Two Issues of Vagueness

Two issues of vagueness, which may together exhaust its philosophical interest, are, first, to solve the sorites paradox and, second, to explain the notion of a borderline case. I'll try to make a little headway on both issues.

I

The Sorites Paradox

The following argument, which turns on the vagueness of 'rich', presents a typical instance of the sorites paradox:

A person with $50,000,000 is rich.
For any $n$, if a person with $n$ is rich, then so is a person with $n - 1$ (you can’t remove a person from the ranks of the rich by removing $1$ from her fortune).
Therefore, a person with only $3$ is rich.

This presents a paradox because it determines a set of mutually incompatible propositions each one of which appears plausible when viewed on its own. These mutually incompatible propositions are (1) that the inference is valid, (2) that its first premise is true, (3) that its second premise, which we may call the sorites premise, is true, and (4) that its conclusion is false.

It’s reasonable to assume that, faute de mieux, (3), which ascribes truth to the sorites premise, is the odd-guy-out, the proposition that isn’t true. It’s obvious, I dare say, that the first premise is true and that the conclusion is false, and the validity of the inference depends only on modus ponens and universal instantiation, and we can remove the dependence on universal instantiation by replacing the sorites premise with its relevant instances, thereby getting an argument with many millions of premises but whose validity is secured just by modus ponens. We seem constrained,

then, to accept (1), (2), and (4) of our paradox set, which is why I say that, *faute de mieux*, (3), the proposition that the sorites premise is true, is the odd-guy-out.

Deciding that we should reject the sorites premise, however, hardly solves the sorites paradox. Indeed, to reject the sorites premise is only to reveal the heart of the paradox. The puzzle here is that, on the one hand, as we’ve just seen, we seem forced to reject the sorites premise, while, on the other hand, rejecting the premise appears to have an unacceptable consequence. The apparently unacceptable consequence is revealed by the substantial initial degree of plausibility each of the following propositions enjoys.

(a) To reject the sorites premise is to accept its negation, that it’s not the case that, for any \( n \), if a person with \( \$n \) is rich, then so is a person with \( \$n - \$1 \).

(b) But that, by a familiar equivalence, is just to accept that there is an \( n \) such that having \( \$n \) is sufficient for being rich but having \( \$n - \$1 \) isn’t sufficient for being rich.

(c) Yet that in turn is to accept something *unacceptable*—namely, that there is a sharp one-dollar cutoff between what suffices to make a person rich and what fails to suffice to make a person rich.

I’ll assume we really can’t accept the sorites premise. Evidently, this means that the sharp one-dollar cutoff either isn’t a consequence of rejecting the sorites premise or isn’t unacceptable, which disjunction in turn means that at least one of (a)-(c) can’t be true. Very well, which one?

For each of (a)-(c) there’s at least one familiar solution that rejects it, and there are at least three familiar solutions that reject (c). Space permitting, this would be the place for me to review all these solutions and tell you what I find wrong with each one of them. But space isn’t permitting. I will, however, say just enough to aid the presentation of my own views. Familiar solutions to the sorites may be divided into two broad types, those that deny bivalence for vague sentences and those that accept bivalence for them. Those who accept bivalence are committed to denying (c): they are committed to a sharp one-dollar cutoff, but they argue, in one way or another, that this isn’t unacceptable. They are committed to a sharp cutoff in that they’re committed to there being a numeral such that the result of substituting it for ‘\( n \)’ in the open sentence
Having \( n \) is sufficient for being rich but having \( n - 1 \) isn’t

is a true sentence, and, of course, they’re committed to saying that ‘Harry is bald’ is true or false notwithstanding that Harry is a borderline case of baldness. What this type of theorist is then constrained to say is that we can’t know where the one-dollar cutoff falls, and we can’t know the fact of the matter about Harry’s baldness. The proposition that having \$276,205 is sufficient for being rich but having \$276,304 isn’t—or some other proposition like it—is true, although, the theorist must claim, no one can hope to know it, and while it’s either a fact that Harry’s bald or a fact that he’s not bald (notwithstanding that he’s a borderline case), no one can know which fact obtains. It’s not just self-professed “epistemic theorists of vagueness” like Timothy Williamson and Roy Sorensen who take this line; it’s also what deflationists like Paul Horwich, Hartry Field, Vann McGee and Brian McLaughlin are constrained to say.3 My problem here, which I can’t elaborate, is that in my estimation none of these theorists has succeeded in adequately explaining the ignorance to which he’s committed.4

Of the solutions which deny bivalence, the most promising, in my estimation, is the supervaluationist approach to vagueness. The idea, roughly, is that a vague sentence is true just in case it’s true under every admissible precisification of the language to which it belongs, false just in case it’s false under every admissible precisification, and neither true nor false just in case its true under some admissible precisification while false under another. A precisification is a model-theoretic interpretation of the language wherein the set assigned as extension to a vague term includes everything to which the term definitely applies, nothing to which it definitely doesn’t apply, and may include none, some, or all of the term’s borderline applications. A precisification is admissible just in case it respects all analytic connections among vague terms.5 For example, if a precisification of English puts borderline Harry into the set assigned to ‘bald’ as its extension under that precisification and Harry has more hair than borderline Lester, then Lester must also be included in the extension. Truth under a precisification is defined in the standard model-theoretic way. Thus, truth-under-a-precisification is bivalent: for any given precisification of the language, a sentence of the language is either true or false under that precisification. But truth tout court isn’t truth-under-a-precisification. Since a sentence can be true under some admissible precisification while false under another, truth tout court isn’t bivalent. The laws of
classical logic, however, are retained. Thus, for example, excluded middle holds. ‘Harry is bald or Harry is not bald’ is true, for it comes out true under every admissible precisification, notwithstanding that neither of its disjuncts has a truth-value (although, of course, each disjunct has a truth-value under each precisification). A similar result holds for the sorites sentence

\[
\exists n \text{ (having } \$n \text{ is sufficient for being rich & having } \$n - \$1 \text{ isn’t sufficient for being rich).}
\]

This will be true in every admissible precisification of English, since in every such precisification ‘rich’ is assigned a complete and determinate extension, and for each precisification there will be a true substitution instance of the quantified open sentence (‘Having \(\$n\) is sufficient for being rich & having \(\$n - \$1\) isn’t sufficient for being rich’) wherein a numeral replaces ‘\(n\)’. At the same time, there will be no one sharp cutoff for all admissible precisifications, since it’s of the nature of precisifications that they differ in the way they arbitrarily allocate borderline cases. Consequently, the displayed sorites sentence will be true for the supervaluationist, although its quantified open sentence enjoys no true substitution instance wherein a numeral replaces the free variable. The existential generalization is true, but no specifiable amount of money makes it true. There is such an amount relative to each admissible precisification, but the amount varies among admissible precisifications. In this way, the supervaluationist hopes to avoid the unacceptable result of a sharp one-dollar cutoff between what suffices to make a person rich and what fails so to suffice.

While the supervaluationist approach is in my estimation the best of the truth-gap solutions, I believe it can’t work. One familiar objection which I’m inclined to think is right is that the supervaluationist can’t adequately accommodate higher-order vagueness. Since this problem is familiar (and since I don’t have the space anyway!), I won’t go into it. But I will mention a problem I find with the supervaluationist approach to vagueness which isn’t familiar.

The problem turns on vagueness in intentional contexts and is based on what the supervaluationist is constrained to say about that-clauses containing vague terms. We know what the supervaluationist must say about the sentence

[a] Harry is bald
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when Harry is a borderline case of ‘bald’: it’s neither true nor false. But what must the supervaluationist say about the meaning or propositional content of [a]? It might seem that she has two choices: either she can say that it’s indeterminate which precise, bivalent proposition [a] expresses, or she can say that [a] expresses the vague proposition that Harry is bald which is itself neither true nor false. However, there’s an argument that appears to preclude the first option; the supervaluationist is constrained to say that that-clauses containing vague terms refer to vague propositions. Let’s run the argument on a specific example. Suppose that in uttering ‘Harry is bald’, Renata said that Harry was bald. Then the sentence

[b] Renata said that Harry was bald

is true. But the supervaluationist must say that it wouldn’t be true if the that-clause in [b], ‘that Harry was bald’, indeterminately referred—or, as we might say, partially referred—to various precise propositions. For in order for [b] to be true, according to the supervaluationist, it must be true under every way of precisifying the reference of its that-clause. Yet not one of those precisifications will be true, since, even taking into account the vagueness of ‘say’, Renata obviously didn’t say any precise proposition, let alone all of the precise propositions to which the that-clause partially, or indeterminately, referred. Evidently, then, the supervaluationist must say that [b]’s that-clause refers to the vague proposition that Harry is bald. The generalization to all that-clauses containing vague terms is straightforward.8

Given this result, the problem concerning intentional contexts can now be simply stated. To see it, let’s consider

[*] Al said that Ben was there,

which we may take to be determinately true notwithstanding the vagueness of ‘there’ (we can hardly suppose the occurrence of ‘there’ in [*] to refer to a precise region of space). The supervaluationist then confronts the following argument:

(1) If supervaluationism is correct, then either [*]’s that-clause (a) refers to a vague proposition or (b) partially, or indeterminately, refers to each of a range of precise propositions.
(2) Not (b): Al certainly didn’t say *any* of the propositions referred to by those that-clauses we obtain when we replace vague ‘there’ with singular terms that do refer to precise regions of space.

(3) But not (a) either.

Therefore:

(4) Supervaluationism isn’t correct.

It remains to say why (3) is true. There was no problem initially in the idea that the that-clause in [b] (‘Renata said that Harry was bald’) referred to a vague proposition, because there was no problem initially in the idea that ‘bald’ in that that-clause expressed a vague property, a property with a penumbra. The problem with [*] comes when we try to make sense of the idea of there being a vague place to which ‘there’ might refer. What could possibly be both a place, a region of space, and fail to have precise boundaries? It might be thought that the supervaluationist could take a vague proposition to be a set of precise propositions, those used to give the supervaluationist truth conditions of the vague proposition. Then the reference of ‘there’ can be taken to be a set of precise places. But I don’t think this will work. Perhaps at a certain level of analysis we can represent a vague property as a set of precise properties, but it’s doubtful that we can represent a vague place as a set of precise places. A set of places is no kind of place. The problem is that the occurrence of ‘there’ in [*] is de re and thus occurs as a demonstrative seeking to refer to a place. Witness the transformation from [*] to

\[ \exists x (x \text{ is where Al said Ben was}), \]

and from there, by demonstrative specification, to

There is where Al said Ben was.

Here, as regards this last example, the supervaluationist evidently has to take her standard line: in a sentence of the form ‘There is such-and-such’, ‘there’ must be taken to indeterminately (or partially) refer to each member of a set of precise places, the set of places that can be used to give the supervaluationist truth conditions of the sentence in which the demonstrative occurs.
So I’m inclined to think, but certainly haven’t shown, that none of the familiar solutions to the sorites is correct. I’m also inclined to suppose that the known views pretty much cover all the “solutions” in logical space. If this is right, we have reached a curious impasse. Confronted with the sorites paradox, we felt compelled to reject the sorites premise. But rejecting the sorites premise required us to reject one of (a)-(c) above, and my view is that none of the ways of challenging any of them is promising. How can this be? How can we be rationally required to reject a proposition while, at the same time, not rationally required to accept what its rejection evidently implies? Let’s return to this, and to the sorites paradox generally, after a complementary look at the second of the two issues that define the problem of vagueness.

Borderline Cases

A term is vague if it admits borderline cases, but what is it to be a borderline case of a term? It’s of little help to repeat the truism that Harry is a borderline case of ‘bald’ if Harry is neither determinately bald nor determinately not bald, for the problem of explaining the ‘determinately’ operator just is the problem of explaining the notion of a borderline case. And if we can’t explain in what being a borderline case consists, then we can’t explain vagueness, for vagueness just is the possibility of borderline cases.

One position in logical space is that the notion of a borderline case is somehow to be explained in terms of truth-value gaps. The simplest version of this holds that x is a borderline case of ‘F’ just in case ‘F’ is neither true of x nor false of x. However, as Mark Sainsbury has pointed out, this fails to yield a sufficient condition for being a borderline case in the intended sense of that notion. For suppose we stipulate, first, that a person is a minor* if she has not reached her seventeenth birthday and, second, that a person is not a minor* if she has reached her twenty-first birthday; and suppose we forget to make any further stipulations. In the event, ‘minor*’ is arguably neither true nor false of nineteen-year-old Fiona, but there’s nothing vague about ‘minor*’ and therefore nothing about it that admits of borderline cases in the intended sense. Rather than being vague, it’s a precise but incompletely defined term. A bigger problem with truth-value-gap accounts of borderline cases generally is that, not surprisingly, they’re only as good as their concomitant solution to the sorites, but I’ve claimed that no such theory solves the paradox.
The same bigger problem infects the various ways of trying to explicate the notion of a borderline case while subscribing to the principle of bivalence. There are also more specific problems. For the epistemic theorist, vagueness is a kind of ignorance, and therefore x is a borderline case of ‘F’ just in case it’s either a fact that x is F or else a fact that x isn’t F although, for a certain reason, it’s impossible for us to know what the fact of the matter is. Ignorance in borderline cases, I’ve just emphasized, must be for a certain reason, because without the qualification a sufficient condition for being a borderline case won’t have been provided. There may well be facts we can’t know which have nothing to do with vagueness; to take a familiar example, Goldbach’s conjecture or its negation may be true even though neither is provable. The trouble here is that Timothy Williamson is the only epistemic theorist who has tried to say what the special kind of ignorance is,12 and one may question whether he’s succeeded in explaining vagueness as a certain kind of semantic ignorance.

Deflationists about truth also hold that vagueness sticks us with unknowable truths, but they needn’t try to explicate borderline cases in terms of ignorance. If they don’t, then, like Field, McGee and McLaughlin,13 they may try to explicate borderline cases in terms of what they say about the ‘determinately’, or ‘definitely’, operator, or, like Horwich,14 in terms of the practices on which the meanings of vague terms supervene. Their views on these matters are interesting and deserve study, but unfortunately I have space only to go on record as being unpersuaded.

So, if my prejudices are right, we reach a second curious impasse: we’re so far unable to explain the notion of a borderline case, and thus unable to explain the notion of vagueness. Naturally, this isn’t at all surprising given our first impasse, our inability to make any real headway on the sorites paradox.

II

The preceding section reviewed the two issues of vagueness and inadequately alluded to some nonsolutions. In this section I’ll say how I think those issues should be resolved. Let’s start with the problem of explicating the notion of a borderline case.
Borderline Cases Again

Harry is a borderline case of baldness. What makes him such? As already signaled, I don’t think we’ll answer this by denying a truth-value to the propositions that Harry is bald and that he isn’t bald or by postulating a fact to which it’s impossible for us to have access. I do think, however, that the judgments ordinary speakers are prepared to make about the likes of Harry may provide a useful avenue. Consideration of them will reveal that we have a certain kind of partial belief that can be used to explain the notion of a borderline case. At the same time, we’ll see that this explication gives rise to its own conundrum, and later we’ll see how this bears on the sorites paradox. I’ll begin with a brief, and rough, setup characterization of the epistemic posture a normal agent has towards applications of ‘bald’ along a spectrum of cases ranging from the unquestionably non-bald to the unquestionably bald.

We’ll let Sally be our paradigm normal, rational speaker of English, ever willing to be sincerely obliging to us philosophers. We’ll imagine her to be presented with Tom Cruise, a paradigmatically non-bald person, and we’ll monitor her belief states concerning Tom’s baldness while his hairs are plucked from his scalp one by one. We may suppose that the conditions for making baldness judgments—lighting conditions, exposure to the hair situation on Tom’s scalp, Sally’s sobriety and perceptual faculties, etc.—are ideal, and known by Sally to be such, and I’ll pretend both that degrees of belief can be measured by real numbers from 1 (absolute belief) to 0 (absolute belief) and that at any given time Sally believes Tom to be bald to some determinate degree. Both pretenses are artificial (especially the second), but I’ll be using them merely as simplifying expository devices. Let the plucking begin.

Sally starts out judging with absolute certainty that Tom is not bald; that is, she believes to degree 1 that Tom is not bald. This state of affairs persists through quite a few pluckings. At some point, however, Sally’s judgment that Tom isn’t bald will have an ever-so-slightly diminished confidence, reflecting that she believes Tom not to be bald to some degree barely less than 1. The plucking continues and as it does the degree to which she believes Tom not to be bald diminishes while the degree to which she believes him to be bald increases. At some point, we may
pretend, the degree to which Sally believes both that Tom is bald and that he isn’t bald is .5, and Tom thereby represents for Sally a solid borderline case of baldness. Presently I’ll be discussing in some detail the kind of partial belief exhibited in cases of vagueness, but for now let’s simply notice that certain things that one might ordinarily expect to accompany a .5 belief-state don’t accompany, and one wouldn’t expect to accompany, Sally’s .5 belief that Tom is bald. For example, if you believe to degree .5 that you left your glasses in your office, then you’ll think that there’s a fifty-fifty chance that you left your glasses in your office, and if you’re a betting person, you’ll be prepared to bet even money that you left your glasses in your office. But Sally, notwithstanding that she believes to degree .5 that Tom is bald, doesn’t believe that there’s a fifty-fifty chance that he’s bald, and she recognizes that it’s conceptually impossible for any bet on the matter to be won or lost, even by God. She doesn’t suppose that the real fact about Tom’s baldness is hidden from her and that the best evidence available requires her to suspend judgment, which would be her stance if she thought there was a fifty-fifty chance that Tom was bald. She knows that all facts relevant to the question of Tom’s baldness are available to her and that those facts make Tom precisely the ambiguous case that he is. As we’ll presently observe, this failure to convert partial belief into a commensurate likelihood belief is characteristic of all the partial beliefs Sally has throughout the plucking towards the proposition that Tom is bald.15

Having reached .5, Sally’s degrees of belief that Tom is bald will gradually increase as the plucking continues, until she believes to degree 1 that he is bald. To be sure—and this is obvious to Sally, too—if Tom’s hairs were restored and the plucking done again, there’s no reason to think that Sally’s partial belief progressions would match those on the first run. And if she were presented with different presentations of Tom, with the sate of his scalp in randomly different degrees of hairiness, there’s again no reason to expect her judgments about his being bald or being not bald to correspond closely to her judgments when Tom’s scalp was continuously present to her throughout a well-ordered plucking. In particular, there are no stable cutoffs, no one-hair differences in Tom’s scalp condition that force a move from a belief to degree 1 that Tom is/isn’t bald to a belief with the same content that is held to a degree less than 1. Moreover, each of these different belief states, provoked at different times
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and in different surrounding conditions, would be equally well justified. Such is the nature of vagueness.

So much for epistemological phenomenology. The foregoing is a preface to a distinction between two kinds of partial belief: what we may call standard partial belief (SPB) and vagueness-related partial belief (VPB). SPB is the kind of partial belief to which belongs Sally’s partial belief that she left her glasses in her office; VPB is the kind of partial belief to which belong Sally’s partial beliefs throughout most of the plucking that Tom is bald. Precise definitions aren’t necessary for where I’m headed, so the following characterizations should suffice. I’ll continue with the fiction that degrees of belief can be measured by real numbers between 1 and 0; a partial belief is any belief held to a degree less than 1 and greater than 0.

SPB is the kind of partial belief we would have even if, per impossible, our language were perfectly precise. SPB is the kind of partial belief which the technical notion of degree of belief defined in terms of betting behavior is intended to fit; equivalently, and I think more perspicuously, SPB is the kind of partial belief which can plausibly be identified with (no doubt when suitably idealized) subjective probability. The plausibility of this identification is due to the plausibility of construing SPB (or some suitable idealization of it) as satisfying the axioms of probability theory. Thus, if rational Sally sp-believes to degree .5 that she left her glasses in her office and sp-believes to degree .5 that she didn’t leave her glasses there, then she sp-believes to degree 1 that she either did nor didn’t leave her glasses in her office. And, for another example, if rational Sally sp-believes to degree .6 that she left her glasses in her office and sp-believes to degree .2 that her nephew will graduate college, and if she regards those two partially-believed propositions to be independent, then she sp-believes to degree .12 that (she left her glasses in her office and her nephew will graduate from college). A correlative feature of SPBs (although, I admit, saying exactly why it’s correlative may take some spelling out) is that SPBs are those partial beliefs that generate corresponding likelihood beliefs. For example, Sally may believe to degree .5 that she left her glasses in her office in such a way that she ipso facto also believes that there’s a fifty-fifty change that she left her glasses in her office; she may believe to degree .98 that it will rain this afternoon in such a way that she ipso facto believes that it’ll almost certainly rain this afternoon; and she
may believe to degree .32 that Henry will come to the party in such a way that she *ipso facto* believes that it’s somewhat unlikely that Henry will come. Another characteristic feature of SPB is that, often, if $x$ sp-believes $p$, then $x$ correctly believes that it’s in principle possible for her to get into a better epistemic position with respect to $p$ so that she comes to know either $p$ or not-$p$ (or comes to know it with greater certainty); $x$ doesn’t regard herself as being in the best possible epistemic position to pronounce on the truth of $p$, even if she has no doubts about the integrity of the evidence she takes herself to have. Thus, Sally can improve her .32 sp-belief that Henry will come to the party by sticking around to the end of the party and noting whether Henry appears. There are exceptions to what is often the case; in many of them, there’s a better position to be had, and perhaps someone else may occupy it, but for one reason or another the sp-believer supposes she can’t get into that better position. For example, she may feel that there’s at least no physically possible way she can improve her sp-opinion about Thales’s eye color, but a contemporary of Thales could easily have known what color his eyes were. Then there are sp-beliefs about what went on at the Big Bang or what happens in a black hole, but it’s also characteristic of these cases that one can’t rule out improvements in one’s epistemic position which might come via one’s being privy to more revealing physical theories.

If SPB is the kind of partial belief we would have even if our language were perfectly precise, then, as I’ll presently suggest, VPB is precisely the kind of partial belief we have when our language is vague. There’s an intuitive sense in which VPBs—e.g., Sally’s beliefs about Tom’s baldness throughout the plucking—come in degrees, in that, say, Sally believes Tom to be bald more firmly at one time than she does at another, but that sense isn’t captured by the technical notion of degree of belief defined in terms of betting behavior.16 Equivalently, VPB, however idealized, can’t be identified with subjective probability, for even the VPBs of supremely rational beings (such as Sally) fail to conform to the axioms of probability theory. For suppose that Sally vp-believes to degree .5 both that Tom is bald and that he’s thin, and that she regards those two partially believed propositions to be independent; she nevertheless won’t vp-believe to degree .25 that Tom is bald and thin. Since she regards her epistemic position as unimprovable and feels that all relevant facts are out in the open, she’ll most likely also vp-believe the conjunction to degree .5. And
if she vp-believes to degree .5 that Tom is bald and that he’s not bald, then, however rational we suppose her to be, we still can’t conclude that Sally will believe to degree 1 that Tom is bald or not bald. If she’s like most people, she’ll have no idea what to make of that instance of excluded middle when Tom is a borderline case of baldness. Correlatively to this inability to subsume VPB under the rubric of subjective probability, another hallmark of VPB is that VPBs are those partial beliefs that don’t generate corresponding likelihood beliefs. When Sally believes to degree .5 that Tom is bald, she doesn’t think that there’s a fifty-fifty chance that Tom is bald. For her to believe that there’s a fifty-fifty chance that Tom is bald would be for her to suppose that there are facts relevant to the question of his baldness that are outside her ken, but she recognizes that all relevant facts are available to her. Likewise when she believes to degree .9 that Tom is bald. She doesn’t then believe that it’s very likely that Tom is bald, for that would imply that there’s something about Tom’s baldness that she doesn’t yet have access to, and she supposes no such thing. Sally assumes that all facts relevant to determining Tom’s baldness are fully known by her. And finally, another characteristic feature of VPB is that often, if not typically, if x vp-believes p, then x correctly supposes that it’s not possible for her or anyone else to get into a better epistemic position with respect to p. When Sally vp-believes that Tom is bald, she correctly supposes that it’s not possible for her or anyone else to get into a better epistemic position with respect to the proposition that Tom is bald, no matter what the degree to which she vp-believes that Tom is bald. Whatever partial belief Sally has about Tom’s baldness during the plucking, she appreciates that all evidential or criterial facts relevant to Tom’s baldness are fully on view to her. There’s no question of her getting into a better position in order to improve her opinion about Tom’s baldness; there’s no question of her being prevented from being in a better position that someone else might occupy; and there’s no question of her epistemic position’s being improved by her becoming privy to some more revealing theory of baldness.

This characteristic unimprovability of VPB is not invariant, however; or rather, it needs to be put in a qualified way. Sally, by hypothesis, was in ideal epistemic circumstances with respect to the proposition that Tom was bald, but we can imagine others who vp-believe that Tom is bald who can “improve” their epistemic position. For example, a person
not present at the plucking might have a vp-belief that Tom is bald as the result of knowing merely that a plucking had been going on for such-and-such length of time. This person could upgrade his vp-belief that Tom is bald by gaining the same epistemic access to the plucking which Sally enjoys.

Let’s call those VPBs that are held in ideal epistemic conditions, and hence can’t be improved, paradigm VPBs. This notion may be brought to bear in defining the notion of a borderline case, at least to a relaxed first approximation. Note first that with vague terms it often happens that one person is willing to apply a term unequivocally to a thing while another is willing to apply it only equivocally, or is even unwilling either to apply it or its negation, and where there is really no question of either being wrong. From a God’s-eye perspective, even that thing is a borderline case of the term in question, and we want it to be possible for a thing to be a borderline case of a term even though no one is making judgments about the thing. I therefore submit that:

\[ x \text{ is to some extent a borderline case of ‘} F \text{’ just in case someone could have a paradigm VPB that } x \text{ is } F. \]

One might understandably have qualms about whether this definition really captures the essence of what it is to be a borderline case, and presently I’ll address that qualm, but for now let’s simply notice that it’s plausible that the definition provides both a necessary and sufficient condition for a thing’s being to some extent a borderline case of a predicate. It’s pretty hard to see how the definition could fail to provide a necessary condition. For suppose, e.g., that Tom is a borderline case of ‘bald’. Then to say that someone could have a paradigm VPB that Tom is bald is merely to say that there is some possible world such that it’s similar in all relevant respects to the actual world and in which someone has a paradigm VPB that Tom is bald. In this case, the relevant respect of similarity is the exact hair situation on Tom’s scalp—the number, size, distribution, etc., of the hairs on his scalp. Thus, the ability to form a paradigm VPB that Tom is bald would fail to be a necessary condition for his being a borderline case of ‘bald’ only if there is a possible world in which Tom is a borderline case of ‘bald’ and there is no possible world similar to that world as regards the hair situation on Tom’s scalp in which
someone has a paradigm VPB that he’s bald. Yet it’s extremely reasonable, I submit, to suppose that there will always be some relevantly similar possible world in which someone has the required paradigm VPB.

As regards the definition’s providing a sufficient condition, we should try to imagine a case where someone has a paradigm VPB that, say, Tom is bald, but where Tom was definitely bald or definitely not bald. It’s hard to see how there could be such a case. If one has a paradigm VPB that Tom is bald, then one’s in—and knows oneself to be in—ideal epistemic circumstances to pronounce on the hair situation on Tom’s scalp. If in those circumstances Tom is definitely bald or definitely not bald, then this would be known by anyone who had the concept of baldness, anyone, that is, capable of having a propositional attitude involving that concept, and this person couldn’t have a paradigm VPB that Tom is bald. We can make sense of the possibility of someone’s having a paradigm VPB that $x$ is $F$ only on the assumption that $x$ is to some extent a borderline case of ‘$F$’.

In any event, the notion of VPB, even if it can be used to define the notion of a borderline case, is not without its own puzzles.

Still Another Puzzle

I’ve offered an account of borderline cases in terms of a certain kind of partial belief, VPB. VPB is a real phenomenon, and if it’s definitive of the notion of a borderline case, then it’s definitive of vagueness, for vagueness simply is the possibility of borderline cases: a term or property is vague just in case it admits of borderline cases. But VPB is apt to seem puzzling, for it dubiously coheres both with the assumption that borderline propositions have a truth-value and with the assumption that they lack a truth-value.

It’s hard to see how VPB can cohere with the assumption that borderline propositions lack truth-values. VPB is a form of belief, and belief, by its very nature, aims at truth: to believe a proposition $p$, for those who have the concept of truth, is to believe that $p$ is true; so, to vp-believe $p$ to any degree is to vp-believe to that degree that $p$ is true. But how can one coherently believe to any degree that $p$ is true when, at the same time, one assumes that $p$ lacks a truth-value? Those who deny that borderline propositions can have truth-values should be puzzled by the fact that those propositions are ubiquitously the contents of partial beliefs.
But it’s also hard (albeit perhaps a little less hard) to see how VPB can cohere with the assumption that borderline propositions have truth-values. The main puzzle here is why one wouldn’t have a SPB that Harry is bald if one assumed that that proposition was either true or else false, that, in other words (since facts are true propositions), it’s either a fact that Harry is bald or else a fact that he isn’t. For suppose God were to tell me that either it’s true that Harry is bald or else true that Harry’s not bald. In that case, and assuming God told me nothing more, I should take my equal inclination towards each proposition to mean that, as far as I was concerned, there was a fifty-fifty chance that Harry was bald and a fifty-fifty chance that he wasn’t bald. My partial beliefs would be sp-beliefs, not vp-beliefs. Moreover, it seems to belong (perhaps defeasibly) to the common-sense view of borderline cases that there’s no fact of the matter either way, and this is evidently part of the explanation of why the partial beliefs we have towards borderline propositions have those features that make them VPBs rather than SPBs. For consider again Sally during the plucking of Tom at a point when she believes to degree .5 that Tom is bald. Sally knows that if the proposition that Tom is bald is true, then its truth supervenes on the hair situation on his scalp; but she has full access to those facts (on which Tom’s baldness would have to supervene if he were bald) and instinctively feels that she knows full well that they don’t necessitate that Tom is bald. The proposition that Tom is bald can’t be “barely true,” true in virtue of nothing other than itself, and, she implicitly believes, the only facts that could make it true fail to make it true. Likewise, mutatis mutandis, for the proposition that Tom isn’t bald. Although Sally merely believes to degree .5 that Tom is bald, she knows that no one could be in a better epistemic position than hers for judging whether Tom is bald, and she doesn’t for a second suppose that this is because the proposition magically gets its truth-value from nowhere and magically hides it from everyone. She appreciates that it’s a feature of her concept of baldness that she’s reached the end of the line on the matter of Tom’s baldness. So it’s hard to see how to combine Sally’s vp-believing that Tom is bald with her further assuming that the proposition that Tom is bald has a truth-value.

The puzzle is that we have VPBs and they dubiously cohere both with the assumption that borderline propositions have truth-values and with the assumption that they lack them. But this puzzle may have a partial resolution: the proposition that Tom is bald is indeterminate whether borderline propositions have truth-
values, for reflective participants in our conceptual and linguistic practices involving vague notions may themselves have paradigm VPBs toward the proposition that borderline propositions have truth-values (and even, alas—for there is surely no commitment to excluded middle at the level of our commonsense logical concepts—toward the proposition that they have them or lack them). Let me bring this thought to bear on the sorites.

**The Sorites Again**

A paradox is a set of mutually inconsistent propositions each of which seems plausible when considered on its own. A *happy-face solution* to a paradox would do two things: first, it would identify the odd-guy-out, the seemingly true proposition that isn’t really true; and second, it would remove from this proposition the air of seeming truth so that we could clearly see it as the untruth it is. The “paradox” of the barber who shaves all and only those who don’t shave themselves enjoys a happy-face solution, but I doubt that many, if any, of the real philosophical paradoxes do. The reason standard solutions to these problems never ultimately satisfy is that they’re attempting to give happy-face solutions to problems that don’t admit of them. Think of the libertarian, hard determinist, and compatibilist solutions to the problem of free will, or think of any of the familiar solutions to the skeptical problem of our knowledge of mundane propositions about the external world, such as the proposition that I have a hand.18 I doubt that the sorites has a happy-face solution. We do seem determined, faute de mieux, to reject the sorites premise, but a happy-face solution would also eliminate the paradox involved in rejecting that premise by revealing to us which one of (a)-(c) at the beginning of this paper had to be rejected and why it had to be rejected, which is to say it would bring us a semantic insight that would reveal the pull away from the needed rejection to be specious in a way that freed us from it, and I doubt that is possible.

Still, we can say something significant about (a)-(c). It follows from what I said in the preceding section that it is indeterminate which of (a)-(c) is the odd-guy-out. Let me be more specific. The second member of the triad, (b), says, in effect, that the proposition that it’s not the case that for any n, if a person with $n$ is rich, then so is a person with $n-1$ is equivalent to the proposition that there is an n such that it’s not the case that if a person with $n$ is rich, then so is a person with $n-1$. This claim, rejected by the intuitionist,19 isn’t affected, and we are free to accept it. I’ll
say nothing more about it. The first member of the triad, (a), says that to reject the sorites premise is to accept its negation, and this presupposes a commitment to bivalence for borderline propositions. But since one can have a paradigm VPB towards the proposition that, say, the proposition that borderline Harry is bald has a truth-value, it follows that such propositions are borderline cases of ‘has a truth-value’. And if something is a borderline case of ‘$F$', then, trivially, it is indeterminate both that that thing is $F$ and that it’s not $F$. The final member of the triad, (c), makes in effect two claims. First, that the proposition that there is an $n$ such that having $\$n$ is sufficient for being rich but having $\$n - \$1 isn’t sufficient for being rich entails there is a sharp one-dollar cutoff between what suffices to make a person rich and what fails so to suffice, where that is interpreted to mean that there is a numeral $\alpha$ such that the result of substituting $\alpha$ for ‘$n$’ in the open sentence ‘Having $\$n$ is sufficient for being rich but having $\$n - \$1 isn’t’ expresses a true proposition. Second, that it’s implausible that this cutoff obtains. I believe we can continue to find it implausible that the sharp cutoff obtains, but I am committed to regarding it as indeterminate that the negation of the sorites premise entails the sharp cutoff, for that entailment again presupposes bivalence for borderline propositions. My position on the sorites, then, is this: the sorites premise is not true, but it’s indeterminate which of the key propositions that motivate accepting the premise—viz., (a) and the first claim of (c)—isn’t true, and this because it’s indeterminate whether borderline propositions have truth-values.

One thing that makes this “resolution” of the sorites aptly called an unhappy-face solution is that we can’t eliminate the paradox simply by adopting a determinate notion of truth. This is because:

1. Vagueness can’t be eliminated; it’s simply impossible for us to have a language or conceptual scheme that is free of vagueness.
2. Vagueness entails vagueness-related partial belief (VPB).
3. VPB leads to paradox if we accept bivalence and if we reject bivalence—this was the moral of the argument that VPB dubiously coheres with the assumption that borderline propositions have truth-values and with the assumption that they lack them.

How terrible is this? Suppose that (1)-(3) are correct. So what? Why can’t we recognize our conceptual situation for what it is and live with it? Reasoning needn’t be impaired. Classical logic will continue to serve us as
well as it now serves us, which is pretty damn well. For the most part, we simply act as though excluded middle always held and that all propositions were bivalent. Our use of classical logic may be strained when we confront arguments, such as the sorites, which explicitly turn on the status of borderline propositions, but I'm suggesting that vagueness will on occasion strain us no matter what logic we use. What intellectual endeavor need suffer from this feature of our conceptual practices?

It might be suggested that the real problem surfaces in semantics. We need, it might be said, theories of truth and meaning for natural languages, and we're still without a way of accommodating vague language in such theories. To this, however, it must be replied that it isn't clear what sort of theories of truth and meaning we need, and therefore not clear that vagueness isn't already well enough accommodated in the ones we do need. Suppose, for example, that we need compositional meaning and truth theories. Ignoring indexicality, we may suppose our meaning theory compositionally to assign to each sentence the proposition it expresses. Vague sentences will express vague propositions, because, at least in part, vague predicates express vague properties. Let's say the sentence 'Harry is bald' expresses the proposition <Harry, baldness>, and that the former is vague because the latter is vague, and the latter is vague because baldness admits of borderline cases. Propositions generally will be of the form \(<<x_1, \ldots, x_n>, \phi_n>\), where \(<x_1, \ldots, x_n>\) is an \(n\)-ary sequence of items and \(\phi_n\) is an \(n\)-ary relation, and such a proposition will be true just in case its \(n\)-ary sequence satisfies its \(n\)-ary relation and false if it doesn't. This gives us bivalence if we have excluded middle, but that merely respects the platitudes that falsity is truth of the negation and that every proposition of the form \(it's \, true \, that \, S \, iff \, S\) is true. Here, then, we would have all the semantics we might need, and the problem of vagueness is thrown back on classical logic, where, I have suggested, we already have a line to take. So semantics seems not to provide a special problem as regards vagueness. Besides, as I've argued in many places,²⁰ we may actually need very little in the way of "theories" of meaning and truth for natural languages.

Concluding Metaphysical Reflection

Harry is a borderline case of 'bald'. He's a borderline case of 'bald' because 'bald' expresses the vague property baldness and he's a borderline case of baldness. At the same time, I've suggested that vagueness-
related partial belief (VPB) is of the essence of vagueness, and that the notion of a borderline case needs to be defined in terms of VPB. This proposal is apt to strike one as proceeding in the wrong direction. Surely, it’s the belief-independent metaphysical status of baldness in relation to Harry which accounts for whatever VPBs we have about Harry’s being bald, and not the other way around. Our propensity to form partial beliefs of the kind in question—VPBs—can’t constitute vagueness; it must rather be a reflection of it. This is the worry alluded to earlier, when I imagined someone objecting that even if my definition of the notion of a borderline case in terms of paradigm VPBs provided a necessary and sufficient condition, it couldn’t really provide the essence of vagueness.

No, I hazard, vagueness really does need to be explained in terms of our propensity to form VPBs. That’s precisely what vagueness consists in. Rather than this being a reflection of a deeper metaphysical status of vague properties, the metaphysical status of vague properties is a reflection of our dispositions to form VPBs. For properties, as I’ve argued elsewhere, are mere hypostatizations of our linguistic and conceptual practices. Baldness is a pleonastic gift of the predicate ‘bald’ thanks to the pleonastic equivalence between ‘Harry is bald’ and ‘Harry has the property of being bald’, and the nature of baldness is entirely determined by the linguistic and cognitive practices governing our use of ‘bald’. It’s because the formation of VPBs belongs to those practices that baldness is a vague property. Baldness is language and mind independent in that it exists in all possible worlds, and hence exists regardless of whatever linguistic or conceptual practices we have. Yet that’s consistent with the nature of the property being entirely determined by the practices whose hypostatization determines the property. But I seem to be opening still another can of worms. Besides, the position presented in this paper is far from adequately elaborated; much more needs to be said about VPB. The problem of vagueness, one of the oldest and most troublesome philosophy knows, calls for a new treatment. I hope that what I’ve presented in this paper is worthy of further consideration.22

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TWO ISSUES OF VAGUENESS

NOTES


2. There are those who deny the first premise with the claim that vague terms express properties that, like the property of being a round square, can’t have application (see, e.g., Peter Unger, "There Are No Ordinary Things," *Synthese* 41 [1979]: 117–54). Since virtually all predicates are vague, a consequence of this solution is that there are virtually no non-negative truths. I’ll ignore this remedy, which couldn’t even enjoy a true statement, and assume that for most vague predicates “F”, some things are determinately F and some things are determinately not F.


5. These are what Kit Fine calls *penumbral connections* in “Vagueness, Truth and Logic,” *Synthese* 30 (1975): 265–300. This paper is the *locus classicus* of a supervaluationist solution to the problem of vagueness.


8. I’m inclined to think there’s already a problem for the supervaluationist at this point, although the supervaluationist is unlikely to be moved. The problem I find goes as follows. (i) Subject to qualification pertaining to the semantic paradoxes, every instance of the schema ‘the proposition that S is true iff S’ (equivalently, ‘it’s true that S iff S’) is analytic (cf. Horwich, *Truth*). Indeed, it’s my view that, owing to the trivial transformation that allows us to go back and forth between any sentence ‘S’ and its pleonastic equivalent, ‘It’s true that S’, the schema provides the essential way in which propositions are introduced into our ontology (see my “Language-Created Language-Independent Entities,” *Philosophical Topics* 1996). (ii) The alleged status of the schema together with the principle of excluded middle and the platitude that falsity is truth of the negation entails that every proposition is true or false. (iii) Since the supervaluationist accepts the platitude about falsity and excluded middle but is constrained to deny that bivalence holds for vague propositions, she must deny the validity of the truth schema for propositions. The supervaluationist will be unmoved by this, however, since she’ll feel uncompelled to accept the alleged status of the schema.
9. Hartry Field made this suggestion to me in conversation.
11. Frege held that propositions with false presuppositions—such as the proposition that the King of France in 1997 is male—are neither true nor false. Since there are predicates that may have false presuppositions—e.g., ‘admires the King of France in 1997’—such predicates, for Frege, would be neither true nor false of anything. Frege's view may not be correct, but the fact that we don’t take entertaining it to be entertaining a hypothesis about vagueness evidently shows that a predicate’s having borderline applications doesn’t simply consist in its having a truth-value gap.
15. And towards the proposition that he isn’t bald; what I say about the one proposition applies, *mutatis mutandis*, to the other as well.
16. This way of expressing my (rather obvious) point is partly borrowed from John Pollock’s *Contemporary Theories of Knowledge* (New York: Rowman & Littlefield, 1986), where, on pp. 97–98 he writes: “Theories of subjective probability begin with the platitude that belief comes in degrees, in the sense that I may hold one belief more firmly than another, or that I can have varying degrees of confidence in different beliefs.”
17. The next section reveals why this resolution can be only partial.
22. I am much indebted for their comments on an earlier draft to David Albert, John Collins, Manuel García-Carpintero, Hartry Field, Kit Fine, Thomas Hofweber, Paul Horwich, Christopher Peacocke, Graham Priest, Roy Sorensen, Achille Varzi, and Stephen Yablo.