propositions as cognitive event types*

In developing his theory of propositions, Soames (2014b) shares King's two chief goals. Those goals are (i) to offer a theory of propositions that is Russellian, insofar as propositions are structured entities whose constituents are mind-independent objects, properties, relations, and functions, and (ii) to explain how propositions have their representational features, rather than allowing the representationality of propositions to be brute, or basic.

The theory Soames advocates in his (2014b) is that propositions are cognitive event types. He explains that any token event of believing, doubting, or denying that Oscar is red involves an agent thinking of Oscar as red. In Soames's preferred terminology, any propositional attitude involving the proposition that Oscar is red is one in which an agent *predicates* the property redness of the object Oscar. On Soames's usage, predication is a mental act—it is not a linguistic operation.<sup>54</sup> Soames (p. 96) goes on to explain that, “the proposition that o is red is simply the minimal event type in which an arbitrary agent predicates *being red* of o.” Soames offers the following explanations for complex propositions:

To entertain the proposition *that it is not true that o is red* is (i), to predicate redness of o, and thereby to entertain the proposition that o is red (ii), to negate the property *being true*, and (iii) to predicate the resulting property *not being true* of that proposition. (p. 97)

... the proposition *that necessarily it is not the case that Kripke is Kaplan* is the event type of (i) predicating identity of the pair of Kripke and Kaplan (ii) predicating untruth of, or applying the negation operation to, the event type of which the previous predication is an instance, and (iii) predicating being necessarily true of the complex event type of which the second predication or operation is an instance. (p. 99)

In Soames's estimation, grounding propositions in mental event tokens gives his theory a significant advantage over Frege's and Russell's conceptions of propositions.<sup>55</sup> These advantages are in terms of the epistemology and ontology of propositions:

Unlike the Platonic epistemology required by traditional theories of propositions, the present account demystifies our acquaintance with, and knowledge of, propositions by taking both to be grounded in concrete cognitive experience. (p. 104)

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<sup>54</sup> King (2014b: 128 ff) argues forcefully that Soames's notion of predication is somewhat mysterious and seems to be committed to some strong empirical claims about “cognitive unity and convergence in perception, thought, and language” (129).

<sup>55</sup> See Soames's (2014a) from the same volume.

Has Soames succeeded in giving a theory that is Russellian and also explains the representational properties of propositions in terms of the acts of agents? There are some type/token issues that undermine Soames's twin goals. For each goal, Soames argues that his cognitive event types meet the goal in virtue of their tokens meeting it. Concerning the goal of being a Russellian theory of propositions, Soames thinks that his cognitive event types have mind-independent objects, properties, etc., as constituents because the tokens of these types have those constituents. Predication is a mental act, on Soames's view, that operates on mind-independent objects and properties. So, when I predicate *being red* of Oscar, Oscar the apple and the property *being red* are constituents of my mental act token. Since any token predication of redness to Oscar has Oscar and *being red* as constituents, Soames infers that the cognitive event type PREDICATING *BEING RED* OF OSCAR itself has Oscar and *being red* as constituents. Every token of the type has a certain object and a certain property as constituents, therefore the type itself has that object and that property as constituents, reasons Soames. Likewise, concerning the goal of explaining how propositions are representational, Soames reasons that each tokening of the type is representational,<sup>56</sup> therefore the type itself is representational. Soames infers that, since every token event of an agent predicating *being red* of Oscar is representational, the event type PREDICATING *BEING RED* OF OSCAR is itself representational.

Soames's type/token reasoning is invalid. Concerning whether Soames's propositions are representational, King (2014b: 136-7) argues forcefully that, even if token predications are representational, this establishes that their types are representational only in "a very stipulative and non-substantial way." Says King, "we could in an exactly similar sense say that the event

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<sup>56</sup> It is even in doubt that it is strictly correct to say that these event tokens are representational. King (2014b, p. 134-6) argues persuasively that there is no good reason to think that these event tokens are representational, or that they have truth-conditions. I grant this point for the sake of argument.

type of an agent hitting Alan *derivatively touches* Alan because in every instance of it Alan is touched.” Soames’s theory predicts that propositions are cognitive event types, but King’s argument demonstrates that these types are representational only in a non-substantial way. Thus, Soames’s theory has not succeeded in explaining how propositions are representational. Likewise, concerning whether Soames’s propositions are Russellian, the inference from token to type cannot be taken for granted. Even if every cognitive act token of predicating redness of Oscar has both Oscar and *being red* as constituents, this does not establish that the type itself has that object and that property as constituents. For instance, consider the event type THINKING OF SOMEONE AS A GENIOUS LYRICIST. Grant for the sake of argument that each tokening of that type has a lyricist as a constituent. Some tokens would have Courtney Barnett as a constituent, while others would have Chancellor Bennett, or Woody Guthrie, and so on. It does not follow that the event type THINKING OF SOMEONE AS A GENIOUS LYRICIST has a lyricist as a constituent. If it did, which lyricist would be the constituent of the type? Thus, Soames has not succeeded in establishing that cognitive event types are Russellian, as he intends his propositions to be.

Therefore, Soames has some repair work to do. I don’t know exactly how that work should go. In order to consider how Soames’s theory might account for the content of vague sentences, let us grant that Soames’s cognitive event types have Russellian constituents. Suppose Soames’s cognitive event type propositions have constituents that are mind-independent objects, properties, relations, and such. How then can Soames’s theory explain the content of vague sentences? Supposing that his cognitive event types are genuinely Russellian, they have as constituents mind-independent objects, properties, relations and such—their constituents are the entities that propositions are about. Granting that these entities have truth-values, what happens

when one of them is neither true nor false? Return to the example of Oscar the apple and its questionable redness. If the event type PREDICATING REDNESS OF OSCAR indeed has Oscar and *being red* as constituents, and if that event type has truth-conditions, then that entity is true iff Oscar instantiates *being red*. If this cognitive event type has the value I (neither true nor false) in a circumstance of evaluation, then it is indeterminate at that circumstance of evaluation whether Oscar instantiates the property *being red*. Once again, we encounter ontic vagueness as the terminus of a Russellian explanation of the content of a sentence that is neither true nor false. Once again, this is ontic vagueness constituted by indeterminacy in the instantiation of a mind-independent property, what I termed a “thick property” in ch. 1. This is a strong sort of ontic vagueness and a heavy theoretical cost.

#### *§4: Gappy Fregean propositions are better*

I have argued that these three recent Russellian theories of propositions all result in ontic vagueness of fairly strong sorts. Each of these theories followed the path from indeterminate truth-values for vague sentences to ontic vagueness. And this isn't too surprising, given that Russellian theories of propositions build propositions out of mind-independent constituents: indeterminacy in the truth-value of a sentence is explained by indeterminacy in a proposition, and propositions are made out of non-representational building blocks, so indeterminacy in a proposition leads to indeterminacy in the non-representational parts of the world.

My account uses gappy Fregean propositions, so it does not commit to ontic vagueness. If the proposition *that Oscar is red* is neither true nor false, that means the sense of ‘\_\_ is red’ returns the value I at some world when the sense of ‘Oscar’ is the input. In the formalism,  $sense[\mathbf{red}(\mathbf{oscar})]$  is I at some  $w$  because  $d-sense[\mathbf{red}]$  doesn't always map  $sense[\mathbf{oscar}]$  to T or

F—when Oscar is borderline red, it returns the value I. So, we have a predicate sense that is indeterminate in application to an individual concept. But indeterminacy in the sense of ‘\_\_ is red’ does not entail ontic vagueness; it does not entail indeterminacy in non-representational entities. Were we to add to the account that *d-sense*[red] stands for a thick property that is indeterminate in its instantiation, parallel to the indeterminacy in *d-sense*[red], then indeterminacy in *d-sense*[red] would entail indeterminacy in something mind-independent. But that addition is not required. Maybe *d-sense*[red] closely mirrors some property that earns its place in the best ontology. Or, maybe *d-sense*[red] runs roughshod over the real color properties in the vicinity (surface-reflectance properties?). Maybe there are not real color properties. I don’t think I have to decide that here. I will just say that the way we think about redness is not fully determinate so as to map every case to true or false.

And I think this is a quite reasonable place to locate vagueness. Vagueness is indeterminacy in concepts, as well as indeterminacy in the relations between concepts and what those concepts are about. Even if there is good reason to allow some limited version of ontic vagueness, perhaps in the boundary of the Thames, there are surely other cases in which it makes good sense to posit vagueness in concepts, thought, and language, that does not bleed into indeterminacy in the extra-mental, extra-linguistic bits of the world. Rosanna Keefe (2000: 11) cites examples of very vague predicates, such as ‘\_\_ is nice’. My theory can say that when someone utters ‘Oscar is nice’, they say something, but that something isn’t true or false in every case. And I am committed neither to a mind-independent property of niceness, nor to a barrage of precise properties that could serve to precisify the predicate. The moral of the story is that sense is a level of meaning that is quite useful for explaining the meaning of vague terms. Since most natural language terms are vague, sense is globally quite useful.

In addition to explaining vagueness without commitment to ontic vagueness, the discussion of this chapter has highlighted a few other advantages of my account over these Russellian alternatives. First, my theory explains how propositions are representational and have truth-values. My propositions are made of senses, or concepts—inter-subjective mental entities. Concepts are about things—they are intrinsically representational. The individual concept *sense*[**harry**] is about Harry. The predicate concept *d-sense*[red] represents a way things can be. The compound concept *sense*[**bald(harry)**] represents Harry as being bald, and if he is, the proposition is true. So there is an explanation here of how propositions are representational and have truth-values.

Speaks does not attempt to explain how propositions are representational. His theory is the most genuinely Russellian. King and Soames attempt to explain how propositions are representational, but it does not work out particularly well in either case. They start with non-representational entities and aim to build some representational things out of them. But neither King's facts nor Soames's cognitive event types seem to be representational entities that have truth-conditions. It is difficult to construct something representational out of non-representational materials.

Furthermore, concepts already have a place in our ontology. Concepts explain how we think of things and we can all think of the same things in the same ways. In my estimation, concepts are far less mysterious, or ontologically suspect, than the ontological oddities these recent Russellian theories posit. Particularly when it comes to positing indeterminacy, it is better to posit indeterminacy that is conceptual and mental, rather than ontological and mind-independent. Indeterminacy in mental and conceptual stuff makes good sense; our minds are

only so precise. Indeterminacy in extra-mental stuff may turn out to be unavoidable, but it should be approached with caution.

## BIBLIOGRAPHY

- Asher, N., Dever, J., and Pappas, C. (2009). Supervaluations debugged. *Mind*, 118(472), 901-933.
- Barnes, E. (2010). Ontic Vagueness: A Guide for the Perplexed. *NOUS* 44: 601–627.
- Braun, D. and Sider, T. (2007). Vague, so untrue. *Noûs*, 41, 133-156.
- Burgess, A. and Sherman, B. (2014). Introduction: a Plea for the Metaphysics of Meaning. In A. Burgess & B. Sherman (Eds.), *Metasemantics: New Essays on the Foundations of Meaning* (pp. 1-16). Oxford: OUP.
- Chisholm, R.M. (1981). *The First Person: An Essay on Reference and Intentionality*. Minneapolis, MN: University of Minnesota Press.
- Dever, J. (2013). The revenge of the semantics-pragmatics distinction. *Philosophical Perspectives*, 27(1), 104-144.
- Dietz, R., & Moruzzi, S. (Eds.). (2010). *Cuts and clouds: Vagueness, its nature and its logic*. OUP: Oxford.
- Dummett, M. (1975). Wang's Paradox. *Synthese* 30: 301-324.
- Evans, G. (1978). 'Can there be vague objects,' *Analysis* 38: 208.
- Fine, K. (1975). Vagueness, truth and logic. *Synthese*, 30, 265-300.
- Fodor, J.A. and Lepore, E. (1996). What cannot be evaluated cannot be evaluated, and it cannot be supervaluated either. *Journal of Philosophy*, 93, 513-535.
- Forbes, G. (2010). 'Identity and the Facts of the Matter' in Dietz & Moruzzi 2010, pp. 419-437.
- Frege, G. (1948). Sense and reference. *The Philosophical Review*, 57(3), 209-230.
- . (1956). The thought: A logical inquiry. *Mind*, 65(259), 289-311.
- Gamut, L.T.F. (1991). *Logic, Language, and Meaning v.II: Intensional Logic and Logical Grammar*. Chicago: University of Chicago Press.
- García-Carpintero, M. (2000). Vagueness and indirect discourse. In Villanueva (Ed.), *Philosophical Issues*, 10, (pp. 258-270). Boston: Blackwell.
- . (2010). Supervaluationism and the report of vague terms. In R. Dietz & S. Moruzzi (Eds.), *Cuts and Clouds: Vagueness, Its Nature, and Its Logic* (pp. 345-359). Oxford: OUP.

- King, J. (2007). *The Nature and Structure of Content*. Oxford: OUP.
- . (2014a). Naturalized propositions. In J.C. King, S. Soames, and J. Speaks (Eds.), *New Thinking about Propositions* (pp. 47-70). Oxford: OUP.
- . (2014b). Criticism of Soames and Speaks. In J.C. King, S. Soames, and J. Speaks (Eds.), *New Thinking about Propositions* (pp. 127-146). Oxford: OUP.
- Keefe, R. (2000). *Theories of Vagueness*. Cambridge: Cambridge University Press.
- . (2010). Supervaluationism, indirect speech reports, and demonstratives. In R. Dietz & S. Moruzzi (Eds.), *Cuts and Clouds: Vagueness, Its Nature, and Its Logic* (pp. 360-372). Oxford: OUP.
- Lewis, D.K. (1970). General semantics. *Synthese*, 22, 18-67.
- . (1979). Attitudes de dicto and de se. *Philosophical Review* 88: 513-543.
- . (1982). Logic for equivocators. *Noûs*, 16, 431-441.
- . (1986). *On the Plurality of Worlds*. New York: Blackwell.
- . (1993). Many, but almost one. In J. Bacon, K. Campbell, & L. Reinhardt (Eds.), *Ontology, Causality and Mind: Essays in honour of D. M. Armstrong* (pp. 23-38). Cambridge: Cambridge University Press.
- Merricks, T. (2001). 'Varieties of Vagueness'. *Philosophy and Phenomenological Research* 62: 145-157.
- Parsons, T. (2000). *Indeterminate Identity: Metaphysics and Semantics*. Oxford: Clarendon Press.
- Rosen, Gideon and Nicholas J. J. Smith (2004). 'Worldly indeterminacy: A rough guide'. *Australasian Journal of Philosophy* 82:185-198.
- Russell, B. (1904). Letter to Frege, 12 December 1904. In N. Salmon & S. Soames (Eds.), *Propositions and Attitudes* (p. 57). Oxford: OUP.
- Sainsbury, R.M. (1994). 'Why the World Cannot be Vague'. *The Southern Journal of Philosophy* 33: 63-82.
- Salmon, N. (1981). *Reference and Essence*. Princeton: Princeton University Press.
- . (2002). 'Identity facts', *Philosophical Topics* 30: 237-267.
- . (2010). 'Vagaries about Vagueness' in Dietz & Moruzzi 2010, pp. 131-148.

- Schiffer, S. (1998). Two issues of vagueness. *Monist*, 81, 193-214.
- . (2000a). Vagueness and partial belief. *Noûs*, 34(s1), 220-257.
- . (2000b). Replies to García-Carpintero, Horwich, Valdivia, Marqueze, Barnett. *Noûs*, 34(s1), 321-343.
- . (2003). *The Things We Mean*. Oxford: OUP.
- . (2010). Vague properties. In Dietz & Moruzzi 2010, pp. 109-130.
- Shapiro, S. (2010). ‘Vagueness, Metaphysics, and Objectivity’ in Dietz & Moruzzi 2010, pp. 149-162.
- Soames, S. (1988). Direct reference, propositional attitudes, and semantic content. In N. Salmon & S. Soames (Eds.), *Propositions and Attitudes* (pp. 197-239). Oxford: OUP. [Originally published as Soames (1987), *Philosophical Topics*, 15, 47-87.]
- . (1989). Semantics and semantic competence. *Philosophical Perspectives*, 3, 575–596.
- . (2002). Replies. *Philosophy and Phenomenological Research* 65: 429-452.
- . (2014a). Why the traditional conceptions of propositions can’t be correct. In J.C. King, S. Soames, and J. Speaks (Eds.), *New Thinking about Propositions* (pp. 25-44). Oxford: OUP.
- . (2014b). Cognitive propositions. In J.C. King, S. Soames, and J. Speaks (Eds.), *New Thinking about Propositions* (pp. 91-124). Oxford: OUP.
- Speaks, J. (2014). Propositions are properties of everything or nothing. In J.C. King, S. Soames, and J. Speaks (Eds.), *New Thinking about Propositions* (pp. 71-90). Oxford: OUP.
- Tichý, P. (1971). An approach to intensional analysis. *Noûs*, 5(3), 273-297.
- . (1975). What do we talk about?. *Philosophy of Science*, 42(1), 80-93.
- . (1978). Questions, answers, and logic. *American Philosophical Quarterly*, 15(4), 275-284.
- . (1986a). Indiscernibility of identicals. *Studia Logica*, 45(3), 251-273.
- . (1986b). Constructions. *Philosophy of Science*, 514-534.
- Van Fraassen, B.C. (1966). Singular terms, truth-value gaps, and free logic. *Journal of Philosophy*, 63, 481-495.

- . (1968). Presupposition, implication, and self-reference. *Journal of Philosophy*, 65, 136-52.
- . (1969). Presuppositions, supervaluations and free-logic. In K. Lambert (Ed.), *The Logical Way of Doing Things* (pp. 67-92). New Haven: Yale University Press.
- Van Inwagen, P. (1988). 'How to reason about vague objects', *Philosophical Topics* 16: 255-84.
- . (1990). *Material Beings*. Ithaca: Cornell University Press.
- Varzi, A.C. (1997). Inconsistency Without Contradiction. *Notre Dame Journal of Formal Logic*, 38, 621-38.
- . (2007). Supervaluationism and its logics. *Mind*, 116(463), 633-675.
- Weatherson, B. (2003). Many many problems. *Philosophical Quarterly*, 53, 481-501.
- Williamson, T. (1994). *Vagueness*. London: Routledge.
- Williams, J.R.G. and E. Barnes. (2011). 'A Theory of Metaphysical Indeterminacy', in Bennett & Zimmerman (eds.), *Oxford Studies in Metaphysics volume 6*. Oxford University Press. 103-148
- Wilson, J.M. (2013). A Determinable-Based Account of Metaphysical Indeterminacy. *Inquiry* 56 (4): 359–385.