VAGUENESS AND BORDERLINE CASES

by

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Vagueness is ubiquitous in natural language. It seems incompatible with classical, bivalent logic, which tells us that every statement is either true or false, and none is vaguely true. Yet we do manage to reason using vague natural language. In fact, the majority of our day-to-day reasoning involves vague terms and concepts. There is a puzzle here: how do we perform this remarkable feat of reasoning? I argue that vagueness is a kind of semantic indecision. In short, that means we cannot say exactly who is bald and who is not because we have never decided the precise meaning of the word ‘bald’—there are some borderline cases in the middle, which might be bald or might not. That is a popular general strategy for addressing vagueness. Those who use it, however, do not often say what they mean by ‘borderline case’. It is most frequently used in a loose way to refer to in-between items: those people who are neither clearly bald nor clearly not bald. But under that loose description, the notion of borderline cases is ambiguous, and some of its possible meanings create serious problems for semantic theories of vagueness.

Here, I clarify the notion of a borderline case, so that borderline cases can be used profitably as a key element in a successful theory of vagueness. After carefully developing my account of borderline cases, I demonstrate its usefulness by proposing a theory of vagueness based upon it. My theory, vagueness as permission, explains how classical logic can be used to model even vague natural language.
Vagueness is ubiquitous in natural language. We notice it immediately in words like ‘bald’, ‘tall’, and ‘blue’; a longer look shows us that it is present even in apparently precise terms like ‘now’, ‘six feet tall’, and ‘organism’. For consider, the word ‘now’ does not pick out a precisely bounded moment. A few milliseconds sooner or later make no difference. And so there is some vagueness even in the apparently precise term, ‘now’. Similarly, a measurement like ‘six feet tall’ initially seems like a fine way to make precise the vague expression ‘tall’. But when I describe my father as six feet tall, I am not using the phrase precisely. I have no idea whether he is 6.000 feet tall, 6.001 feet tall, or some other nearby height, and any ordinary judgment about the truth of my claim does not depend upon his exact height, as measured to the thousandth of a foot. The best explanation is that ‘six feet tall’, as commonly used, is not perfectly precise. It is less vague than ‘tall’, but it is still vague. As for ‘organism’, we might reasonably have supposed that scientific terms, which are commonly defined by stipulation, are not vague. But in this case we would be wrong. The word ‘organism’ refers to living things. A virus is a borderline case of an organism since it has some features of living things, but lacks DNA and many of the other features normally thought to be required for life. Vagueness is everywhere.

That is not just an idle observation: vagueness creates real trouble. It is apparently incompatible with classical, bivalent logic, which tells us that every statement is either true or false, and none is vaguely true. The point can be put more strongly. Our best
model of successful reasoning is classical, bivalent logic, which has exactly two truth-values: true and false. There is no room for “kind of true.” But we often cannot say whether a claim like ‘Joe is bald’ is true or false—perhaps Joe’s hair is such that we could reasonably go either way. And, supposing my father is not exactly 6.000 feet tall, is it true or false that he is six feet tall? Classical, bivalent logic does not seem well-suited to accommodating ordinary reasoning with vague terms.

Yet we do manage to reason using vague terms. In fact, the majority of our day-to-day reasoning involves vague terms and concepts. There is a puzzle here: how do we perform this remarkable feat of reasoning? Must we wholly revise our understanding of logic to meet the challenge of ubiquitous vagueness? Or should we rather attempt to eliminate vagueness from our language, in order to promote better reasoning? I will argue that neither of those radical measures is needed, or even desirable.

Vagueness, I contend, is a kind of semantic indecision. In short, that means we cannot say exactly who is bald and who is not because we have never decided the precise meaning of the word ‘bald’—there are some borderline cases in the middle, people who might be bald or might not. That is a popular general strategy for addressing vagueness. Those who use it, however, do not often say just what they mean by ‘borderline case’. The term is most frequently used as a loose way to refer to in-between items: e.g., those people who are neither clearly bald nor clearly not bald. But under that loose description, I will argue that the notion of borderline cases is ambiguous, and that some of its possible meanings create serious problems for semantic theories of vagueness. In what follows, I clarify the notion borderline cases so that it can be used profitably as a key part of how
vagueness is understood. An important consequence of my clarification is that semantic theories of vagueness are provided with a plausible defense against objections regarding their use of borderline cases, and also with an explanation of how we are able to reason so successfully using vague terms and concepts. As evidence for the usefulness of my notion of *borderline case*, I also develop a theory of vagueness employing my borderline cases as its central explanatory mechanism.

Chapter 1 is an explanation of the problem of vagueness. There is some disagreement about what vagueness is and what a theory of vagueness should do. After describing some of the possibilities, I settle on a reasonably neutral account, reflected in the two success criteria I propose for theories of vagueness. First, a theory of vagueness must explain how we can reason well, even with vague concepts, and so (1) the theory must accurately describe ordinary reasoning and how such reasoning can meet an appropriate standard of logical rigor. Second, a theory of vagueness must be *about* *vagueness*, and so it must (2) respect the intuition that vague predicates lack sharp boundaries. (For example, it might either not permit that there is a sharp boundary dividing the bald from the non-bald, or explain why people are prone to feel as if there is no such sharp boundary, even though there is one.) In order to demonstrate the difficulty of meeting both criteria at once, I describe a few ways in which theories of vagueness may fail to do so.

In Chapter 2, I consider three prominent accounts of vagueness that are explicitly concerned with borderline cases. Diana Raffman and Crispin Wright have both recently clarified the notion *borderline case*. My own account of borderline cases is in part a
further development of considerations they have raised. The third account I consider is Michael Tye’s. It is very insightful, but subtly equivocates between two different notions of borderline cases. Such insidious errors illustrate the pressing need for further clarification of the various meanings that may be ascribed to ‘borderline case’.

Chapter 3 begins with just such a clarification of the different meanings of ‘borderline case’, followed by an explanation of how one of those meanings stands out from the rest as being particularly apt to enable a successful theory of vagueness. There are two major distinctions I use to categorize the various meanings: First, ‘borderline case’ can be thought of as the name of a third status that is distinct from, and incompatible with, both ‘F’ and ‘not-F’ (for some vague predicate F), or, on the contrary, it can be thought of as a designation for items that may be F or not-F, but that are not clearly so. Second, the borderline cases in a sorites sequence can be thought of either as forming a sharply-bounded group of cases or not. Once those options are laid out clearly, and the consequences of each are considered, the choice among them is relatively straightforward. The conception of borderline cases most useful for theories of vagueness is one that permits each borderline case to be described as ‘F’, ‘not-F’, or ‘borderline-F’, and one under which borderline cases are not sharply bounded. That conception is preferable because it guarantees the absence of sharp boundaries, and contrary to what one might have thought, it allows us to reason in a vague natural language with appropriate logical rigor.

In Chapter 4, I show that my conception of borderline cases can be used in a logically rigorous theory of vagueness. By considering the practical issue of how people
actually reason with vague predicates, I show that my notion of borderline cases can preserve bivalent, classical logic as the model of ordinary reasoning with vague predicates. I call the theory *vagueness as permission*. It is the permissiveness of my conception of borderline cases that enables me to treat vague predicates as if they were precise (allowing bivalence), and simultaneously to respect the absence of sharp boundaries characteristic of vague predicates. Then, in order to better explain the theory, and to situate it among other, more familiar theories, I compare it to epistemicism and to supervaluationism. I contend that my own theory has some of the virtues of both of those theories, without their vices.

This dissertation constitutes a new solution to the problem of vagueness, heavily indebted to supervaluationism, but really quite novel in its approach and in its results. It is more sensitive to how people use vague terms in ordinary conversation than most theories of vagueness, and so it is a more psychologically plausible account of how vagueness works in ordinary reasoning. In addition, it allows for both the genuine boundarylessness of vague predicates, and the use of bivalent, classical logic as the model of those predicates. Because of those features, my theory does not just meet my success criteria, it excels with respect to them. Vagueness as permission follows naturally from the work I have done in clarifying the notion of borderline cases. Nevertheless, one could accept my account of borderline cases without accepting my theory of vagueness. Even if my theory of vagueness is mistaken, this work is important for the ways in which it can improve our understanding of the nature of vagueness, particularly with respect to the nature of borderline cases.
1. THE NATURE OF VAGUENESS

1.1 Introduction

Before we can embark on the project of constructing a theory of vagueness, we must have some fundamental groundwork established. And so this first chapter is devoted to developing reasonably clear answers to these three basic questions:

What is vagueness?

Why is it problematic?

What is required for an adequate solution to the problem?

There is genuine disagreement about all three questions, so fully theory-neutral answers are not to be had. Nevertheless, we can begin with the little bit of common ground shared by most philosophers working on vagueness: the sorites paradox (defined below). The sorites paradox is almost universally taken to be characteristic of vagueness, and to indicate the presence of a serious philosophical problem having to do with vagueness. It can be thought of as a first pass at the questions, “what is vagueness” and, “why is vagueness problematic.”

After considering the sorites paradox, I will wade into the controversy by examining some of the more detailed answers to the first two questions, each answer developed as part of a different theory of vagueness. I will not attempt to give a full, systematic account of all the major theories of vagueness.\(^1\) Mainly, I am concerned in this section to organize the predominant extant definitions of vagueness (and so also the

\(^1\) For such an account, see (Keefe 1996) or (Williamson 1994).
corresponding theories) in a way that (1) clearly illuminates the range of possible answers to the first two questions, and that (2) creates a space in which I can situate my own theory among the others. Keeping those goals in mind, I first give brief descriptions of some of the most commonly used definitions of vagueness, along with some considerations about the plausibility of each. Next, I organize the theories of vagueness that correspond to those definitions, along with some of the major theories that do not employ explicit definitions of vagueness, according to the following, well-known criterion. As part of an answer to the question “why is vagueness problematic,” philosophers must say whether the source of the problem is semantic, epistemic, or metaphysical. That is, we must say whether vagueness is problematic because of some issue with the meanings of vague terms, because of our knowledge (or lack of knowledge) about vague terms, or because of some vagueness in objects themselves.

One’s answers to the first two questions are important largely because of the bearing they have on one’s answer to the third question: What is required for an adequate solution to the problem? In addition, we cannot answer the third question until we resolve this issue: What is the appropriate aim of a theory of vagueness? As I see it, there are two main directions from which one can approach the problem of vagueness, with a good deal of middle ground between the two. Each of these approaches tends to push one toward certain aims and away from others. One approach is broadly prescriptive. For philosophers taking this approach, the goal of a theory of vagueness is to resolve the problems that vagueness causes by reshaping natural language, molding it—or at least those parts of it that we use in our most careful theorizing—to better fit into formal
models of language. (Such an approach *prescribes* how language ought to work, given our best understanding of logic.) The other approach is broadly descriptive. Its goal is to resolve the problems that vagueness causes by showing how and why those problems do not in fact stand in the way of successful communication and successful reasoning, in ordinary natural language. (It is descriptive in that it attempts to resolve the tension between vague natural language and logic without idealizing natural language. Rather, it *describes* natural language as it is.) Those two very different approaches to vagueness tend to lead one toward different success criteria for a theory of vagueness. Their aims are divergent, and so what each takes to be required for an adequate theory of vagueness differs. I conclude this chapter by proposing and defending two success criteria for theories of vagueness that are best suited to descriptive approaches, but are otherwise reasonably neutral regarding the nature of vagueness and the particular problems it causes.

1.2 Describing vagueness

Let us begin with some simple observations about vagueness in natural language, then move on to more technical definitions of vagueness. It is clear that using vague language is easy, but explaining what vague language is and *how* to use it is not. For example, it is a simple matter for two people to communicate about a tall person, even though ‘tall’ is a vague word. If you and I were in a room together with some children, I might ask about the boys in the room, “Which one is your son?” If you answered by
saying, “Mine is the tall one,” then, under suitable circumstances (for example, if there were one boy who was clearly taller than the others, and I were in the right sort of perceptual environment to be able to tell that that was so) I would be able to discern which one of the boys is your son. For that communication to be successful, however, it seems obvious that you and I must agree, at least to some extent, upon the meaning of the word ‘tall’. So what is the meaning of ‘tall’? In the present case, a comparative definition seems appropriate, for example: ‘tall’ refers to the object that is larger in height than the other objects in its comparison class. And so ‘the tall boy’ is the boy in the room whose height is clearly greater than that of the other boys. But consider the second-tallest boy. He might also reasonably be called tall, even though calling him so would not be a good way to distinguish him from the others in this case. Or, what if all the boys were of nearly the same height, and your son were just ¼ inch taller than the next tallest boy? In that case it would be inappropriate to call him tall, relative to the comparison class of boys in the room. For something to be called ‘tall’, relative to other things in its comparison class, it must be significantly taller. How much larger than the other things in its comparison class, with respect to height, must an object be, in order to count as tall? Clearly the context will matter. But even if that were carefully specified, we could not say exactly what ‘tall’ means.

It is characteristic of vague terms like ‘tall’ that we cannot say exactly which things they apply to and which they do not. But, even more perplexing, it seems as though there could not be precisely stated application conditions that describe tallness correctly. The trouble is this. Part of what is characteristic of vague terms like ‘tall’ is not
only that they lack clear application conditions, but also that there is room for reasonable disagreement about their application in particular cases. Two competent speakers of English, and perceivers of height, can look at the same person, in the same context, and disagree about whether he or she is tall. If we tried to pin down the precise application conditions of ‘tall’ by stipulation or (what seems to me to be the same thing) by “discovery” of the exact, proper reference of ‘tall’, we would thereby eliminate the possibility of that reasonable disagreement. Any statement of precise application conditions seems to change the fundamentally under-specified meaning of the vague word ‘tall’. Now we have a puzzle: how do we communicate, or even privately think, using vague words like ‘tall’? A word is only useful to us if we know what it means. But vague words seem highly resistant to precise definition.

Several responses to that observation initially invite our consideration. (1) Perhaps we can use words profitably even if we do not know what they mean at all. (2) Perhaps we can use words profitably even if we know only part of their meanings. (3) Perhaps vague words have only partial meanings—they are fuzzy around the edges. So we may know exactly what a vague word means without knowing exactly what it applies to.

2 That is not quite true. There are some unusual ways to use a word without knowing its meaning. For example, a student who systematically uses ‘deontology’ where he means ‘consequentialism’ can be easily understood. His essay might even be very insightful. His failure to know the meanings of the words does not prevent communication because of the systematicity of his mistake. Another sort of case occurs when the context is adequate to determine what a person might have meant. If a student writes an essay, purportedly about circadian rhythms, that includes a description of the life cycle of the “circadia,” and of its loud chirping sound, it is easy to infer that the student has confused ‘cicada’ with ‘circadian’. Most of the time, though, knowing the meanings of our words is essential for communication.
Response (1) seems unlikely. When people use a word without knowing its meaning at all, they are usually unable to convey their thoughts to their hearers. Although ‘tall’ and ‘short’ are both vague words, I must minimally know something about how the two are related and how they are related to the ordering of things by height, if I am reliably to use them correctly. Responses (2) and (3) are more plausible since they maintain that a competent user of a vague word must have at least some understanding of the meaning of the word. Both (2) and (3) require an explanation of what the meanings of vague words are, and of how we use those words. Response (2) might be thought of as making it easy to explain what vague words mean: they have precise meanings, just like non-vague words do, but we only partly know those meanings. The major draw-back is that it is then hard to explain how we are able to use vague words correctly. To the extent that we do not know what a word means, we cannot reliably use it correctly. Response (3) makes our use of vague words seem simple enough. Vague words have only partial meanings, so our imprecise knowledge of the boundaries of a vague word is actually complete knowledge of the meaning of that word. We know just what vague words mean, and so there is no trick at all to using them. The draw-back to response (3) is that partial meanings are very hard to make sense of. Whether we opt for something along the lines of (2) or (3), we face two challenges: to describe the meanings of vague words accurately (that is, to describe a systematic way to understand the meanings of all vague words), and to explain how it is that we are able to use vague words. Let us now consider more carefully, making use of some of the extensive philosophical research in this area, what it is about vague words that makes their meanings and uses so difficult to sort out.
The word ‘vague’ is used in many ways, but the vagueness that philosophers most commonly write about is the sort that occurs in a sorites sequence. As an example of a sorites sequence, suppose you are presented with a sequence of 32 different color tiles, the first of which is blue, the last of which is green, and the other 30 of which are progressively less blue and more green, such that the color of each tile is imperceptibly different from the color of the tile to its right.\(^3\) You might experience the sequence as starting with a blue tile, then sort of “shading off” into green tiles. Such unclarity about exactly which tiles are blue and which are not is characteristic of the vagueness of sorites sequences.

Knowing how to reason successfully with vague concepts and terms is important since the vast majority of our ordinary (and philosophical) reasoning involves some vagueness.\(^4\) Exactly which colors count as blue and which do not has little real-world importance, but other vague concepts and terms cause a great deal of trouble. Consider our notion of a person. The temporal vagueness of this concept (When does a person start being a person?) may contribute substantially to the difficulty of determining whether abortion is morally permissible. I do not mean to suggest that by proposing a logic and semantics of vagueness I will thereby solve difficult moral questions, but a solid

\(^3\) To be a bit more careful, each pair of adjacent tiles should be thought of as indiscernible with respect to one another. That is, when you look at any two tiles that are adjacent in the sequence, they seem to be the same color. One way to tell tiles 2 and 3 apart might be to compare both of them to tile 4. Tile 3 is indiscernible from tile 4. Tile 2, however, might not be. In that case, the visible difference between tiles 2 and 4, and the lack of such a difference between tiles 3 and 4, would allow you to infer a difference between tiles 2 and 3. Nevertheless, tiles 2 and 3 are indiscernible with respect to one another because they appear to have the same color when considered independently of the rest of the tiles.

\(^4\) Examples in ordinary reasoning are extremely common; they are less apparent in philosophical reasoning. As a philosophical example, vagueness is a key part of how Eric Schwitzgebel (2010) describes implicit associations: they are borderline cases of beliefs, neither clearly beliefs nor clearly not beliefs. He takes the word ‘belief’ to be vague, even as used by very careful philosophers, since the philosophical notion of ‘belief’ may or may not include implicit associations.
metaphysical groundwork does seem to be a prerequisite for understanding how to reason well about such metaphysically tinged moral questions.

Aside from real-world importance, vagueness is of particular philosophical interest because it generates a remarkably difficult puzzle: the sorites paradox: Let us name the tiles in the sequence described above ‘tile 1’ to ‘tile 32’. Now consider this argument:

(1) Tile 1 is blue.
(2) For all \( n \), such that \( n \) is an integer between 1 and 31 (inclusive), if tile \( n \) is blue, then tile \( n+1 \) is blue.
(3) Hence, tile 32 is blue.

Statement (1) is true by construction. Statement (2) expresses the idea that two tiles that are imperceptibly different in color must be called by the same color name. Since each tile’s color is imperceptibly different from that of the tile to its right, if tile 1 is blue, so is tile 2, and so on for each tile in the sequence. So statement (2) is apparently also true. By considering statement (2), applied to each tile in the sequence, from 1 to 31, we can see that (3) apparently follows. But this conclusion is false: tile 32 is, by construction, green.

We seem to be left with a valid argument from true premises to a false conclusion. Clearly, something has gone wrong. That is the sorites paradox.

The paradox can also be considered in terms of a “forced march” through a sorites sequence. Suppose I start with the first tile and ask you, of each in succession, “Is this tile blue?” If you are forced to answer each question, you must either answer ‘yes’ for
every tile in the sequence, or introduce at least one sharp boundary between two imperceptibly different tiles (e.g., “Yes tile 16 is blue, but NO tile 17 is not.”). Either way, something seems to have gone wrong.

First, if you call all the tiles blue, then you are making statements that are flatly false by the time you reach the end of the sequence. Tile 32 is green, not blue. And so this first strategy for responding to a forced march seems mistaken.7

But consider instead the introduction of a sharp boundary. You opt to answer “yes, it is blue” for all of the tiles up to a point, and then to answer “no, it is not blue” for the rest. This decision seems arbitrary since there is no natural-looking place to draw such a boundary. When two tiles are not perceptibly different in color, there can be no principled reason to call one blue and the other not blue. And so any view proposing that there really is a sharp boundary somewhere in the sequence seems thereby to misdescribe the sorites sequence.8

Such an account does have its advantages, though. By proposing a sharp boundary, you can easily resolve the sorites paradox. In the three-line version of the paradox, above, statement (2) can simply be rejected by any account invoking a sharp boundary. In addition, such accounts of vagueness provide some guidance about how to handle a forced march. The correct answer to every question is either a simple “yes” or

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7 Worse yet, you can construct a parallel sorites sequence by starting at tile 32 and asking of each tile in sequence, down to tile 1, whether it is green. If you stick with your original answer all the way through, regardless of the direction of the forced march, then you will call every tile in the sequence both blue (when you march 1-32) and green (when you march 32-1).

8 One popular theory of vagueness that posits sharp boundaries is epistemicism, discussed further in section 1.4 of this chapter, and in Chapter 4, section 4.2. Its central tenet is that vague predicates do have sharp boundaries, but we do not (and perhaps cannot) know where they lie. That is, there are semantic facts about the precise extensions of vague predicates that we simply do not know, and it is that ignorance of ours that is responsible for the vagueness of the predicates. See (Williamson, 1994) and (Sorensen, 1988) for exposition and defense of epistemicism.
“no.” Thus such an account ensures that vague predicates can be used in classical, bivalent logic. If there is a sharp boundary between the blue items and those that are not blue, then for each item in the sequence, there is a fact of the matter about whether “it is blue” is true or false of that item. There is no need to invent a new logic, for example, a logic with more than two truth values, to accommodate vague predicates.9

Let us try another sort of approach. Suppose instead of positing a sharp boundary between ‘blue’ and ‘not blue’, you say that there are no right answers for some of the tiles in the sequence.10 Vague predicates like ‘blue’ neither clearly apply nor clearly do not apply to some things. This seems to describe the vagueness of the sequence more accurately than the last approach we considered – at least it does not explicitly posit a sharp boundary – but this advantage comes at a cost. If vague predicates have such underdetermined extensions, it seems they cannot be used in classical, bivalent logic. The proposal is that ‘it is blue’ is not either true or false of some items in the sequence. This directly contradicts bivalence, which says that every proposition is either true or false. Furthermore, it is hard to see how such a theory could help with a forced march. If you stop calling the tiles ‘blue’ at some point, and start calling them ‘neither blue nor not blue’, you seem thereby to have introduced a sharp boundary. So this response alone does

9 That is not to say that classical, bivalent logic must be preserved in any adequate solution to the sorites paradox. While it is an advantage for an account of vagueness to avoid ad hoc changes to classical logic, not all changes are ad hoc, and even an account with ad hoc changes may still be more compelling, on the whole, than a solution which misdescribes vagueness by positing sharp boundaries. Which logic is appropriate for vague languages cannot be decided independently of careful consideration of particular theories of vagueness.

10 Diana Raffman (2005) warns against switching between “incompatibles” and contradictories, as I have been doing here. In Raffman’s terminology, green and blue are incompatibles, (roughly) because a thing cannot be both green and blue at the same time; whereas not-blue and blue are not only incompatible, but are also flatly contradictory. I discuss Raffman’s concern in the next chapter. As a preliminary observation, I will just point out that a green object is not blue. If my argument above is to avoid the pitfall Raffman has discovered, it will be because of the fact that contradictories are always incompatible.
nothing to help you respond to questions during a forced march, to solve the sorites
paradox, or to square vagueness with bivalent logic.

I can now clearly state the primary challenge for an adequate logic and semantics
of vagueness: We may either describe vague predicates as genuinely vague and so
without sharp boundaries, or we may describe them as if they are not vague, that is, as
having sharp boundaries. The absence of sharp boundaries is critical to an accurate
description of vagueness. But classical, bivalent logic (and, indeed, many other logics)
require sharp boundaries; if there is no fact of the matter about which things fall within
the extension of a predicate, it is hard to see how we could use that predicate in any sort
of sufficiently rigorous reasoning. The deep problem we face is in the tension between
these two desiderata: on the one hand, we want an accurate description of vagueness, and
so it must not involve sharp boundaries; but on the other, we want an account of
vagueness that explains how we can reason using vague predicates. Plainly, we do reason
using vague predicates, and so there must be a solution. Given the apparent contradiction
between those desiderata, however, the solution is far from obvious.

1.3 Defining vagueness

Let us now return to our first question: What is vagueness? Or, to focus the
question more sharply: What features are essential to vagueness? That is, which are the
features that, if you eliminate them, you have thereby eliminated the vagueness? It may
seem odd to spend so much time, at the start, on the definition of the central concept.
Defining vagueness is the job of a finished theory of vagueness. We cannot choose a definition at the outset, independently of a theory. While that is true, we also cannot decide among theories of vagueness without a conception of the proper goals of such a theory, and the goals of theorizing depend upon what vagueness is. As with most philosophical problems, there is no obvious path to take in our approach to it. We must simply begin in media res. Consequently, this discussion of definitions can be read in two ways: One, it is a way to become acquainted with some of the central lines of debate about vagueness today, and so it is as good an introduction to the issue as any. And two, it will enable us to decide what the goals of a theory of vagueness should be, and so it is a better introduction to the issue than many others would be. Brian Weatherson (2010) has come to a similar conclusion:

Imagine, I thought, trying to give a definition of what causation is that didn’t amount to a theory of causation. That project seems hopeless, and I didn’t think the prospects for a definition of vagueness were much better. I now think I was wrong, and we can learn a lot from thinking about which terms are vague independent of our theory of vagueness. […] The game, I think, is one of setting goals for what a theory of vagueness should do. (p. 77)

Let us begin, then, by considering some of the proposals that have been made for defining vagueness.

Bertrand Russell’s (1923) includes an excellent initial characterization of vagueness. He says that ‘red’ is vague because “it is a word the extent of whose application is essentially doubtful.” And, “a representation is vague when the relation of the representing system to the represented system is not one-one, but one-many.” One way to understand these remarks is by taking the latter claim to be an elaboration of the
Vague words are roughly characterized by the first claim. But then why is the extent of application of a vague word “essentially doubtful?” It is because there is a mismatch between our linguistic representations of things and how things really are. We represent things to ourselves and others using concepts and words that are rough approximations of how things are. Finite systems like human minds work best when they are not overburdened with unnecessary detail. It is best for us to have only an imprecise notion of ‘red’. But then that imprecise notion will not correspond to any precise range of application of the word ‘red’. Instead, the one notion ‘red’ corresponds to any number of different ranges of application; the relation between the representing system (me and my word ‘red’) and the represented system (the world with its various shades of colors) is one-many. The world that we represent can be thought of as more continuous, less discrete, than our thoughts about it are. So vagueness is a feature of representations, including linguistic representations like words. Vagueness is the failure of a representation to have a sure extent of application. And that failure comes about because of the one-many relation between representing system and represented system.

At the end of the previous section, I flatly stated that if you say there is a sharp boundary in a sorites sequence, then you have not accurately described the vagueness of the sequence. That is in keeping with Russell’s claim that vagueness involves essential

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11 There are certainly other ways of understanding Russell on vagueness. One interesting alternative is to read his claim about essential doubtfulness epistemically. It invites such a reading, since doubt is an epistemic notion. And that reading leads straightforwardly to an epistemicist position. I reject that reading because I think it does not cohere well with the rest of Russell’s essay. Or rather, to be more careful, I think it is fair to suppose that Russell’s view was not as thoroughly developed as the views being defended today, about 90 years later. He may not have anticipated how the debate would go, and so it may be anachronistic to read him as if he already had an opinion about the current debate. His essay has been very influential, and so we should not be surprised to find in it inspiration for a variety of theories, including perhaps both epistemicism and the kind of semantic indeterminacy view that I find in his essay.
doubt about the extent of application of the vague term, as I have understood it:

Characteristic of vague terms is their fuzzy range of application. If we wish to understand vagueness, we must not insist that there is no such thing. Proposing sharp boundaries is a way of eliminating vagueness, not understanding it. I have sided with those who think sharp boundaries are antithetical to vagueness. Mark Sainsbury (1991) is largely responsible for the careful development of this view. He names this feature “boundarylessness,” and uses it to define what vagueness is.

A vague concept is boundaryless in that no boundary marks the things which fall under it from the things which do not, and no boundary marks the things which definitely fall under it from those which do not definitely do so; and so on. Manifestations are the unwillingness of knowing subjects to draw any such boundaries, the cognitive impossibility of identifying such boundaries, and the needlessness and even disutility of such boundaries. (p. 257)

If a feature is definitive of vagueness, then it is the essential feature of vagueness—it alone is necessary and sufficient for vagueness. Sainsbury’s notion of boundarylessness is plausible as a definition of vagueness, but so are many other proposed definitions. Let us consider the most promising definitions, bearing in mind that more than one of the features described could be necessary for vagueness; the definition of vagueness need not be simple.

Sainsbury’s boundarylessness leaves us with difficult questions: what is it for a concept to lack boundaries altogether? And how could we reason using such a concept?

A different definition that gets at the same underlying feature can be found in Kit Fine's

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12 It is possible that the elimination of vagueness is the best we can hope to achieve. Williamson’s extended defense of epistemicism in his (1994) does not take a triumphant tone; rather, he argues there that the existence of sharp, unknown or unknowable, boundaries is the only way to understand vagueness that has not already failed. We should accept it because at least it is still a live possibility, unlike every other theory of vagueness.
(1975) argument that vagueness is the having of borderline cases. The view is that, for any vague term, there are some things near the edge of its range of application to which it neither clearly applies nor clearly does not. For example, perhaps ‘blue’ applies to tile 15, but perhaps it is too greenish to be called ‘blue’. The presence of such borderline cases indicates that the term ‘blue’ is vague. The difference between boundarylessness and borderline cases can be thought of in this way: Fine and Sainsbury both look at the part of the sequence where it seems like a boundary ought to go; Sainsbury describes what is missing, but Fine describes what is there. Fine’s definition of vagueness has an explanatory challenge comparable to Sainsbury’s. Explaining the nature of borderline cases is probably just as difficult as explaining what it is for a concept to lack boundaries.

Crispin Wright (1975) argued that “tolerance” is definitive of vagueness. A predicate is described as tolerant if large differences with respect to the relevant parameter matter for whether the predicate applies, but small enough differences cannot matter for the predicate’s application. An example will make this clearer. The predicate ‘tall’ applies to things that are of sufficient height. If we consider two things that vary a great deal with respect to the parameter of height, one may be tall while the other is not. If, on the other hand, we consider two things that are only very marginally different with respect to height, then they must either both be tall or both not. What is relevant here is not what is going on at the edges of the range of application—that is, we are not paying

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13 Sainsbury talks of vague concepts, while Fine is interested in vague terms. Does that make a difference? Yes and no. Their different paradigmatic cases of vagueness (concepts versus terms) illustrates how they were thinking about the issue, and so I believe it is worth preserving this difference, at the risk of muddying things a bit. To see what is plausible about each definition, we must put ourselves into the shoes of each definition’s proponents. Nevertheless, it is a relatively simple matter for us to rephrase Sainsbury’s boundarylessness so that it has to do with terms, or Fine’s borderline cases so that they have to do with concepts. In chapter three, I will describe my own theory using both terms and concepts.
particular attention to the tricky part of a sorites sequence, where there is a missing boundary, or where we find borderline cases. Instead, we attend to the whole sequence, and try to pinpoint what feature of the predicate could be responsible for the fact that there can be no grounds for applying ‘tall’ in one case, then not applying it in the case of something with only marginally less height. Wright offers a justification for statement (2) in the sorites paradox above.

A variation on Wright’s “tolerance” is Nicholas J.J. Smith’s notion of “closeness.” Smith (2008) argues that closeness is what is actually definitive of vagueness, rather than tolerance. He defines it this way, “a predicate $F$ is vague just in case for any objects $a$ and $b$, if $a$ and $b$ are very similar in respects relevant to the application of $F$, then the sentences $Fa$ and $Fb$ are very similar in respect of truth.” (p. 7) The major difference between tolerance and closeness is that the latter assumes that there are many degrees of truth, rather than the ordinary two: true and false. Tolerance does not require that assumption. It is interesting to note that Smith takes that assumption to be a benefit of his theory, rather than a drawback. He claims that there are many candidate theories of vagueness that are all reasonably convincing. The real problem now, he says, is that we have no good way to choose among them. One way we could establish criteria for choosing among them would be by settling on a definition of ‘vagueness’ which would fit more comfortably with one theory rather than the others. For example, if ‘vagueness’ were defined in such a way that it refers only to a semantic phenomenon, then that would rule out epistemic or ontological vagueness out of hand. That method is suspicious, though, since proponents of any plausible theory of vagueness can use the
same technique to justify different results. How you define the phenomenon of vagueness, how you describe the problem it generates, and what success criteria you stipulate for solving the problem will all contribute to the appearance of one theory as better than another. Smith is not on stable ground.

One more definition deserves a mention. Otávio Bueno and Mark Colyvan (forthcoming) define vagueness in this way: *a predicate is vague just in case it can be employed in a sorites argument.* 14 I will call this property “sorites susceptibility.” Their definition is very much like the pre-reflective description of vagueness that many philosophers give, in lieu of a definition. It is different from the other definitions I have described in that it adds nothing to what is already agreed upon by nearly all the philosophers working on the subject, and so seems like an uncontroversial choice. However, while that simplicity is the definition’s best feature, it is also its biggest problem. The trouble is that vagueness as sorites susceptibility cannot answer the question of which predicates *are* sorites susceptible. The other definitions I have described try to do that, and disagree about some cases. This definition, then, is incomplete, as compared to the other definitions.

I agree with Russell (as I have interpreted him) and with Sainsbury, that boundarylessness is essential to vagueness. Yet I deviate somewhat from Sainsbury’s view, and side more closely with Fine, to define vagueness in terms of borderline cases. That is not because I deny the central importance of boundarylessness, but because I

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14 The same view appears to have been held by Delia Graff Fara, in her (2000), but she did not explicitly defend it. Many philosophers seem to have thought of vagueness in this way, usually without defending the proposed definition.
think it is not the whole story. While vague predicates do not themselves draw
boundaries, people who use vague predicates certainly do draw boundaries. I agree that
“knowing subjects” are generally unwilling to draw *definitive* boundaries, but we are
perfectly willing to stipulate a boundary when it is useful to do so. The usefulness of
vague predicates is not a result of their boundarylessness alone, but also their potential
for further stipulation. Consider the case of the word ‘tall’. There is no sharp boundary
between people who are tall and those who are not. It is because ‘tall’ lacks a determinate
boundary that we are able to stipulate different boundaries that are suitable for different
purposes. For example, when using ‘tall’ to differentiate one person from the others in a
room, what matters is just the comparative heights of the people in the room. Any
individual who is prominently taller than the others will count as ‘tall’. But when I am
struggling to reach the chalk, which some prankster has put on top of the chalkboard, and
I ask my students whether someone tall would get the chalk for me, all I mean by ‘tall’ is
“having sufficient vertical reach to get the chalk.”¹⁵ The meaning of ‘tall’ can be
stipulated in different, incompatible ways, without error. This openness of vague terms to
further stipulation is not part of their boundarylessness. In fact, it involves a certain kind
of (temporary? revocable?) having of boundaries. In Chapter 3, I contend that such
further stipulation is permissible as a result of the nature of vague borderline cases. That
is why I think borderline cases are a better way to define vagueness than
boundarylessness, even though boundarylessness is also centrally important to the nature
of vagueness.

¹⁵ The example is Shaughan Lavine’s, mentioned in conversation.
1.4 The problem of vagueness

One important part of the question, ‘What is the problem of vagueness?’ is whether the problem of vagueness is semantic, epistemic, or metaphysical. The definitions I described above were all developed as part of semantic theories of vagueness, with the exception of Bueno and Colyvan’s very open definition (vagueness as sorites susceptibility), which is explicitly intended to be compatible with nearly any theory of vagueness. Semantic theories of vagueness hold that the sorites paradox arises because of some kind of apparent mismatch between logic and natural language.\(^{16}\) The goal of a semantic theory of vagueness, then, is to explain how we ought to understand logic or natural language, so as to eliminate the paradox. Semantic theories are the most popular type of theory, and the type that I endorse. Their popularity, I think, owes to the initially intuitive claim that vagueness is a feature of linguistic items, like predicates.\(^{17}\) As is evident from the variety of definitions that have been developed for semantic theories of vagueness, there are many different theories that fall under this type. Theories of epistemic and metaphysical vagueness are far less common, and far less varied. I have not included definitions of vagueness developed for epistemic or metaphysical theories of vagueness.

\(^{16}\) I am using “natural language” in contrast with “formal language.” There are, of course, many languages of both sorts, but what is important for my purposes is that vagueness is ubiquitous in natural languages and absent in formal languages. A semantics of vagueness should provide general principles for assigning meanings to vague terms. Such principles seem very likely to apply across natural languages; whether they actually do so is in part an empirical question, though, and so beyond the scope of this work.

\(^{17}\) Many philosophers start with the belief that vagueness should be explained semantically, and only decide against that view later, once their attempts to offer a semantic theory of vagueness have been frustrated. (Williamson 1994) is an extended argument of that form—it is an argument that vagueness must be epistemic, since it cannot be adequately explained in any other, more plausible, way. I take that as a challenge to defend the initially plausible view that vagueness is best explained semantically.
vagueness because proponents of those kinds of theories do not often give explicit, detailed definitions of vagueness.

For example, Elizabeth Barnes, in defining *metaphysical vagueness*, does not explicitly give a definition of vagueness *in general*. Her definition of metaphysical (or “ontic”) vagueness is: “Sentence S is ontically vague iff: were all representational content precisified, there is an admissible precisification of S such that according to that precisification the sentence would still be non-epistemically indeterminate in a way that is Sorites-susceptible” (2010 p. 604). Leaving aside explanation of the jargon for now, what this definition does is attempt to bracket semantic and epistemic vagueness. Then, whatever vagueness is left is metaphysical. More precisely, if the sentence is still “indeterminate in a way that is Sorites-susceptible,” after clearing up the semantic and epistemic vagueness, then that indeterminacy is metaphysical vagueness. From that we can conclude that Barnes’ definition of vagueness is something like Bueno and Colyvan’s: vagueness is sorites susceptibility.

That definition is a bit surprising. The key principle of metaphysical vagueness is that vagueness is not (or is not only) either a feature of language or the result of ignorance, but is rather (at least in part) a feature of the world itself. But sorites

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18 This argument is rather unorthodox, since it provides no positive characterization of metaphysical vagueness at all. Also, it requires that semantic, epistemic, and metaphysical vagueness are the only kinds of vagueness that there are. One might object on either of those grounds. As a consequence of those contentious features, however, the definition successfully meets a more basic goal: it is clearly coherent. The most damning objection to metaphysical vagueness is that the very notion is incoherent. What could it be for the world itself to be vague? Isn’t vagueness a consequence of a certain kind of relation between representing and represented? Objects can *appear* fuzzy at the edges, but that is because of the relation between our perceptual systems and the objects—how could vagueness be in just the objects themselves? Positive characterizations of metaphysical vagueness have been largely unable to defuse this very troubling objection. Barnes’ negative characterization has problems of its own, but at least it is not subject to charges of incoherence. Anyone who accepts that there is such a thing as semantic or epistemic vagueness must accept this definition as coherent, even if they insist that nothing answers to it.
susceptibility is a feature of words, not of objects. Only words can be used to construct arguments, soritical or otherwise. Here is one way to understand Barnes’ definition. In the case of a vague sentence like, “George is tall,” we might conceivably eliminate *semantic* vagueness by determining with full precision what each of the words in the sentence means, then *epistemic* vagueness, by measuring George’s height with perfect precision, and by knowing the precise meanings we just determined. Suppose ‘George is tall’ were still sorites susceptible. The cause of that sorites susceptibility would be metaphysical vagueness. For example, George’s height fluctuates over the course of a day, as his spine compresses; it fluctuates over the course of the night, as his spine relaxes. No matter how precise our meanings and measurements, George himself does not have a static height. Perhaps that could count as an example of metaphysical vagueness, left over after the other vagueness has been cleared away.¹⁹

Whether or not there is metaphysical vagueness, Barnes’ definition requires us to think first about semantic and epistemic vagueness. For the remainder of this work, I will leave the possibility of metaphysical vagueness aside. I hope that my work here on the nature of semantic vagueness may shed some light on whether there is a need for the postulate of metaphysical vagueness.

¹⁹ Or perhaps not. While I find the case helpful for thinking about what metaphysical vagueness might be like, it is not obvious that there is actually any metaphysical vagueness here. By specifying more *temporally* narrowly what is meant by ‘George’, we could avoid the problem of height fluctuation over the course of each day. That is, in addition to determining the precise *spatial* extent meant by the name ‘George’, we must also determine its precise *temporal* extent. And so it could be just another case of semantic vagueness. Still, even if George’s height fluctuation is not a very good example of metaphysical vagueness, it illustrates how the definition could work to pick out whatever metaphysical vagueness does exist.
Finally, there are theories according to which the problem of vagueness is purported to be epistemic. A theory of that sort, “epistemicism,” proposes that there really is a single grain of sand that makes the difference between a heap and a non-heap, there is a single color tile, indiscernible from the tiles to its left and right, that is the last blue tile in the sequence, but that we do not (and perhaps cannot) know which grain of sand or which tile is the one. That claim allows epistemicists to reject the second premise of our sorites argument\textsuperscript{20}, the inductive premise, and so to avoid the argument’s paradoxical conclusion. The central idea is that vague words, like non-vague words, have precise meanings; the difference is that we are ignorant of some part of the meanings of vague words.

That is the central idea, but how do epistemicists define vagueness? I have not come across an explicit statement of the necessary and sufficient conditions for vagueness in the works of either of the two leading epistemicists, Timothy Williamson and Roy Sorensen. Here is a partial definition, however, from (Sorensen 2001).

This absolute unknowability is part of the meaning of ‘vague’. I react to reports that a threshold has been discovered by concluding that either the reporter is conceptually confused or that I am conceptually confused. […] If I were to learn that extra-terrestrials know the threshold of all our ordinary vague predicates, I would conclude that vagueness does not exist. After all, if they knew the size of the smallest heap, they could resolve the ‘vagueness’ by transmitting the answer by radio. Indeed, just the metaphysical possibility of such extra-terrestrial intelligence would show that there is no vagueness. Thresholds for vague predicates are not just unknown; they are unknowable. (pp. 2-3)

\textsuperscript{20} Premise (2): For all \(n\), such that \(n\) is an integer between 1 and 31 (inclusive), if tile \(n\) is blue, then tile \(n+1\) is blue. Clearly, if there is some \(n\) such that tile \(n\) is blue, but tile \(n+1\) is not, then we must reject (2).
From this we should conclude that one necessary condition for vagueness, according to Sorensen, is that vague predicates lack knowable thresholds. If the word ‘heap’ has a knowable threshold—knowable by anyone at all—then it is not a vague word. Because Sorensen claims that unknowability is “part of the meaning of ‘vague’,” he suggests that unknowability is not alone sufficient for vagueness—that it is just a part of the definition of ‘vague’. What else might be necessary for vagueness?

One further condition an epistemicist might include is that the unknowability of a vague predicate’s threshold is caused by the right sort of feature. For example, imagine the threshold of a predicate is unknowable because it just so happens that every creature in the universe capable of knowledge is perceptually deficient in the same odd way. That does not seem like the right sort of unknowability, and so it would not be surprising if epistemicists were to rule it out. I am not sure how exactly to formulate a necessary condition that expresses this, but something along those lines could contribute to a complete definition of vagueness for epistemicists. Interestingly, proponents of semantic vagueness could accept Sorensen’s partial definition, though they should add to it a further necessary condition along these lines: the purported threshold is unknowable because there is no such threshold. That is, the meanings of vague words do not include thresholds at all, even unknown ones.

Similarly, epistemicists could accept some of the definitions given by semantic theorists in section 1.3. Of course, epistemicists could use Bueno and Colyvan’s definition of vagueness as sorites susceptibility. That definition is perfectly consistent with the belief that vagueness is strictly an epistemic phenomenon. In addition, as I
mentioned in footnote 11, Russell’s characterization of vagueness (as a kind of indeterminacy resulting from a mismatch between the representing system and the represented system) can also be read in a way that is consistent with epistemicism. Just take the representing system to be human understanding rather than human linguistic representations. The result is that vagueness is the indeterminacy that results from a one-many relation between what is knowable about the application of a predicate and the actual application of a predicate. Finally, I think that epistemicists could probably accept the definition of vagueness as the having of borderline cases, provided the right sort of conception of borderline cases. For example, think of borderline cases as those items in a sorites sequence for a predicate $F$ that we cannot know to be either at the threshold of $F$’s application or not. Something along those lines might work as a necessary and sufficient condition for vagueness that would be acceptable for epistemicists.\footnote{I am not entirely content with the definition as it is. Consider the predicate ‘is a string of digits that occurs in pi’. Now suppose there is a string of digits, say, 20 digits long, that we do not currently know to occur in pi. Unless and until the string of digits is found to occur in pi, we cannot know whether the predicate applies to it. And so that string of digits is a borderline case for the predicate, according to the definition I proposed. Nevertheless, it would be very strange to call the predicate ‘is a string of digits that occurs in pi’ vague. Sorensen’s insistence on unknowability seems likely to exclude cases such as this one, but in my attempt to complete his partial definition, I have not managed to do so. Still I think that some definition along these lines could work for epistemicists.} Epistemicism is not compatible with the definitions of vagueness as boundarylessness, vagueness as tolerance, or vagueness as closeness. Vagueness as \textit{boundarylessness} explicitly rules out the kind of sharp boundary that epistemicists accept. Epistemicists cannot accept vagueness as \textit{tolerance} because it requires that any two things that are very similar with respect to $F$-ness must either both be $F$ or both be not-$F$. That is contrary to the epistemicist claim that for every vague predicate $F$, there is a sharp (unknowable)
boundary between those things that can be correctly called $F$ and those that cannot. Finally, vagueness as closeness is contrary to epistemicism because the two accounts are premised on different kinds of logic: epistemicism uses bivalent, classical logic, while vagueness as closeness uses a non-classical, many-valued logic.

My main objections to epistemic theories of vagueness are (i) that it is implausible that there are hidden facts about the meanings of our words, wholly apart from what we competent language users think our words mean, and (ii) the related concern that there does not seem to be anything that could determine such hidden facts. A good reply to (ii) would be the start of a reply to (i) as well. Williamson has suggested a way to answer (ii): perhaps certain facts about the overall patterns of use by all competent speakers of a language determine the sharp boundaries between the extension of a vague term and its anti-extension. That is, vague terms may get their precise, unknown, sharp boundaries from facts about the average of all the points at which competent speakers of the language would draw such a boundary. We cannot, in practice, survey all competent speakers to discover where each of them draws the line between ‘tall’ and ‘not-tall’, on each occasion, and then take the average of those responses. But perhaps that data, although unknown and unattainable by we limited beings, is what determines the precise meaning of ‘tall’. There are many immediately obvious difficulties with such a claim.

First, I think that some other epistemicists, such as Sorensen, would have to reject this, since it makes the actual sharp boundaries of vague terms potentially knowable. Sorensen claimed that those boundaries are not just unknown, but are “absolutely
unknownable.” So Williamson’s proposal does not seem acceptable to some other epistemicists.

Second, Williamson means for his suggestion to provide a non-arbitrary way of finding the sharp boundaries of vague terms (not in practice, but in principle). But there are numerous ways in which this is still fundamentally arbitrary. In order for such a sharp boundary to be found, we would have to decide many things. First, which speakers are competent? Competence in the use of a term is itself vague, and we could not decide who is a competent user of a vague term without thereby deciding the term’s meaning. Second, what period of time is relevant? Natural languages change continuously, so only recent usage is relevant to the current meaning of a word, but how recent? We might take all the data from the past 10 years of usage, or we might instead try to measure something like current dispositions to use the term under various circumstances, at this very instant. (But how long is an instant?) Third, there can be significant variation in usage among subgroups of language users. Australian and Scottish English speakers probably vary in some stable ways with respect to their overall patterns of use—should we take the aggregate data to reflect the actual, universal, sharp boundary, or are there instead different sharp boundaries for different subgroups of speakers? Fourth, how should we take the overall pattern of use to specify a sharp boundary? Is a pile of sand a heap just in case at least 50% of competent speakers, when confronted with that very pile of sand, would call it a heap? Why not be more cautious and say it is not a heap unless at least 65% of competent speakers would call it a heap? Fifth, even if it were obvious how to derive the correct sharp boundary from the overall pattern of use, and even if we could
actually observe the overall pattern of use, what authority would that pattern of use have over our meanings anyway? Meanings are certainly determined by convention, and so there is a good reason to think that they are sensitive in some way to overall patterns of use. But in the case of vague terms, we sometimes have the freedom to choose whether a word applies to a thing or not. I do not see that we are required to give up that freedom, even if the overall pattern of use indicates that the boundary between ‘tall’ and ‘not tall’ is precisely there (given some algorithm for finding a unique sharp boundary).

I will discuss epistemicism further in Chapter 4, but for now, I will set it to one side. Like metaphysical vagueness, it has very serious prima facie problems. Ultimately I will argue that epistemicism is not without value, but that vagueness is, nevertheless, a semantic issue.

1.5. Requirements for an adequate solution to the problem

Clearly, what one takes to be the problem of vagueness will influence what one thinks is necessary for an adequate solution to the problem. In addition, I think there is a significant difference in approach that has influenced such judgments. Namely, I propose that we should divide approaches to the problem of vagueness into two broad kinds, based on the overarching goals that each theory is meant to accomplish: I call these approaches ‘prescriptive’ and ‘descriptive’. After carefully describing that distinction, and its importance for understanding the arguments for different theories of vagueness, I
will propose and defend two criteria as the minimum necessary requirements for a successful descriptive theory of vagueness.

As I described in section 1.2, when faced with the sorites paradox, we find ourselves with a difficult puzzle. How can it be that perfectly acceptable reasoning in natural language often involves vague terms, but that classical logic, our best model of good reasoning, runs into paradox whenever vague words are involved? That explanatory challenge is often described by saying that we must give a logic and semantics for vagueness. We must explain how to reason with vague terms and what is meant by them.

There are two very different ways to understand that challenge, resulting in two very different kinds of explanations. First, you might think the task is prescriptive: the vagueness of natural language appears to be incompatible with any rigorous logic and semantics, and so we must fix natural language by insisting, minimally, on an account of vagueness that is not itself vague. The goal can be thought of roughly as discovering a way to translate vague language into non-vague language. For example, stipulating sharp boundaries around a vague concept (I hereby declare that this is the shortest tall man) is a way of eliminating vagueness for the sake of logical rigor. Rather than the characteristic “boundarylessness” of a vague concept, we are left with a perfectly precise concept which is more amenable to use in a formal system of logic.

The other approach to giving a logic and semantics of vagueness is descriptive: natural language makes heavy use of vague terms, and so an adequate descriptive logic and semantics for natural language must not explain away the vagueness, but must find a way to accommodate it. The theory must show both how we ordinarily reason with vague
sentences and what our ordinary vague terms mean. This project is descriptive in that it requires careful attention to how the vagueness of natural language actually works, and it avoids prescriptions for how it ought to work.

Both kinds of projects are interesting, but for different purposes. A good prescriptive semantics of vagueness offers us a way to translate vague statements into a highly rigorous, non-vague formal language. Such a translation is only an approximation of what is actually meant by a vague statement, but it can be a very useful approximation. For example, the development of computer programs that respond appropriately to statements made in a natural language requires just such formal modeling of natural language.\textsuperscript{22} A good descriptive semantics of vagueness, on the other hand, aims to explain how meanings are actually assigned to vague terms in a natural language. It is not a translation or an approximation, but an explanation of vague language itself. The vast majority of our communication and reasoning uses vague concepts and terms, sometimes leading to intense disagreement, and so this descriptive project is also worth pursuing.

As a more detailed example of my distinction between prescriptive and descriptive theories of vagueness, let us return to Nicholas J.J. Smith, whose definition of vagueness as “closeness” we considered in section 1.3. He explains vagueness by means of a many-valued logic.\textsuperscript{23} According to Smith, sentences at the beginning of a sorites sequence have a truth-value of 1 (wholly true), those at the end have a truth-value of 0 (wholly false), and those in between each have a precise truth-value between 1 and 0. The

\textsuperscript{22} For some interesting recent work on computer modeling of vague language, see (DeVault and Stone 2004), (Kennedy 2007), and (Kyburg and Morreau 2000). Prescriptive theories of vagueness, particularly many-valued logics, have had remarkable recent successes.

\textsuperscript{23} (Smith 2005), (Smith 2008).
truth-values are ordered, so that those sentences closer to the beginning have a higher truth-value than those closer to the end. Leaving aside questions about the details of how exactly those truth-values should be assigned, it is immediately obvious that this is not how people ordinarily use vague predicates. If I describe Joe as “kind of tall,” I do not have in mind that the sentence “Joe is tall” has the truth-value 0.666… (or any other particular truth-value). Proponents of a many-valued logic account of vagueness generally agree with me on that point. But if they are not describing what people actually mean by vague predicates, then what could such a theory of vagueness be doing? Such a theory is best understood as suggesting a way to stipulate precise truth-values for vague sentences, so that they can be more easily formalized. By fixing the truth-value of “Joe is tall” the sentence is made precise – this is an elimination of vagueness for the sake of formalization. Such a theory can be very useful in helping us to create relatively simple semantic models of vague language, but we must not mistake it for a theory describing how vague language is actually used in ordinary natural language. Eliminating vagueness for the sake of formal simplicity is a prescriptive project – it tells us how we ought to think about vague predicates, in order to achieve a particular goal. Saying how vagueness actually works in natural language is the task of a descriptive logic and semantics of vagueness. My goal is the latter: to give a descriptive logic and semantics of vagueness.

It is worth noting that although the goals of prescriptive and descriptive accounts diverge, their results need not. That is, it may turn out that the best prescriptive logic and semantics of vagueness is also an accurate description of how vague terms are used by ordinary people in natural language. There is no in-principle reason why one theory of
vagueness cannot satisfy both explanatory projects. In discussing the limitations of artificial intelligence, people routinely assume that computer processing is nothing like human reason. This is in part because of the difference between the fuzzy boundaries characteristic of human concepts, and the sharp boundaries characteristic of computer program commands. In a recent New York Times article about the first non-human champion of Jeopardy, we read,

[A computer] has no holistic sense of context and no ability to survey possibilities from a contextual perspective; it doesn’t begin with what Wittgenstein terms a ‘form of life’, but must build up a form of life, a world, from the only thing it has and is, ‘bits of context-free, completely determinate data’. And since the data, no matter how large in quantity, can never add up to a context and will always remain discrete bits, the world can never be built. (Fish, 2011)

I believe the claim expressed there is a perfectly ordinary one, but a bit hasty. It is true that computers use discrete bits of information. Computer “concepts” are sharply bounded, never vague. But it is not so obvious that human reasoning does not work in the same way. The difference between human and computer reasoning may be quantitative rather than qualitative. In practice, of course, the two projects may require two theories. For my own part, if my theory of vagueness can plausibly be thought to describe ordinary practice correctly, I will be content.

At last, we have a sufficiently complete notion of the many different ways to think about vagueness and the problems it creates, that I can propose general goals for descriptive theories of vagueness. I mean these to be minimal adequacy criteria for any kind of descriptive theory of vagueness:

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24 Recently, some cognitive scientists have worked on the possibility of engineering intelligence. I think the project has something like this idea at its root: If we build a machine that can think the kinds of thoughts we do, then we will be closer to understanding how our own thinking may work. (Pollock 2008), (Changizi 2003).
BOUNDARYLESS: A theory of vagueness must respect the intuition that there are no sharp boundaries in the sorites sequences of vague predicates.

REASON: A theory of vagueness must explain, in a psychologically plausible way, how our reasoning can accommodate vague predicates with suitable logical rigor. In defense of those criteria, note two things about my choice. First, BOUNDARYLESS and REASON are not especially controversial aims for a theory of vagueness. And second, those criteria, or something like them, are directly suggested by the sorites paradox (as illustrated in Section 1.2); my criteria reflect the tension at the root of the paradox, between the apparent absence of sharp boundaries characteristic of vague predicates, and the apparent dependence on sharp boundaries characteristic of rigorous formal reasoning.

Those minimal adequacy criteria are not hard for a theory of vagueness to meet, but are hard to excel at. An excellent theory of vagueness would not merely respect the intuition of boundarylessness by telling a story about why we mistakenly believe there are no sharp boundaries. Rather, it would offer an explanation of how it can be that vague predicates are genuinely boundaryless. An excellent theory of vagueness would not only demonstrate that we can reason with vague predicates with some watered-down kind of suitable logical rigor, but would show how to reason with vague predicates using full-fledged, bivalent, classical logic. My success criteria impose only minimal adequacy conditions, but the parallel, more stringent criteria—simultaneously preserve genuine boundarylessness and bivalent classical logic—set a much higher bar for a successful theory of vagueness.

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25 For relevant recent discussion, see (Keefe and Smith 1997), (Smith 2008, especially Chapter 3), and (Bueno and Colyvan manuscript). For more on boundarylessness in particular, see especially (Sainsbury 1991).
In the next chapter, I will focus my attention more narrowly on the kind of theory that I find most promising: semantic theories of vagueness that treat vagueness as the having of borderline cases. The notion of ‘borderline case’ is currently something of a muddle. By carefully considering three theories that make use of that notion, Chapter 2 will help us to clarify the different conceptions of what borderline cases are, and the different accounts of what role they should play in a theory of vagueness. Then, in Chapter 3, I will return to the two success criteria discussed above. I will use them to guide my evaluation of some competing notions of ‘borderline case’.
2. RECENT WORK ON BORDERLINE CASES

2.1 Introduction

Borderline cases are central to understanding the nature of vagueness. Even philosophers who do not define vagueness as the having of borderline cases still frequently make use of the notion in their theorizing about vagueness. Roy Sorensen begins his entry on vagueness in the *Stanford Encyclopedia of Philosophy* (2006), “There is wide agreement that a term is vague to the extent that it has borderline cases. This makes the notion of a borderline case crucial in accounts of vagueness.” So what are borderline cases? Little work has been done to clarify ‘borderline’ beyond its loose, pre-theoretical meaning. Among the philosophers who have worked on the notion of borderline cases, I think three warrant particular attention: Diana Raffman, Crispin Wright, and Michael Tye. I devote one section of this chapter to each of those philosophers’ accounts of borderline cases. An additional section covers Raffman and Wright on the special case of higher-order borderline cases. After considering the ways in which each account is apt for forming part of a successful theory of vagueness, or is not apt for that purpose, I propose my own account of borderline cases, in Chapter 3.

Let us first consider the loose, pre-theoretical notion of borderline cases. Like most terms that are co-opted by philosophers, ‘borderline’ is ordinarily used in a wide variety of ways, only some of which are relevant to the philosophical issue at hand. For example, when I evaluate term papers, there are invariably some papers that are not quite
A papers, but are better than the other B papers. Such a paper can be called a “borderline case” between the As and the Bs. It is likely to be assigned a borderline-A or borderline-B grade (i.e., an A-, B+, or A-/B+). That sort of borderline case does not necessarily indicate vagueness but rather the need for a more precise grading scheme than whole letter grades. There could also be vagueness involved, of course, but the mere fact that some of the term papers fall on the borderline between the As and the Bs does not, on its own, indicate the presence of any vagueness. Another example of an ordinary use of ‘borderline case’ is the following headline, used to describe a town that is geographically divided between the U.S. and Canada, “Partly in Vermont: A Borderline Case” (Blampied, 1979). Here, ‘borderline case’ is used to describe the difficult situation of a town, and some of the buildings in the town, that are divided by the U.S./Canada national border. There are many fascinating problems that have arisen as a result of the unfortunate state of affairs (customs duties for buying things from the corner store, taxation complications, etc.), but vagueness is not one of them. The line between the two nations is not problematic because it was drawn imprecisely, but rather because it was drawn across the middle of the town, and even across the middle of some buildings. There is some imprecision involved since the town cannot, without qualification, be called either a U.S. or a Canadian town. That issue has been resolved, though, by officially describing the Canadian part as one town, and the U.S. part as another town. It is a borderline case in that it is a complicated situation caused by the awkward placement of a border. Like the last example, it is not particularly relevant to the issue of vagueness.

A third example along these lines can be found in (Wright 2010):
Consider a case where, as many would allow, something akin to vagueness is induced by deliberate definitional insufficiency. Suppose we characterize the notion of a *pearl* as follows:

1. It is to be a sufficient condition for being a pearl that a candidate have a certain specified chemical constitution and appearance and be naturally produced within an oyster.
2. It is to be a necessary condition for being a pearl that a candidate have that same specified chemical constitution and appearance.

What about artificial pearls? (p. 525)

‘Artificial pearl’ here refers to anything that has the chemical constitution and appearance of a natural pearl, but that was not naturally produced within an oyster. It would be perfectly permissible under those circumstances to count artificial pearls as pearls, but it would not be mandatory to do so. An artificial pearl could thus be described as a borderline case of the notion of a *pearl*. But the notion of a *pearl* specified in Wright’s example is markedly different from paradigm cases of vagueness. It distinguishes three sharply bounded sets: pearls, non-pearls, and artificial pearls. While artificial pearls are a sort of borderline case of the notion of a *pearl*, since they fall between the clear cases of pearls and non-pearls, they do not indicate the presence of any vagueness in the notion. There is no sense of boundarylessness here, the borderline cases in this example simply give us reason to recognize two sharp boundaries rather than one: the line between non-pearls and artificial pearls, and the line between artificial pearls and pearls.

On the other hand, the following ordinary use of ‘borderline’ *is* relevant to vagueness: A recent headline in a Pakistani newspaper, on the subject of an upcoming cricket match between Pakistan and India, reads: “Cricket mania and borderline hysteria”

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26 My impression is that jewelers are more nuanced than this in their use of the term ‘artificial pearl’. In particular, a “cultured pearl” is produced by an oyster, but not naturally. An “artificial pearl” is not even produced by an oyster. Cultured pearls are pearls, but are not “real” pearls. Artificial pearls are not pearls (they can at best be called “artificial pearls”). I believe it is best to leave those nuances aside in our consideration of Wright’s example.
(Daily Times, 2011). What ‘borderline’ apparently signals in this context is that local public interest in the cricket match is perhaps not quite hysteria, but is nearly so. It is, of course, journalistic hyperbole. What the author of the headline intended to convey was that people are very excited about the upcoming game. (It was a match in the semi-finals of the Cricket World Cup, and between nations with an intense rivalry, so there was good cause for a high state of excitement.) That non-literal meaning rests on a literal reference to the vague boundary between healthy enthusiasm and deranged hysteria. The kind of borderline case intended by that hyperbolic headline is just the sort that is relevant to vagueness.

Clearly, not just anything we might call a borderline case is actually relevant to vagueness. The first three examples given above demonstrate that in an intuitive way. We see that the notion of *borderline case* of central importance to theories of vagueness is a very specific notion. It is harder to see what exactly that specific notion is. One way to determine the appropriate constraints for an account of borderline cases is to return to the success criteria established for theories of vagueness in the last chapter. For a definition of vagueness in terms of borderline cases to work, it must be usable in a successful theory of vagueness. A successful theory of vagueness is one that meets, and preferably excels at, the two success criteria. Those criteria work by capturing many of the features of vagueness that are central to the dominant definitions of vagueness. The result of adhering to those criteria is that one’s theory of vagueness, defined in terms of borderline cases, will not ignore the insights at the heart of competing definitions of vagueness. The right account of borderline cases describes them in such a way that when vagueness is
defined as the having of borderline cases (of that refined sort), that definition will respect
the sense of boundarylessness central to the competing definitions, and vague predicates
on that definition will turn out to be sorites susceptible. This significantly limits which
uses of ‘borderline case’ are apt for the purpose at hand: only a very particular sort of
borderline cases indicates the presence of vagueness.

My account of borderline cases, in Chapter 3, directly addresses those concerns. I
first consider others’ well-established accounts of borderline cases, though, for a number
of reasons. One is that those accounts already have some traction among philosophers of
vagueness; they are the standard to beat. Another is that by describing those accounts
first, I can describe my own by comparison with others, and so convey more clearly what
I think borderline cases are. My exact position can be triangulated on the basis of earlier
positions. Third, I think it is important to illustrate the degree of disagreement about the
nature of borderline cases. It really is a surprisingly open question. And finally, it is
illuminating to witness some of the difficulties involved in meeting the standards I have
set for accounts of borderline cases. By doing so, we get a better idea of how an account
might meet them.

2.2 Diana Raffman

Raffman (2005) begins her investigation into the nature of borderline cases by
describing what she calls “the standard analysis” of borderline cases. Any analysis that is
named “standard” is sure to be eliminated. Indeed, Raffman goes on to reject the standard
analysis in favor of her own account of borderline cases, “the incompatibilist analysis.”

The standard analysis is a family of views that adhere to the following general picture regarding the nature of borderline cases: Borderline cases occur in linear orderings of at least three items from $F$ to not-$F$. A borderline case of $F$ is also a borderline case of not-$F$. And for a borderline case $x$, ‘$x$ is $F$’ is neither true nor false. As a description of the kind of borderline cases that characterize vagueness, that is not a bad start. By stipulating that they must occur in a “linear ordering” that ranges from $F$ to not-$F$, the standard analysis captures the idea that the relevant sort of borderline cases are ones that occur in a sorites sequence. And by stipulating that a borderline case is an item of which neither $F$ nor not-$F$ can be truly predicated, the standard analysis goes some way toward capturing the sense of boundarylessness that is characteristic of vague predicates. Emphasizing our inability to categorize borderline cases is one way to get at the idea that there is no sharp boundary between $F$ and not-$F$.

The main difficulty with the standard analysis of borderline cases, as Raffman rightly notes, is that it leaves an uncomfortable truth-value gap. If ‘$x$ is $F$’ is neither true nor false, then what is its truth-value? The standard analysis includes many different theories of vagueness, and so many different responses have been given to that question. Another kind of solution, the kind that Raffman employs, is to reject that part of the standard analysis. She claims that if $x$ is a borderline case of $F$, then $x$ is not $F$, and so ‘$x$ is $F$’ is simply false. But if ‘$x$ is $F$’ is simply false, then what good do borderline cases do

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27 Throughout, Raffman indicates predicates not with a capital Roman letter, but with a capital Greek letter. Namely, she uses the Greek letter phi where I (and Wright) would use the Roman letter F. I write an F in place of each phi, even in direct quotations, so as to prevent notational confusion.
as a component of a theory of vagueness? Raffman’s kind of borderline cases do not seem suitable for a theory of vagueness that is respectful of the boundarylessness intuition. Therefore, they do not seem apt to play any important role in a successful theory of vagueness, one that meets BOUNDARYLESS. Bear this worry in mind as we explore Raffman’s account of borderline cases more carefully.

As I see it, Raffman’s incompatibilist analysis of borderline cases depends upon six technical terms. I will begin with the definitions of those technical terms, drawn from (2005), then present and illustrate the analysis of borderline cases itself.

**An \( F \)-ordering:** “some set of items that are linearly ordered with respect to \( F \)-ness, proceeding from an item that is definitely \( F \) to an item that is definitely not-\( F \)” (p. 3)

**Contrary predicates:** predicates that cannot both be true of the same thing

**Incompatible predicates:** “incompatible predicates ‘\( F \)’ and ‘\( F^* \)’ are contrary predicates such that some linear ordering of items on a distinct dimension \( D \), decisive of the application of both ‘\( F \)’ and ‘\( F^* \)’, is both an \( F \)-ordering and, conversely, an \( F^* \)-ordering” (p. 8).

**An \( F/F^* \) ordering:** the kind of linear ordering definitive of two incompatible predicates \( F \) and \( F^* \) (p. 8)

**A replete ordering:** (defined by example) a “rich-ordering” of incomes between $200,000 and $50,000 is replete if “it contains all possible incomes that can be linearly ordered, with respect to richness, between $200,000 and $50,000” (p. 4)

**Proximate incompatibles:** “incompatible predicates ‘\( F \)’ and ‘\( F^* \)’ are proximate just in case there is an item (or items) in a replete \( F/F^* \) ordering whose value on

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28 This definition is a little troubling, since it seems to depend upon something like an implicit ordering by degrees, but that is not always possible. For convenience, we sometimes pretend that the number of hairs on someone’s head is all that is relevant to baldness, but vagueness is actually much more complicated. The difference between being bald and not being bald also has a lot to do with where one’s hairs are located, and how thick each hair is. Given the variety of factors that are relevant to the application of some vague predicates, I am skeptical of accounts that rely heavily on always finding a convenient, simple ordering by degrees.

29 I am also a bit troubled by this definition. Incomes are usually thought of in terms of whole dollar amounts, but could be thought of in terms of whole cents, or in terms of fractions of cents (as gasoline prices are measured). Which incomes are possible depends upon the smallest unit by which we measure incomes. Because the notion of a “proximate incompatible” depends upon how we understand replete orderings, and in particular, it depends upon which units are the smallest in a replete ordering, this question is significant. But any answer to it will be somewhat arbitrary.
the relevant dimension $D$ provides some equal positive justification both for applying ‘$F$’ and for applying ‘$F^*$’ (p. 8)

Now let us consider an example, to illustrate the use of those technical terms. Recall my original sorites sequence of 32 color tiles that progress from blue to green. The sequence is a linear ordering on the dimension of color. It is a “blue-ordering” since it goes from tiles that are clearly blue to tiles that are clearly not blue. It is not implausible that a single item cannot both be blue and green, so ‘blue’ and ‘green’ are contrary predicates. They are also incompatible predicates, since they have the right relation to one another: they are not contrary in the way that ‘is blue’ and ‘is prime’ are contrary; a sorites sequence can be constructed between ‘blue’ and ‘green’, so the predicates are not merely contrary but also incompatible. Now we can see that our sorites sequence is not merely a blue-ordering, but is also a blue/green ordering, since it runs between two incompatible predicates, ‘blue’ and ‘green’. Our sorites sequence is decidedly not replete, since it contains only 32 tiles. Between any two of those tiles, there could be placed many possible in-between color tiles. A replete blue/green ordering would contain all the possible colors that could be linearly ordered, with respect to color, between blue and green. Finally, blue and green are proximate incompatibles if and only if there is at least one item in a replete blue/green ordering that could just as aptly be called ‘blue’ as ‘green’. In contexts where highly specific color names are most appropriate, blue and green might not be proximate incompatibles, since the cases in the middle of a sorites sequence from one to the other would not have positive justification for being called either ‘blue’ or ‘green’—they would be called ‘turquoise’, ‘teal’, or some other specific color name that refers to a shade between blue and green. In a context where the only
relevant colors are those that occur in a box of eight crayons, however, blue and green are proximate incompatibles.

The incompatibilist analysis of borderline cases is:

(i) For any proximate incompatible predicates ‘F’ and ‘F*’, x is an F[F*] borderline case if and only if x belongs to an F/F* ordering but is neither F nor F*.
(ii) x is a borderline case for ‘F’ if and only if there is some proximate incompatible predicate ‘F*’ such that x is an F[F*] borderline case. (2005, pp. 9-10)

So imagine a context in which blue and green are proximate incompatibles (say, you plan to display the 32 color tiles on two shelves, and so you intend to divide them into the two broad categories of blue and green). Tile 16 is a borderline case of blue and green (it is a “blue[green] borderline case,” to use Raffman’s notation) if and only if it belongs to a blue/green ordering (it is in a sorites sequence from blue to green) and it is neither blue nor green. And tile 16 is a borderline case of blue if and only if blue has a proximate incompatible (like green) such that tile 16 is a borderline case in the linear ordering between blue and its proximate incompatible.

The major differences between this account of borderline cases and the standard account are, first, that it declares borderline cases of blue and green to be neither blue nor green, and second, that it depends upon “incompatibles” rather than contradictories. Both of those differences deserve serious consideration.

Raffman’s primary objection to the standard analysis of borderline cases is that it leaves us with an awkward truth-value gap. If tile 16 is a borderline case of blue, the standard analysis says that ‘tile 16 is blue’ is neither true nor false. Admittedly, it is difficult to know how best to make sense of that claim. Raffman avoids the problem by
saying that ‘tile 16 is blue’ is simply false. So if you were being force-marched through a sorites sequence, you might begin by saying of the clearly blue tiles, “‘Tile 1 is blue’ is true,” and end by saying of the clearly not-blue tiles, “‘Tile 32 is blue’ is false.” Of the borderline cases in the middle, you should then say, “‘Tile 16 is blue’ is false.”

But now consider that the very same sorites sequence can be considered in the opposite direction—as a sequence running from not-blue to blue. Suppose we begin with tile 32, which is clearly not blue. So, ‘Tile 32 is not blue’ is true. If tile 15 is indeed a borderline case, then we should not apply the predicate ‘not blue’ to it. It is a borderline case, and so neither \( F \) nor not-\( F \). So, ‘Tile 15 is not blue’ is false. Here is the trouble. These statements are apparently logically equivalent:

(1) It is false that tile 15 is not blue.

(2) It is true that tile 15 is blue.

But when we considered the sorites sequence in the blue-to-not-blue direction, we claimed the opposite of (2), that it is false that tile 15 is blue. We have arrived at a contradiction.\(^\text{30}\) The truth-value gaps of the standard analysis are one way to avoid the contradiction, but then we are stuck with truth-value gaps.

It is at this point that the significance of Raffman’s “incompatible predicates” becomes apparent. I described the sorites sequence above in terms of the contradictory predicates ‘blue’ and ‘not-blue’. Suppose we describe it instead in terms of the proximate incompatible predicates ‘blue’ and ‘green’ (assuming a context that makes the predicates ‘blue’ and ‘green’ proximate). Instead of finding ourselves with the contradictory

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\(^{30}\) An argument along those lines is described in (Keefe and Smith 1997), and is there dubbed “the symmetry argument.”
conclusion that tile 15 is both not blue and not not-blue, we conclude merely that tile 15 is neither blue nor green. The incompatibilist analysis of borderline cases appears to be a significant improvement over the standard analysis. It avoids tricky truth-value gaps, while simultaneously dodging a looming contradiction.\textsuperscript{31} Unfortunately, it is not without problems of its own.

My main concern with the incompatibilist analysis is that the kind of borderline cases it proposes do not do enough to help a theory of vagueness to meet \textsc{boundaryless}. If vagueness is defined as the having of borderline cases, then the relevant notion of borderline cases must be such as to ensure that all and only those predicates that have such borderline cases are vague. All the important features of vagueness must be somehow involved in the correct notion of borderline cases. But the kind of borderline cases specified by the incompatibilist analysis do nothing to ensure that the apparent boundarylessness of vague predicates will be respected. In fact, it seems as though a sequence with the sort of borderline cases specified by the incompatibilist analysis must have sharp boundaries. Such a sequence will run directly from true statements of the form ‘x is $F$’, true because x is a clear case of $F$, to false statements of that form, false because x is a borderline case of $F$. \textsc{boundaryless} does not state that a theory of vagueness cannot involve sharp boundaries at all; that would exclude many arguably successful theories of vagueness out of hand. But it does require that a theory of vagueness must at least offer an explanation for the apparent absence of sharp boundaries.

\textsuperscript{31} To clarify a bit, tile 16 is neither blue nor green, but that does not generate a truth-value gap in the way that being neither blue nor not-blue does. The statement ‘Tile 16 is blue’ has a truth-value of false, as does the statement ‘Tile 16 is green’.
characteristic of vagueness. The incompatibilist analysis of borderline cases does not help to meet this lower standard either. There are simply no resources available in the incompatibilist analysis that could help a theory of vagueness cast in terms of such borderline cases to meet BOUNDARYLESS.$^{32}$

A further problem is that not-blue might be considered a proximate incompatible of blue in some contexts, and so the contradiction in the standard analysis would return. For example, one way to describe the color green is “not-blue”. Any paradigmatic instance of green is not blue, after all. So, given a sequence that runs from blue to green, we would not be wrong to describe it as a sequence from blue to not-blue. But if that is possible, then the incompatibilist analysis does not avoid the contradiction of the standard analysis. The incompatibilist analysis tells us that a borderline case in the blue/not-blue ordering cannot be described as blue or as not-blue.

2.3 Crispin Wright

Wright’s (forthcoming) begins by taking an interesting perspective on the methodology of theorizing about vagueness. He claims that “the characterisation of vagueness will best proceed, broadly, in terms of aspects of the distinctive attitudinal psychology involved in the exercise of judgement involving vague concepts” (p. 2).$^{33}$ I

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$^{32}$ Raffman’s theory of vagueness, as a whole, is sensitive to the considerations motivating BOUNDARYLESS. My complaint is that her account of borderline cases does not carry its weight, and so I think she is under-employing that powerful concept. Nevertheless, her theory of vagueness, considered as a whole, does meet my minimal success criteria.

$^{33}$ That can be seen as a fairly natural extension of his definition of vagueness as tolerance (1975). ‘Tolerance’, recall, is used to describe predicates that are not sensitive to sufficiently small variations along
believe what he has in mind is that vague concepts are those that cause in us a certain
distinctive sort of psychological discomfort: when we make judgments about the
application of a vague concept, some of those judgments may strike us a little awkward.
The details of how such a psychological methodology should proceed can be worked out
in at least a couple of different ways.

Wright describes Stephen Schiffer’s theory (2000) as a foil for his own. Schiffer
thinks that the right way to explain the psychological discomfort of applying vague terms
to borderline cases is in terms of partial belief. According to his account, what is
distinctive about the phenomenology of vague concept application in the penumbra of the
vague concept is that we only partially believe that the vague term applies (or that it does not).

To illustrate, when we apply a non-vague predicate like ‘is a prime number’, we
either believe that the predicate applies in a particular case, we believe that it does not, or
we have no idea. A competent user of the predicate does not have the experience of
partially believing that it applies in a particular case. Similarly, when we apply a vague
predicate to a clear case, we fully believe that the predicate either applies or does not to
that case. Partial belief arises when we apply a vague predicate to a borderline case. You
might very well be willing to make a judgment about whether a vague predicate applies
to a borderline case, but you will lack conviction about that judgment.

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34 Schiffer does not say that all partial belief is the result of vagueness. He specifies a notion of vagueness-related partial belief, and says that that is what is distinctive of vagueness. The details are not relevant to this discussion, however, so I am omitting them.
Wright contends that that is not obviously so. His main objection to Schiffer’s treatment of vagueness is the following: A competent user of a vague concept might initially hesitate to make a judgment about a borderline case, but subsequently endorse her judgment wholeheartedly. Full belief in one’s judgment does not necessarily indicate a failure to understand the concept; rather, it may simply indicate a certain stubbornness about sticking with one’s opinions, once one has formed them. Such stubbornness may occasionally irritate one’s friends, but it is perfectly consistent with understanding and using vague concepts correctly. For example, imagine you are confronted with an object that a competent user of the predicates ‘blue’ and ‘green’ would not be entirely comfortable calling either ‘blue’ or ‘green’, and you are asked whether it is blue or green. As a competent user of those predicates yourself, you should experience the psychological discomfort that is characteristic of judging an unclear case of a vague predicate. Once you have decided that the object is blue, though, you might feel committed to your decision, and so believe it fully.

Wright prefers to characterize vagueness not in terms of one’s reflective commitment to a partial belief that a vague predicate applies to a borderline case, but rather in terms of the initial hesitation or uncertainty one experiences when trying to make judgments about whether to apply a vague predicate to a borderline case. He names that kind of hesitation “quandary,” and defines it in this way:

Proposition P presents a thinker T with a Quandary in circumstances of evaluation C if and only if, in C,

(i) T does not know whether or not P
(ii) T does not know any way of knowing whether or not P
(iii) T does not know that there is any way of knowing whether or not P
T does not know that it is (metaphysically) possible to know whether or not P

[…] It is a consequence of the proposal […] that the less cognitively adept a thinker, the easier it will be to confront her with quandary—since she only has not to know various things (forthcoming, p. 12).

That phenomenon is much broader than vagueness. You could easily find yourself in a quandary over the proposition, “Chalmers-style zombies are metaphysically possible” (or if not you, then a typical undergraduate taking his first course on the philosophy of mind). Perhaps that is due to vagueness in the notion of possibility or in the notion of consciousness, but it seems more easily attributable to a more general sort of uncertainty.

You can be deeply unsure about a proposition, in the way specified as a quandary, even if all the terms in it are sufficiently precise. Before my first cup of coffee in the morning, I often find myself faced with quandaries that a less addled person could easily resolve.

Vagueness may result in quandaries, but not all quandaries are the result of vagueness.

Wright proposes that we can use the notion of a quandary to define borderline propositions (those propositions the subject of which is a borderline case item), and we can then understand vagueness as that which causes a token utterance, under certain circumstances, to express a borderline proposition. In that way, the notion of a quandary is central to his understanding of vagueness, but only insofar as it informs his account of borderline propositions and borderline cases. He seems reluctant to commit to a definition of borderline propositions, but offers this one as leading “in a potentially profitable direction:”

P is borderline in circumstances C iff P configures some concept F for which Π is a parameter of supervenience such that

(i) A conceptually and perceptually fully competent thinker T could be put in quandary for P in C by the value taken by Π in C; and
(ii) A conceptually and perceptually fully competent thinker T is not required to be put in quandary for P in C. (pp. 14-15)

That warrants some unpacking. First, a “parameter of supervenience” is something like the feature with respect to which the items in a sorites sequence incrementally vary. So, for the concept ‘blue’, in the context of a sequence from blue to another color, the parameter of supervenience is color. Consider next the proposition that tile 16 is blue. That proposition, expressed in the context of our sorites sequence from blue to green, makes a claim about the application of the concept ‘blue’, for which the parameter of supervenience is color. Now suppose that the color of tile 16 is such that even a conceptually and perceptually fully competent person could be put in a quandary regarding the proposition ‘tile 16 is blue’, but that he or she need not be put in a quandary by it. In that case, ‘tile 16 is blue’ is a borderline proposition, and its subject, ‘tile 16’, is a borderline case. Vagueness is what results in an utterance expressing a borderline proposition. Or, in Wright’s words, “[T]he vagueness of [a vague expression] E consists in the fact that its presence in token utterances results, in certain circumstances, in their expression of a borderline proposition” (p. 12).

In Wright’s analysis of vagueness, borderline cases are those items that even a fully competent judge might not be able to sort out. Why “might not”? Why not say instead that borderline cases are those items that a fully competent judge cannot sort out? It is important that the fully competent judge is never forced into a quandary, since otherwise the analysis would not have the resources to meet BOUNDARYLESS. Recall, 35

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35 I am supposing that making a claim about the application of a concept is what is meant by “configuring” the concept. The article is not entirely clear on that point, though.
BOUNDARYLESS is the requirement that a theory of vagueness must respect the intuition that there are no sharp boundaries in the sorites sequences of vague predicates. Suppose borderline cases were defined as those items that force all competent judges into a quandary.\textsuperscript{36} Under that definition, the only appropriate response to borderline cases would be to withhold judgment. Imagine the progress of a fully competent judge along a sorites sequence with that sort of borderline cases. The judge begins by calling the items \( F \), then at some point reaches the borderline cases and so makes a mandatory switch from the judgment of \( F \) to the judgment that no judgment can be made. There would be a sharp boundary between the \( F \)s and the borderline-\( F \)s.

Wright’s account of borderline cases as those items a fully competent judge might not be able to sort out is just one part of how his theory of vagueness complies with BOUNDARYLESS. In addition, he has the following two related commitments. First, he rejects what he calls “third possibility” accounts of borderline cases. That is, he does not think that borderline cases should be treated as having a unique status, distinct from the statuses of the clear cases of \( F \) on the one hand, and the clear cases of not-\( F \) on the other.

We have seen Raffman, too, reject a “third possibility” account of borderline cases, in section 2.2 above. She rejected what she calls “the standard analysis” because of the awkward truth-value gap created by borderline propositions that are neither true nor false. The status of “neither true nor false” is a distinct third possibility. Wright concurs about the standard analysis (though he does not call it by that name). He also explicitly rejects

\textsuperscript{36} There is something akin to a contradiction here. If all competent judges are forced into a quandary by borderline case \( b \), then it seems like we have some important knowledge about \( b \). Namely, we know that one must not respond to \( b \) by calling it \( F \) or not-\( F \). But if we know that \( b \) is neither \( F \) nor not-\( F \), we are no longer in a quandary. I think that argument structurally parallels Gareth Evans’ well-known argument against vague identity (1978), so whether it stands or falls, it is in good company.
other third possibility accounts of borderline cases, including those that assign both ‘true’ and ‘false’ to borderline propositions, and those that assign borderline propositions intermediate truth values of any kind. If borderline cases are treated in any of those “third possibility” ways, then they cannot contribute to the successful meeting of BOUNDARYLESS by a theory of vagueness. Let clear cases of \( F \) be called ‘\( F \)’ and borderline cases of \( F \) be called ‘\( G \)’, where no item can be both \( F \) and \( G \). Merely positing that some items are \( G \) does nothing to explain our sense that there is no sharp boundary between the \( F \)s and the \( G \)s.

The second commitment Wright holds that helps his theory to meet BOUNDARYLESS is a view he calls “liberalism.” He defines it thus:

It is the view that it is always permissible to return a verdict about a borderline case simply because it is — in a sense we need to clarify — open what to think about such cases and open, indeed, whether in thinking one thing in particular, you are knowledgeable (pp. 5-6).

Liberalism is closely related to Wright’s rejection of third possibility accounts of borderline cases. It provides an explanation of what you should say about a borderline case, if you intend not to categorize it as a third possibility. We need not withhold judgment about borderline propositions, judge them to be neither true nor false, or judge them to have an intermediate truth value. Instead, a competent judge of a borderline proposition may permissibly respond to it in more than one way. In particular, the judge may refrain from passing judgment or may judge it to be either true or false. Furthermore, when a competent judge delivers a verdict about a borderline proposition, it is open whether that verdict is known by the judge to be true (that is, it is open whether the judge’s belief is an instance of knowledge).
Liberalism is not consistent with Raffman’s claim that a borderline case of $F$ is not $F$. Wright holds that a borderline case of $F$ may very well be $F$, and may perhaps even be known to be $F$. What distinguishes borderline cases of $F$ from clear cases of $F$, for Wright, is not that the borderline cases are not-$F$, or that they are not knowably $F$. Rather, he distinguishes borderline cases by the “distinctive attitudinal psychology” we experience when initially confronted with them: we recognize them by the possibility of quandary that they introduce. It is thus rather open just which items are borderline cases, but that can be taken to be a virtue of Wright’s account. The moment we can say exactly which items are borderline cases, we are positing a sharp boundary between the clear cases and the borderline cases.

I objected to Raffman’s account of borderline cases, above, because it left them without the resources to meet BOUNDARYLESS. Wright disagrees with Raffman on the very point that caused a problem for Raffman: whether a borderline case requires one particular verdict. Because Wright takes borderline cases to permit more than one correct verdict, including the same verdicts that one would give for clear cases, he need not posit a sharp boundary between the clear cases and the borderline cases of a vague predicate. Although Wright need not posit sharp boundaries, the account of borderline cases he has given is still compatible with the presence of sharp boundaries, and may not be an ideal way to describe vagueness. The issue is one that Wright has himself recently raised elsewhere (2010). In section 2.1, I quoted his example of a stipulative definition of

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37 I do not mean to imply that Wright is simply contradicting himself. He proposed the pearl example to bolster his refutation of the claim that higher-order borderline cases provide a sure way to meet BOUNDARYLESS. (I discuss that argument in section 2.4 of this chapter.) His account of borderline cases in (forthcoming) is part of a different debate.
pearls. That definition was intentionally left somewhat open, such that artificial pearls meet the necessary condition for being pearls, but do not meet the sufficient condition. Thus they could correctly be called either pearls or not pearls. His point in describing that definition was to point out the difference between what he calls a “seamless” sequence, and one that is not seamless. There is a sharp boundary between the clear cases of pearls and the borderline cases of pearls, so the classification of a sequence of more-or-less pearl-like objects would not be seamless. On account of those sharp boundaries, I would say that that notion of a pearl is not a good example of what philosophers mean by ‘vague’. Here is the trouble: I think Wright’s account of vagueness in (forthcoming) would count the stipulated notion of pearls as vague, but that it should not. The first part of that claim, that Wright would count the stipulated notion of pearls as vague, deserves a closer look.

Recall, in (forthcoming), Wright claims that vagueness is that which causes a token utterance, under certain circumstances, to express a borderline proposition. A borderline proposition (very roughly) is one that could put a fully competent judge into a quandary, but need not. And a quandary is a state of deep ignorance about the truth of a proposition. A borderline case is the subject of a borderline proposition. I contend that the stipulated notion of ‘pearl’ is vague on that account because artificially produced pearls are a borderline case of the notion of ‘pearl’. The relevant borderline proposition would be, ‘Artificially produced pearls are pearls.’ Is that proposition true or false? A fully competent judge might decide that they are (or are not) pearls, even though the specified notion of ‘pearl’ does not determine the case. On the other hand, a fully competent judge
might be put into a quandary by the case. Perhaps she has no inclination to make an independent decision about the case, and so will only make a judgment if it is mandated by the definition given. Such a judge would find herself in a quandary. That is, she does not know whether artificial pearls are pearls, she does not know any way of knowing whether artificial pearls are pearls, she does not know that there is any way of knowing whether artificial pearls are pearls, and she does not know whether it is possible to know whether artificial pearls are pearls. Hence, on Wright’s account of vagueness in (forthcoming), the stipulated notion of a pearl is vague, even though it is not “seamless”; his account of vagueness includes sharply bounded concepts, and so it is not appropriately sensitive to BOUNDARYLESS, though for a different reason than Raffman’s account.38

2.4 Higher-order borderline cases

Elsewhere, Raffman and Wright both have explored the notion of borderline cases in the context of higher-order vagueness. In that context, notions of borderline cases are strained and so are forced to become more theoretically sophisticated; it is worth our while to consider the peculiar difficulties that arise for borderline cases used in theories of higher-order vagueness. Both (Raffman 2010) and (Wright 2010) begin with

38 A bit of caution is warranted here. BOUNDARYLESS only requires that a theory of vagueness respect the intuition that vague predicates lack sharp boundaries. There are two obvious ways to do that: either by defining vague predicates in such a way that they really do lack sharp boundaries, or by giving an explanation to account for the ordinary sense that they lack sharp boundaries. Wright has not attempted the latter, and has not quite succeeded at the former. As in the case of Raffman’s theory, there is room to meet BOUNDARYLESS by compensating elsewhere for the failure of borderline cases to do their part.
conceptual divisions of higher-order vagueness into different kinds. There is little overlap in their analyses of higher-order vagueness: they agree about just one kind, what Raffman aptly calls “higher-order borderline cases.” Higher-order borderline cases are, very roughly, those items in a sorites sequence for a vague predicate $F$ that fall somewhere in between the $F$s and the borderline-$F$s. That concept and how it is employed (or not) by Raffman and by Wright provide us with further insight into the nature of borderline cases more generally.

To see the motivation for positing higher-order borderline cases, consider this example. Suppose we have a sorites sequence of 100 men, all standing in order from the baldest (a hairless man) to the least bald (a man with a full head of hair). If you were force-marched through the sequence, that is, if you were required to say of each man in turn whether he is bald or not bald, you would almost certainly be stumped at some point. You would start out by declaring that the hairless man is bald, then that the man with just a few hairs on his head is bald, and so on. But at some point, you would not know whether to call the man in front of you ‘bald’ or ‘not bald’. One thing you might do is refuse to march any further under the old rules; you could declare that a new category is required. This “somewhat hairy” fellow should be called ‘borderline’. That is, he is neither clearly bald, nor clearly not bald. In that way, you could attempt to accommodate the fact that there is apparently no sharp boundary between men who are bald and men who are not.

Now, with your new category in hand, go back to the beginning of the sequence. You would start in the same way as before, by declaring that the hairless man is bald,
then that the man with just a few hairs is bald, and so on. But this time, at some point, you will have to shift from saying ‘bald’ to saying ‘borderline’. When should you do that? Just as in your first march, you will not find an obvious, sharp boundary between ‘bald’ and the other relevant category (here ‘borderline’, before ‘not bald’). You would, at some point, be unsure whether to call the man in front of you ‘bald’ or ‘borderline’.

Suppose you use the same trick as before: you introduce an additional category, say, ‘borderline borderline bald’. Each man in the sequence who falls into that category is an example of what is meant by the term ‘higher-order borderline case’. By now, it is easy to see how the process of introducing yet higher-order borderline categories can be iterated. It is simply a matter of noting the vagueness of a boundary region, and then inventing a new, higher-order category to accommodate that vagueness. For a discrete sequence, that is, one with a fixed number of items, there can be, at most, only as many categories as there are items in the sequence. For a dense sequence, though, one that always has another item between any two items, this mechanism for introducing higher-order borderline categories could be taken to iterate infinitely.

The reason we are supposing that you might postulate higher-order borderline cases while marching along the sequence is because the first-order borderline category, plain old ‘borderline’, is insufficient to capture all the vagueness of the sequence. The introduction of the first-order category is not a full solution to the problem of classifying the men. The earliest mention of this broad kind of problem for vague words is in (Russell 1923):

The fact is that all words are attributable without doubt over a certain area, but become questionable within a penumbra, outside which they are again certainly
not attributable. Someone might seek to obtain precision in the use of words by saying that no word is to be applied in the penumbra, but unfortunately the penumbra is itself not accurately definable, and all the vaguenesses which apply to the primary use of words apply also when we try to fix a limit to their indubitable applicability. (pp. 63-4)

Note that Russell does not introduce a first-order “borderline” category. Instead, he suggests that perhaps we should refuse to use a vague word in its penumbra. Applied to my example above, when you reach the penumbra between bald men and not bald men, you should remain silent, since it is unclear whether ‘bald’ or ‘not bald’ can be truly predicated of those men. But Russell immediately pointed out that that strategy cannot work. The technique has the same problem that our first-order borderline category has, namely, there is additional vagueness that must be accommodated: the penumbra itself is not sharply bounded. And so you would not know exactly which man is the last one you can call ‘bald’ before you must go silent.

Raffman (2010) distinguishes between two kinds of higher-order vagueness. The first sort, higher-order borderline cases, is as I described above. It includes all of the cases in a sorites sequence that might be described as “borderline borderline.” The second sort, “prescriptive higher-order vagueness,” includes higher-order predicates about vague predicates. So, for example, consider the predicate ‘old’. I can create a new predicate, about that predicate, by specifying the proper application of ‘old’. Raffman’s examples are ‘mandates application of “old”’, ‘can competently be called “old”’, and ‘is a permissible stopping point in a sorites sequence for “old”’. She calls such predicates “prescriptively higher-order vague” because they are vague predicates that prescribe how to use other vague predicates.
I agree that both of those concepts involve the notion of something’s being “higher-order,” and that both have to do with vagueness. The latter, though, the “prescriptively higher-order vague” predicates, are not central to the nature of vagueness. In fact, it may be that an account of that sort of predicate will simply fall out of an adequate theory of vagueness. After all, the vagueness in a predicate like ‘can competently be called “old”’ is clearly derivative from the vagueness of its parts, especially ‘competently’ and ‘old’. Explaining how that works is an interesting project, but I suspect it cannot be done until we have an account of simpler predicates like ‘old’.

The first sort of higher-order vagueness, on the other hand, higher-order borderline cases, is central to understanding the complexity of vague predicates, as can be seen by reflecting on the passage from Russell above. In addition, understanding the possible roles of higher-order borderline cases in theories of vagueness will help us to better understand what account of borderline cases is best. For those reasons, I will not address prescriptively higher-order vague predicates here, but will instead focus entirely on higher-order borderline cases.

When Wright discusses the ambiguity of the phrase ‘higher-order vagueness’ in his (2010), he lists three meanings that are commonly intended. Of those, only the first is also in Raffman’s taxonomy. The three phenomena that Wright believes are commonly picked out by the phrase ‘higher-order vagueness’ are (in his words):

(a) That the distinction between the things to which a vague expression applies and its first-order borderline cases —the cases where it is indeterminate whether it or its complement applies— does itself, in the cases that characteristically interest us, admit of borderline cases; that the distinction between the things to which a vague expression applies and this second-order of borderline cases also admits of borderline cases; that the distinction
between the things to which a vague expression applies and this third-order of borderline cases also admits of borderline cases; and so on indefinitely. When, in the fashion noted, borderline cases are thought of as an intermediate kind, distinguished from the kinds of which they are borderline cases, this idea becomes the **Buffering view**.

(b) **The vagueness of Vague**: there are concepts which are borderline cases of the vague-precise distinction itself, — concepts which are neither definitely vague nor definitely precise, — and, further, there are borderline cases of membership of this range of concepts in turn, and borderline cases of those in turn… and so on.

(c) That the usual kind of definiteness operator —that is: one introduced for the purpose of allowing us to characterise the borderline cases of F in accordance with the Basic Formula [that is, as a distinct kind] — ineluctably gives rise to a hierarchy of new, pairwise inequivalent vague expressions, ”Definitely F”, ”Definitely Definitely F” and the like. (Definitisation modifies truth-conditions but does not eliminate vagueness.) (pp. 527-8, italics and boldface in the original, bracketed phrase mine)

The first, Wright’s “Buffering view,” is very much like Raffman’s higher-order borderline cases. Wright builds a bit more into his description of it, though. Unlike Wright, Raffman does not initially specify whether the existence of higher-order borderline cases entails that ‘borderline’ denotes a third status, distinct from ‘true’ and ‘false’. In the end, she does accept this, however, and so there is ultimately no significant difference between her higher-order borderline cases, and Wright’s Buffering view.

While Wright’s (c) is not explicitly part of Raffman’s taxonomy, it is closely related to the sort of higher-order vagueness in (a). If we think of higher-order borderline cases in the broad way that Russell conceived of them, the similarity can be most easily seen. Each vague term has a penumbra, in which it is unclear whether the term applies, and these penumbras are themselves vaguely bounded. Wright’s (a) and (c) are different ways of addressing this general problem. (a) suggests that we introduce new categories for each higher-order borderline region, such as ‘borderline-borderline-bald’. (c) suggests
instead that we use a “definiteness” (sometimes alternately called “determinateness”) operator to distinguish between clear cases and borderline cases, and that we repeat the operator as needed to account for the iteration of vagueness. Represented visually, the categories could be taken to correspond in this way:

<table>
<thead>
<tr>
<th>Bald</th>
<th>Borderline-bald</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely bald</td>
<td>Definitely bald</td>
</tr>
<tr>
<td>definitely bald</td>
<td>definitely bald</td>
</tr>
<tr>
<td>but not definitely bald</td>
<td>but not definitely bald</td>
</tr>
<tr>
<td>Definitely not bald</td>
<td>Definitely not</td>
</tr>
<tr>
<td>definitely not bald</td>
<td>definitely not</td>
</tr>
</tbody>
</table>

So it may be best to consider (a) and (c) as the same sort of higher-order vagueness, dealt with in both cases by introducing new categories. The difference lies in the kind of categories used to express the higher-order vagueness. That is not a trivial difference, since it deeply affects how the logic and semantics of vagueness are worked out. Nevertheless, it is not a difference in the kind of higher-order vagueness involved.

Wright’s (b), the vagueness of ‘vague’, is apparently a very different sort of higher-order vagueness. Here, the issue is not the vagueness of the penumbra of just any vague predicate, but rather the vagueness of the predicate ‘vague’ itself. This kind of vagueness is not obviously central to our understanding of vagueness generally, but there has been an interesting discussion recently, encouraging serious consideration of the question. Discovering whether the vagueness of ‘vague’ has significant implications for
our discussion of higher-order borderline cases would take us a bit far afield, though, so I will set it aside for the remainder of this work.  

At this point, I have used concepts developed by Raffman and Wright to distinguished higher-order borderline cases from the other sorts of higher-order vagueness that might have confused the issue. Now that we know what higher-order borderline cases are, we can consider how they might be thought to contribute to a successful theory of vagueness. Higher-order borderline cases are generally introduced to a theory of vagueness in order to resolve the apparent conflict between BOUNDARYLESS and REASON. As I described at the start of this section, if we think of borderline cases as being a “third possibility,” to use Wright’s terminology, then we need some other way to capture the boundarylessness of vagueness. Higher-order borderline cases are at least a stop-gap way to do that, since they put off the question of where the sharp boundaries lie, and in the case of a dense sorites sequence, they may put off the question forever.

My first concern about higher-order borderline cases is that they do not seem to fit well with any theory that meets REASON. The principle of REASON requires not only that a theory of vagueness is suitably logically rigorous, but also that it is psychologically plausible. Infinitely iterating higher-order borderline cases is well beyond the capacity of our finite minds. Certainly such a mechanism is a poor description of what we are doing when we use vague predicates in our reasoning and conversation.

A second, more complicated concern has to do with whether higher-order borderline cases succeed in their task of putting off the question of where sharp

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39 Some of the key articles in the debate are (Deas 1989), (Hull 2005), (Hyde 1994), (Sorensen 1985), (Tye 1994), (Varzi 2003), and (Varzi 2005).
boundaries lie. Proponents of higher-order borderline cases overestimate their success because they tend to slip between thinking of sorites sequences as discrete and thinking of them as dense. The sorites sequence I have been using as an example, my 32 color tiles ranging from blue to green, is a discrete sequence. It has only 32 tiles, and so it can be divided, at most, into 32 different categories. Suppose we start with just the three categories of blue, green, and borderline, then we add one level of higher-order borderline cases. We then have five categories (blue, borderline between blue & borderline, borderline, borderline between green & borderline, and green). By the fourth level of higher-order borderline cases, we would already have more categories than there are items to categorize. Postulating those higher-order borderline cases obviously does nothing to eliminate the sharp boundaries between categories—instead it multiplies the number of sharp boundaries so that every item in the sequence is in its own sharply bounded category. The mechanism of higher-order borderline cases seems unable to eliminate all of the sharp boundaries it posits.

This is the point at which an advocate of higher-order borderline cases typically slips into discussing a dense sequence. Each of the tiles in my discrete sequence has been categorized, and so there appears to be a sharp boundary between each one. In fact, though, there are infinitely many possible shades between each actual tile. The categorizing of those possible tiles can go on forever, and so we can put off forever the question of where the important sharp boundary is; the line between blue and green is never settled. But I am not convinced that the dense sequence is relevant to my discrete sequence. I was asking about the vagueness involved in one particular sequence, of only
32 tiles. I do not see why an explanation of the vagueness of a distinct, dense sequence
should be thought to describe the vagueness of my discrete sequence.

Even in the case of a dense sequence, serious objections have been raised to the
possibility of ensuring a genuine absence of sharp boundaries by means of higher-order
borderline cases. (Sainsbury 1997) argues:

[S]uppose we have a finished account of a [vague] predicate, associating it with
some possibly infinite number of boundaries, and some possibly infinite number
of sets. Given the aims of the description, we must be able to organize the sets in
the following threefold way: one of them is the set supposedly corresponding to
the things of which the predicate is absolutely definitely and unimpugnably true,
the things to which the predicate's application is untainted by the shadow of
vagueness; one of them is the set supposedly corresponding to the things of which
the predicate is absolutely definitely and unimpugnably false, the things to which
the predicate's non-application is untainted by the shadow of vagueness; the union
of the remaining sets would supposedly correspond to one or another kind of
borderline case. So the old problem re-emerges: no sharp cut-off to the shadow of
vagueness is marked in our linguistic practice, so to attribute it to the predicate is
to misdescribe it (p. 255).

If that is right, then there may be little reason to defend the possibility of higher-order
borderline cases, since they do not do what they were designed to do. But is it right?
In defense of higher-order borderlines, note that Sainsbury’s argument presupposes one’s
account of a vague predicate can be “finished,” but one could deny that there is ever an
end to the iteration of higher-order borderline cases. That is, perhaps there can always be
another, yet higher-order borderline case. If that is so, then there are no sharp boundaries
because there is never a finished account of any vague predicate.

There are probably many ways to reject the possibility of finished accounts of
vague predicates. One such theory might work like this: When you consider a vague
predicate, you are permitted to stipulate a more precise meaning, which then restricts the
further interpretations that are available to you. But there are always further, more precise interpretations available. Consider ‘tall’. You might initially think that a woman is tall if she is at least 68 inches in height. Upon a moment’s reflection, it should be apparent that 68 inches is still a rough estimate—you surely didn’t mean to imply that a woman who is 67.999 inches is not tall, but a woman who is 68.000 inches is. For some purpose, you might find it useful to specify what you mean by ‘tall’ out to three decimal places, but even if you did, there are infinitely more decimal places of precision left open. Even after all your stipulations, there is no sharp boundary between ‘tall’ and ‘not tall’.

I have a serious concern about that kind of move, though. It seems like it only pays lip-service to the idea that there are no sharp boundaries. If it works, it avoids commitment to a perfectly precise sharp boundary between tall and not-tall; but it is committed to the claim that, if pressed, we would find a boundary that is only not-sharp by the barest margin. Such a proponent of higher-order borderline cases would have to accept that one millionth of an inch really does make a difference between tall and not-tall, even while insisting that there is no sharp boundary.

In addition to failure to do their duty, higher-order borderline cases have also been charged with failure even to exist. Raffman (2010) argues that borderline cases should be construed negatively, that is, they should be thought of as whatever items fill the gap between two positively defined vague predicates. But if borderline cases can only occur between positively defined predicates, there can be no borderline cases between $F$ and borderline-$F$. Borderline-$F$ is not positively defined. That means that higher-order borderline cases are impossible.
Since that is a nonstarter for higher-order borderline cases, their proponents must construe them positively. There are many ways such a proposal might be elaborated, and I will not explore all of them here; however, Raffman has a worry about all positive accounts of borderline cases. Namely, she thinks that any positive account of borderline cases is likely to treat ‘borderline’ as an ordinary third category in the sequence, and that it is then just like any other predicate—lacking any characteristics that make it particularly relevant to a theory of vagueness. For example, suppose we decide that tile 16 is a perfect example of ‘borderline’, and so the imperceptibly different tiles to its left and right are also borderline. Now consider the short sequence of tiles from 1-16. It is just like our original sorites sequence, but shorter, running from ‘blue’ to ‘borderline’ instead of ‘blue’ to ‘green’. By construing ‘borderline’ as something other than a negatively defined gap-filler, we end up treating it as just another vague predicate. Two important consequences follow from that: Positively defined borderline cases appear to be unhelpful in an analysis of vagueness. And what we thought were higher-order borderline cases collapse into the first order. (If ‘borderline’ is just another ordinary predicate, then borderline-borderline cases are really first-order borderline cases. The reasoning iterates.)

What do our reflections on higher-order borderline cases tell us about the nature of borderline cases in general? An account of borderline cases that treats them as if they are a new category, a “third possibility,” falling between the Fs and the not-Fs, leads us into positing higher-order borderline cases, in order to capture the sense of boundarylessness characteristic of vagueness. But higher-order borderline cases are deeply problematic. They are wholly ill-suited to discrete sorites sequences, and seem not
to do much better with dense sorites sequences. And so we should not count on higher-
order borderline cases to help us with the problems that arise from treating borderline
cases as a new, exclusive category. Instead, a good account of borderline cases should
avoid treating them as a third possibility, exclusive of \( F \) and not-\( F \).

2.5 Michael Tye

Michael Tye’s account of borderline cases, in his (1990), arises as part of his
explanation of what he takes ‘vague object’ to mean. It is one of the earliest accounts of
the notion of borderline cases, and still one of the most careful. Nevertheless, it is my
contention that Tye’s explanation of vague objects involves a serious mistake, having to
do with his analysis of ‘borderline’. The explanation of vague objects rests upon two
definitions, which I believe conflict with one another. First, Tye defines a borderline case
in this way: “\( x \) is a borderline \( F \) just in case \( x \) is such that there is no determinate fact of
the matter about whether \( x \) is an \( F \)” (535). Second, Tye defines a vague object in terms of
that notion of borderline:

I shall classify a concrete object \( o \) as vague (in the ordinary sense in which
Everest is vague) if, and only if:
(a) \( o \) has borderline spatio-temporal parts and
(b) there is no determinate fact of the matter about whether there are
objects that are neither parts, borderline parts nor non-parts of \( o \). (535-6)

The problem is that the definition of ‘borderline’ contradicts clause (b) of the definition
of ontological vagueness. Consider a heap of sand on the beach. The heap is surrounded
by a large swath of flat beach. How should each grain of sand on the beach be classified?
Some of them are clearly part of the heap, some of them are clearly not part of the heap, but what should we say about the others? Tye’s definition of borderline seems to include all of those “other” grains of sand. If and only if there is no determinate fact of the matter about whether a given grain is part of the heap, then that grain is a borderline part of the heap. So, all of the grains that are determinately part of the heap (or determinately not part of the heap) will not count as borderline parts; every other grain of sand will count as a borderline part. So far, so good. Tye’s definition captures the rough notion of ‘borderline’ that we ordinarily use: the borderline cases are those things that are in between the determinate cases.

The trouble is not with the definition of ‘borderline’ itself, but rather with Tye’s use of ‘borderline’ in clause (b) of his definition of vague objects. There, he says that for an object (o) to be vague, there must be “no determinate fact of the matter about whether there are objects that are neither parts, borderline parts nor non-parts of o.” For that to be true, it must be at least possible for there to be grains of sand that are neither determinately part of the heap, nor determinately not part of the heap, nor borderline cases. That is, the three cases cannot be exhaustive. Now we can see the trouble: Tye defines ‘borderline’ as a catch-all such that the three cases (part, non-part, and borderline) are exhaustive; however, in clause (b) he claims that it must be indeterminate whether those three cases are exhaustive. At least on the face of it, that appears to be contradictory.

How might Tye avoid that contradiction? Perhaps it could be resolved by reconsidering his definition of ‘borderline’. When we consider the range of possible
views about borderline cases, we can divide possible conceptions of ‘borderline’ into two sorts: On the one hand, you might allow that there are some cases which are “determinately borderline.” Those would be the grains of sand that are exactly “on the line” between determinate parts of the heap and determinate non-parts of the heap. That is to treat ‘borderline’ as denoting a third category, of just the same kind as ‘part’ and ‘non-part’: each category has some determinate members. On the other hand, you might think that the “borderline” category cannot have determinate members. On that conception of ‘borderline’, anything that counts as a borderline case is one about which it is unclear what to say. So there might be some determinate parts and determinate non-parts of the heap, but any grain of sand that does not fall into one of those categories would be thought of simply as borderline, never as determinately borderline. In a monotonic sequence, you might still be able to compare the relative “distance” of each borderline case from the determinate cases, but there would still be no determinately borderline cases.

In my description of the apparent contradiction between Tye’s definition of borderline cases, and his definition of vague objects, I took Tye to endorse the latter conception of borderline (such that the category borderline can have no determinate members). How does Tye’s definition fare when we consider the other conception of ‘borderline’? Suppose there are some grains of sand that are right on the line between parts of the heap and non-parts of the heap. Those are the determinately borderline cases.

40 Depending on whether vagueness is a semantic, epistemological, or ontological phenomenon, it may be appropriate to strengthen this claim. If vagueness is epistemological, we might go so far as to say that any borderline case is one about which we cannot know whether it is a part or a non-part. If vagueness is ontological, we could say that any borderline case is one about which there is no fact of the matter about whether it is a part or a non-part.
If a grain of sand is determinately borderline, we can safely say that it is not part of the heap. There is, then, a fact of the matter about whether that grain of sand is part of the heap—it is not. But Tye’s definition of ‘borderline’ requires that there be no determinate fact of the matter about whether the grain of sand is a part of the heap. A determinately borderline grain of sand does not meet Tye’s criterion for a borderline case. As a result, Tye’s definition of ‘vague object’ fares just as badly under this conception of ‘borderline’ as it did under the other. In using the notion of borderline cases to explain vagueness, we must be careful to avoid this subtle mistake. Tye’s work on vagueness is excellent, so his difficulty with borderline cases is evidence that a great deal of careful reasoning is still needed on the subject. Defining borderline cases is a very tricky business.

2.6 Conclusion

The accounts of borderline cases we have considered here provide us with powerful lessons about what borderline cases must be like, if they are to be a useful part of a successful theory of vagueness. First, it is very difficult to develop an account of borderline cases that has the resources needed to meet BOUNDARYLESS. None of the accounts we have considered yet has succeeded at that task, and each for different reasons. If an account of borderline cases is to be used as the central component of a successful theory of vagueness, we must do better. In the next chapter, my account will not treat borderline cases as a third possibility, as Raffman’s (2005) account does. I will ensure that borderline cases are seamless, as Wright’s (forthcoming) account does not.
And it must avoid the kind of logical misstep that Tye (1990) makes in treating borderline cases ambiguously, either as a third possibility or not. All three of those philosophers ran into trouble because of their commitment to something like my principle of REASON: a theory of vagueness must explain, in a psychologically plausible way, how our reasoning can accommodate vague predicates with suitable logical rigor (preferably, it may be added, by preserving bivalent, classical logic). On the face of it, we cannot expect bivalent logic to suit genuinely boundaryless predicates. After consideration of the theories of Raffman, Wright, and Tye, that impression is strengthened.

We might have hoped that higher-order borderline cases could be used to resolve the apparent conflict between the strong versions of BOUNDARYLESS and REASON, but theories using higher-order borderline cases do no better. The problems with higher-order borderline cases are somewhat different: Such theories often are not psychologically plausible, and so run afoul of REASON. They also tend to conflate discrete and dense sorites sequences, resulting in a confused theory. But in addition to those problems unique to theories that posit higher-order borderline cases, they still have all the same troubles that we found with ordinary, first-order borderline cases. Higher-order borderline cases do not resolve the problems with first-order borderline cases in the ways that we might have hoped.

In the next chapter, I introduce a few new concepts to make clearer what has gone wrong with previous accounts of borderline cases. I then apply those concepts, and the lessons we have learned about borderline cases here, to the project of developing a new account of borderline cases.
3.1 Introduction

A serious problem pervading Chapter 2 was an impoverished vocabulary. The philosophers whose theories I evaluated there all attempted to mitigate that problem; each of them developed new concepts and distinctions to help us attend to the important differences among accounts of borderline cases. But their distinctions are somewhat unwieldy—they do not get at all of the most important differences among accounts of borderline cases. Here I establish a more apt vocabulary for describing the various meanings of ‘borderline case’. With those clearly distinguished meanings at my disposal, I argue that one of them is particularly well-suited to being the cornerstone of a theory of vagueness. This is the crux of my account of borderline cases: My preferred conception of borderline cases treats them as a vaguely bounded collection of items in a sorites sequence, each of which permits more than one judgment. That conception will allow me, in Chapter 4, to develop a theory of vagueness that meets, and excels at, my success criteria. In this chapter, I develop the necessary conceptual framework, the new vocabulary, and then propose my account of borderline cases. Along the way, I situate my account among the accounts of borderline cases that were described in Chapter 2.

3.2 Borderline case success criteria
The introduction of borderline cases, as a category used to describe the items near the middle of a sorites sequence, is intended to allow us simultaneously to describe the vagueness of the sorites sequence correctly (without sharp boundaries), and to explain how we are able to think logically about all the items in the sequence. Borderline cases might be thought to allow that because they are a way to bracket the difficulties that arise regarding the proper classification of items near the middle of the sequence. As you answer questions along a forced march, you need not draw a sharp boundary between \( F \) and not-\( F \), since you can answer ‘borderline’ for unclear cases. There are two major objections commonly made to accounts of borderline cases of that general kind. The first is that such borderline cases alone are insufficient for vagueness. That is, defining vagueness as “the having of borderline cases,” given that account of borderline cases, would count some non-vague predicates as vague. Sainsbury (1991) provides this counterexample as evidence of the problem:

> [S]uppose that ‘child*’ is true just of persons who have not reached their sixteenth birthday, false of persons who have reached their eighteenth birthday, and neither true nor false of all other persons. Intuitively, this is not a vague predicate, despite the existence of borderline cases. (p.173)

Sainsbury’s example shows that merely having borderline cases of the kind described above is insufficient for soritical vagueness. A predicate like ‘child*’ does have borderline cases of that sort, but is not vague.\(^{41}\) The important difference between ‘child*’ and ‘blue’ is that in the case of ‘child*’ there are exactly three clear classes into which all people fall: those who are children*, those who are not children*, and those

\(^{41}\)One could, of course, insist that ‘child*’ is a vague predicate, but we are interested here in the philosophers’ sense of ‘vague’, according to which a predicate is vague only if it is susceptible to the sorites paradox. Provided that birthdays are thought of as sharp boundaries, ‘child*’ does not. For the sake of argument, let us ignore the vagueness involved in when exactly someone becomes a 16-year-old.
(16- and 17-year-olds) who neither are nor are not children*. ‘Blue’ is not like that. We may call some of the cases between blue and green ‘borderline’, but that does not entail that each color tile will fall neatly into the three classes, blue, green, and borderline. On the contrary, in a genuine case of sorites-type vagueness, the introduction of a class of borderline cases hardly begins to resolve the sorites paradox. Just as there is no natural sharp boundary between blue and green, there will also be no natural sharp boundary between blue and borderline.

As we saw in Chapter 2, considerations of that sort might lead us to propose the existence of higher-order borderline cases. The reasoning, recall, goes like this: No sharp boundaries at all are appropriate in a sorites sequence; the introduction of a single ‘borderline case’ category generates two sharp boundaries; and each new sharp boundary must then be dealt with, presumably by introducing an additional class of borderline cases (e.g., between ‘blue’ and ‘borderline’). In order to ensure the boundarylessness of vague predicates, the procedure of introducing additional classes of borderline cases must be iterated, perhaps infinitely. Since the items that fall into those additional, iterated classes are borderline cases of borderline cases, they are called higher-order borderline cases. One might think it is those higher-order borderline cases that are definitive of vagueness; a predicate like ‘child*’ is not vague because, unlike ‘blue’, it lacks higher-order borderline cases.

The second serious objection to borderline case accounts of vagueness applies both to first-order and to higher-order borderline case accounts. The problem is that whether you introduce only one or many classes of borderline cases, they do not
guarantee the elimination of artificial sharp boundaries, but instead appear to increase the number of such boundaries.\textsuperscript{42} Recall, the problem with simply positing a sharp boundary between blue and green (calling one tile ‘blue’ and then the very next tile ‘green’) is that doing so seems wholly unmotivated by anything in one’s experience of the sequence. The color of each tile in the sequence is imperceptibly different from that of the tiles to its left and right. Not only would it be a misdescription of the situation to posit a sharp boundary between blue and green, but also to posit a sharp boundary between blue and borderline-blue. The same holds true of higher-order borderline cases generally: no sharp boundaries, at any level, seem appropriate in describing the vagueness involved in a sorites sequence.

Those two objections can be captured in these specific success criteria that apply only to theories of vagueness in terms of borderline cases.

\textsc{Child*}: A theory of vagueness in terms of borderline cases must rule out, in principle, predicates like ‘child*’ which apparently have borderline cases but are not vague.

\textsc{New Boundaries}: A theory of vagueness in terms of borderline cases must avoid even implicitly creating sharp boundaries when introducing a ‘borderline case’ category, however many such categories are introduced.

At this point, I have described four criteria which are \textit{prima facie} necessary for an adequate theory of vagueness in terms of borderline cases. The two just mentioned apply specifically to borderline-case theories, and these two (from Chapter 1) apply to all theories of vagueness:

\textsuperscript{42} The problem was noted at least as early as in Fine’s introduction of “iterated supervaluationism” (1975). There he advocated the idea that because there is never a natural place to draw a sharp boundary, the mechanism used to explain vagueness must be infinitely iterated. Horgan (1994) argues convincingly that even infinite iteration cannot eliminate sharp boundaries. Raffman (2010) agrees with Horgan, as part of her general indictment of higher-order borderline cases.
BOUNDARYLESS: A theory of vagueness must respect the intuition that there are no sharp boundaries in the sorites sequences of vague predicates.

REASON: A theory of vagueness must explain, in a psychologically plausible way, how our reasoning can accommodate vague predicates, in a suitably rigorous way.

Those criteria can be further simplified, however. If BOUNDARYLESS is met, then CHILD* and NEW BOUNDARIES will be as well. If a theory of vagueness respects the intuition that vague predicates have no sharp boundaries, then it will not count predicates like ‘child*’ as vague. Moreover, by meeting BOUNDARYLESS, a theory of vagueness will thereby avoid creating sharp boundaries on either side of the category ‘borderline case’. So, although there are specific objections made to borderline-case theories of vagueness, they need not be given special attention. If a borderline-case theory of vagueness meets the general success criteria that apply to all theories of vagueness, it thereby also meets the specific success criteria for borderline-case theories of vagueness. And so BOUNDARYLESS and REASON alone will remain the focus of my analysis.

3.3 The vocabulary and taxonomy of borderline cases

We saw in Chapter 2 that the term ‘borderline case’ is ambiguous, and that its ambiguity can cause problems for borderline-case theories of vagueness. For example, Tye’s theory of vague objects was shown to equivocate between two meanings of ‘borderline case’, and, as a consequence of that equivocation, to be internally

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43 There is some slack in both NEW BOUNDARIES and BOUNDARYLESS. Neither criterion strictly requires that there be no sharp boundaries; both require that a good theory of vagueness must avoid sharp boundaries if possible, and justify having posited them when they cannot be avoided. Since the criteria have equal slack, meeting the latter ensures having met the former.

44 The fact that my original success criteria, if met, ensure an adequate response to these common objections is additional evidence that those success criteria are reasonable goals for a theory of vagueness.
inconsistent. We also saw how difficult it is for a borderline-case theory of vagueness to meet the criterion BOUNDARYLESS. In the remainder of this work, I show that there is a way to avoid those problems and to meet REASON at the same time. In this chapter I introduce two important new distinctions, use them to identify several distinct kinds of borderline cases, and determine which of those borderline cases are most useful for theorizing about vagueness. In the next chapter, I describe a new theory of vagueness in terms of those useful borderline cases. My account of borderline cases rests on these two distinctions: First is the distinction between what I call “strict” and “lax” borderline cases. Second is the distinction between sharply bounded collections of borderline cases and those that are not sharply bounded. Let us consider each in turn.

A. Strict Borderline Cases and Lax Borderline Cases

Strict Borderline Cases: ‘Borderline case’ is sometimes used to describe those items in a sorites sequence that cannot properly be called either ‘F’ or ‘not F’ (for some vague predicate F). Imagine a color that is too greenish to be called ‘blue’, but too bluish to be called ‘green’. It must be categorized as ‘borderline’. On such an understanding of ‘borderline’, each item in the sequence falls within at most one of the categories ‘F’, ‘borderline’ and ‘not F’.\(^{45}\) Let us call it the notion of “strict borderline cases.” For someone with strict borderline cases in mind, the introduction of the predicate

\(^{45}\) Perhaps it falls into none of those three, but rather into some further category on the borderline between F and borderline. Categories could be proliferated in that way. At most, though, each item in the sequence can only properly be put into one category.
‘borderline’ to categorize some items in a sorites sequence amounts to the introduction of a third exclusive status that items in a sorites sequence can have. Just as it would be unacceptable to say that an item has both the statuses ‘blue’ and ‘not-blue’ (at the same time, and in the same respect), it would be similarly unacceptable to say that an item has both the statuses ‘blue’ and ‘(strict) borderline’.

Strict borderline cases do little to advance our understanding of vagueness. Imagine that instead of introducing the strict category *borderline* between blue and green, we chose to introduce the category *turquoise*. That would change our single sorites sequence (running from blue to green) into two sorites sequences: one from blue to turquoise, and the other from turquoise to green. But both of those new sorites sequences would have all the same troubling characteristics as the original sequence from blue to green. Namely, the introduction of turquoise does nothing to account for the boundarylessness of vagueness. Strict borderline cases play the same role in a sorites sequence as turquoise. Because strict borderline cases are an exclusive category, they do nothing more than change one sorites sequence into two—blue to borderline and borderline to green. And so a theory that includes strict borderline cases *could* meet BOUNDARYLESS, but the strict borderline cases themselves would play no part in that; strict borderline cases can do nothing to ensure the absence of sharp boundaries at the edges of each status. If borderline cases are to play a central role in explaining vagueness, there must be more to them than simply being strict.

Similar distinctions can be found in both (Wright, 2010) and (Raffman, 2010). Wright’s “third possibility” accounts of borderline cases posit something like my strict
borderline cases. Both “third possibility” accounts and strict borderline cases are problematic because they treat borderline cases as an exclusive category, wholly distinct from the Fs and the not-Fs. Wright’s notion, however, emphasizes the different truth-values that some theories of vagueness propose for borderline cases. For example, one third possibility account says that the truth-value of ‘x is F’ (for a borderline case x of a vague predicate F) is “neither true nor false.” Wright’s objection seems to be primarily directed at the introduction of a new truth-value for borderline cases. Admittedly, there is something fishy about new truth-values, but I take that to be a side-issue, derivative from the fundamental problem: the exclusivity of the new ‘borderline’ category. Accounts that posit strict borderline cases usually overlap with Wright’s “third possibility” accounts, but they do not always. Here is a possible account of borderline cases that is not a “third possibility” account, but does posit strict borderline cases:

A borderline case of F can correctly be called F, or can correctly be called ‘borderline’, but a clear case of F cannot be called ‘borderline’.

That account employs strict borderline cases, but it need not create a third possibility. The truth-value of ‘x is F’, where x is a borderline case, may be simply ‘true’. It generates sharp boundaries and so is problematic. But that is not because it assigns the wrong kind of truth-value to the borderline cases (it need not do so), but because it treats borderline cases as an exclusive category. Strictness is the relevant feature, not third possibilities.

Raffman (2010) objects to what she calls “positive” definitions of borderline cases. She contends that the notion of a borderline case is only useful for a theory of vagueness if borderline cases are thought of as whatever fills the gap between the positively defined notions at either end of the sorites sequence. I think what creates a
problem for “positive” definitions is not that they attempt to say what borderline cases are (rather than what they are not). The problem here, too, is the exclusivity of the category ‘borderline’. Raffman objects to accounts of borderline cases according to which ‘borderline’ is just another first-order judgment, like ‘F’ or ‘not-F’. Strictness is one key feature of the borderline cases of such accounts, but is not the only one. I will return to the issue in subsection B, below.

Lax Borderline Cases: The term ‘borderline case’ is sometimes used to describe items in a sorites sequence for a vague predicate $F$ that can properly be called either ‘$F$’ or ‘not $F$’. Any such item may also be called ‘borderline’ with respect to $F$ and not $F$. It would be infelicitous to call the same item ‘$F$’ and ‘not $F$’ in the same breath, yet it is permissible to call the item either ‘$F$’ or ‘not $F$’ (or ‘borderline’).\footnote{Raffman (2010) accepts this feature as definitive of all borderline cases; “Failure to classify an item as borderline $Ψ$ cannot be mistaken or in any way improper or even legitimately questionable. (Intuitively, one is never required to classify something as borderline; a judgment of ‘borderline’ is always optional.)”} Call that the notion of “lax borderline cases.” On such an understanding of ‘borderline case’, a judgment of ‘borderline’ indicates that more than one judgment is acceptable for the item. To make the notion somewhat more vivid, imagine a tile near the middle of our sequence from blue to green. If someone called it ‘blue’, she would not be wrong; if someone else said it was ‘borderline’, she would not be wrong; and if a third person called it ‘green’, she would also not be wrong.\footnote{Wright (2010) shares Raffman’s belief that ‘borderline’ must always be an optional designation. He calls this “the entitlement intuition”: one is always entitled to call a borderline-$p$ case either $p$ or not $p$.}
Like strict borderline cases, lax borderline cases alone do not guarantee an absence of sharp boundaries. It could be that tile 16 must be called ‘blue’ but tile 17 may be called either ‘blue’, ‘borderline’, or ‘green’. In that case, there would be a sharp boundary between tiles 16 and 17, even though tile 17 is a lax borderline case. If borderline cases are to play a central role in explaining vagueness, there must be more to them than merely being lax.

Before I describe what I think that additional something is (the distinction between sharp and unsharp, in subsection B below), I must say a bit more about the permissibility involved in lax borderline cases. Whether it is permissible to describe a certain object using some vague predicate is a practical question. My general approach to vagueness, recall, is to consider our actual use of vague terms in ordinary reasoning and argumentation. But actual practice is messy. Nevertheless, I can offer this general guideline for permissibility: what makes a given use of a vague predicate permissible is that it is compatible with the ordinary linguistic practice of the relevant community of language users (relative to a context, of course). For example, the use of a vague predicate is permissible in either of the following circumstances.\footnote{Undermines the notion of lax borderline cases; my account can easily be adapted to incorporate contextual variation. At this point, though, such adaptation would needlessly complicate the story, and so I am setting the issue aside for now.}

1) Although $F$ is a vague predicate, you use it to describe a clear case of $F$, one that is well away from the borderline cases, and so the vagueness of $F$ is irrelevant to your use of it.

\footnote{In the first case, the use of the relevant vague predicate is not merely permissible—I can make the stronger claim that the use of the vague predicate’s contrary in such circumstances is impermissible.}
Most of our uses of vague predicates are of that sort. For example, at a debate among U.S. presidential candidates, the ties worn by the male candidates are all either clearly blue or clearly red. When you refer to “all the blue ties” in that restricted domain, there are no cases anywhere near the borderline, and so your meaning is obvious. Used in that way, ‘blue’ functions almost as if it were not vague because its vagueness is irrelevant to your use of it. Such uses of vague predicates are one way that we communicate our ideas clearly, even though our ideas often involve vague concepts.\textsuperscript{49}

2) The item you describe is not a paradigmatic case of $F$-ness, but your use of $F$ to describe it is consistent with ordinary uses of $F$.

Vagueness could cause some trouble here, but it need not. For example, if you and I were looking at a painting and I remarked that I liked the blue in it, you would probably have no trouble working out roughly what parts of the painting I was talking about, even if the so-called “blue” in the painting was not a paradigmatic blue, but was instead a bluish gray. My calling it ‘blue’ would be a stipulative extension of the meaning of ‘blue’. That is, my use of ‘blue’ under those circumstances would not contradict ordinary usage; it would temporarily extend the meaning of ‘blue’ to include the particular non-paradigm case under consideration. Such a stipulation need not (and should not) be taken to be significant, either metaphysically or semantically—it does not indicate or dictate either the precise extension of the property blueness or the precise meaning of the predicate ‘blue’. It might have been equally permissible for me to describe the color in question as

\textsuperscript{49} In Chapter 4, I refer to this as the “normal case” of vague predicate use, and I refer to type (2) as the “tougher case.” There, they play an important role in my theory of vagueness.
gray. That sort of flexibility in how vague terms may be used allows us to describe things quickly and imprecisely, without describing them incorrectly.

A use of a vague term is not permissible when it is inconsistent with ordinary usage. If I remark on the lovely shade of blue in the painting while we are looking at a canvas covered uniformly in bright red paint, my use of ‘blue’ would be impermissible on any straightforward interpretation. You would have to wonder whether I might be extremely color-blind, or perhaps making a poor attempt at a joke. The meaning of the word ‘blue’ cannot be extended to include paradigmatic cases of redness.

B. Sharp and Unsharp

The simplest way for a theory of vagueness to meet the criterion BOUNDARYLESS is for it to guarantee that vague predicates have no sharp boundaries. A borderline-case theory of vagueness needs that guarantee to follow from its account of borderline cases. Neither strict nor lax borderline cases alone are sufficient; there must also be no fact of the matter about exactly which items are borderline cases. And so we come to the second distinction: the borderline cases in a sorites sequence (all of them, as a group) can be thought of as either sharply bounded or not. If they are sharply bounded, then there is some item in the sorites sequence that is the unique last one that must be called ‘F’, and it is followed by the first item in the sequence that may (or must) be called ‘borderline’.

Sharply bounded borderline cases are, of course, unhelpful in explaining the

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50 My account of borderline cases is itself made in a vague language, and so there also is no sharp boundary between those uses of ‘blue’ that are consistent with ordinary usage and those that are not.
boundarylessness of vagueness. And so borderline cases must be understood as being “unsharp.”
That is, there must be no fact of the matter about exactly which items are borderline cases.

In the case of strict borderline cases, even if they were unsharp, they would not contribute to an absence of sharp boundaries. And so, while there is no technical barrier to unsharp, strict borderline cases, they are not often considered for inclusion in a theory of vagueness. What characterizes strict borderline cases is that they can only properly be described as ‘borderline’. That is, in order for an item to be a strict borderline case, it cannot be correctly described as ‘$F$’ or as ‘not $F$’. Unsharp, strict borderline cases would be those items in a sorites sequence that might be strict borderline cases, but might not. It is strange to imagine an item such that “maybe it must be called ‘borderline’.” If it is possible that the item could properly be called ‘$F$’, then how could it be mandatory to call it ‘borderline’? It seems less strange when we consider that the category “strict borderline” functions in just the way that $F$ and not-$F$ do. If some items in a sorites sequence are strict borderline cases, then the single, complex sorites sequence can be

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51 A brief terminological note may be needed here. The notion of “boundarylessness” is often used in theories of vagueness. Of course, in a sorites sequence we do somehow get from $F$ to not-$F$, and so there is a boundary between them, however blurred. Advocates of the boundarylessness of vague terms do not believe they have no boundaries at all. My own use of “boundarylessness” has been in keeping with that typical usage. Now that I am spelling out the details, however, I will attempt to avoid confusion on this point by calling our options ‘sharp’ and ‘unsharp’ rather than ‘bounded’ and ‘unbounded’. The difference between a sharp boundary and an unsharp boundary can be visualized in this way: When you draw a line down the middle of a page with an ultra-fine point pen, it is only 0.3mm wide. A line drawn on a wet page, with watercolors and a broad brush, might be as wide as 5cm, and without distinct edges.

52 There is at least one interesting theory of vagueness that takes such claims very seriously. Ruth Weintraub (2004) proposes a variety of epistemicism that postulates not only the existence of one unknowable sharp boundary between $F$ and not $F$, but also the existence of unknowable sharp boundaries between intermediate statuses like ‘borderline’. Her view is an interesting kind of hybrid theory of vagueness, joining epistemicism with a degree theory of truth. Since the “maybe” is epistemic on her view, there is nothing strange about the claim that “maybe it must be called ‘borderline’.”
more simply described as two sorites sequences. The reasoning is as described in subsection A, when I compared the introduction of a category called (strict) ‘borderline’ to the introduction of a category called ‘turquoise’: A sequence from blue to green may have strict borderline cases in the middle. But if that sequence exhibits vagueness, then there will be some lax borderline cases on either side of that intermediate category. And so we might reasonably say that there are, in fact, two “simple” sorites sequences: one from blue to borderline, and the other from borderline to green. Given that important similarity between (strict) ‘borderline’ and ‘F’, it is perfectly natural to think that just as there could be items in the sequence that “maybe must be called ‘F’,” there could also be items that “maybe must be called ‘borderline’. ” Although unsharp, strict borderline cases are possible, they do nothing to guarantee boundarylessness, and so cannot be used as the central element in a successful theory of vagueness.

It is easier to see how lax borderline cases could be unsharp. The very sort of permissibility that characterizes lax borderline cases could be thought to apply to higher-order questions, too. That is, not only is it permissible to call a lax borderline case either ‘F’, ‘borderline’, or ‘not-F’, but there is additional openness about just which items in the sequence are lax borderline cases. So on a forced march through a sorites sequence, we can identify two sorts of permissibility: First, there is no particular point at which you are required to switch from calling the items ‘F’ to calling them ‘not-F’. Rather, it is permissible for you to stipulate an arbitrary, sharp boundary anywhere within a range of
items. Second, there is no particular point at which that range of items begins or ends—it is permissible for you to stipulate arbitrary, sharp boundaries around the range of items as well. That means in our sorites sequence from blue to green, there is (first) no point at which you must switch from ‘blue’ to ‘green’, and there is (second) no point at which you must switch from ‘must call ‘blue’’ to ‘may call either ‘blue’ or something else’. If necessary, this sort of permissibility could be iterated beyond the second-order question. In practice, however, such iteration is rarely needed. Sometimes further precision is needed, and so we stipulate an arbitrary sharp boundary (the first-order case). On rare occasion, someone might ask about the limits of where you could have drawn that boundary (the second-order case). But it would be very strange to ask where you could have drawn the second-order boundaries—the question is irrelevant to ordinary reasoning.

3.4 My preferred notion of ‘borderline case’

Now I will use the distinctions between strict and lax and between sharp and unsharp to consider which of the possible meanings of ‘borderline case’ can be used as the central component of an adequate theory of vagueness—one that meets both success

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53 ‘Arbitrary’ may not be the best choice of words. When I decide to stipulate that x grains of sand is a heap, it is wholly arbitrary. But when the American Medical Association decides that death occurs x minutes following the cessation of brain function, for the purpose of organ harvesting, it is only marginally arbitrary. A better way to describe stipulative boundaries might be “essentially contestable and revocable.” For brevity’s sake, I will stick with ‘arbitrary’ throughout Chapter 3, but I do not mean to imply that reasons never have any bearing on where one draws a sharp boundary. All I mean by ‘arbitrary’ is that the location of one’s sharp boundary is not entirely determined by one’s reasons; under a powerful enough microscope, there is some degree of arbitrariness even in the AMA’s choice of x minutes (rather than, say, x minutes and 0.2 seconds). Where the details become more important, in Chapter 4, I change terminology.
criteria. First, in order to meet BOUNDARYLESS, the borderline cases in a sorites sequence should not be sharply bounded. So the relevant notion of ‘borderline case’ must be unsharp, rather than sharp. As I argued above, unsharp strict borderline cases can be part of a sorites sequence, but can do nothing to explain the boundarylessness that is central to vagueness. Strict borderline cases divide a sorites sequence into two: $F$ to borderline, and borderline to not-$F$. Lax borderline cases must then bear all the explanatory weight in a theory of vagueness. And so the notion essential to characterizing vagueness is unsharp, lax borderline cases. That is not to say that the term ‘borderline case’ cannot, or should not, be used in other ways. Unsharp, lax borderline cases are the only sort that are useful for explaining vagueness, but that need not constrain our use of the terms ‘borderline’ and ‘borderline case’ in other contexts.

Can a theory employing unsharp, lax borderline cases also meet REASON? Recall, what REASON requires is that a theory of vagueness should explain, in a psychologically plausible way, how our reasoning can accommodate vague predicates with suitable logical rigor. In particular, it must somehow account for the sorites paradox. Throughout, I have placed less emphasis on REASON and more on BOUNDARYLESS (particularly in Chapter 2, but also in the present chapter). That emphasis was motivated by these two considerations: First, all of the philosophers mentioned in this work are deeply concerned with the goal of accommodating vague predicates with suitable logical rigor. There is some entrenched disagreement about what counts as suitable logical rigor, but none of the contenders in the debate have failed, by their own lights, to meet that goal. Second, it is hard to objectively assess the other part of REASON, that a theory’s explanation should be
psychologically plausible. In Chapter 1, I noted that multi-valued logic theories of vagueness tend not to be psychologically plausible, but I did not raise the same concern about any of the theories I described in Chapter 2. That is because none of those theories are obviously psychologically implausible. All of them meet REASON, at least minimally. It remains to be seen whether my account of borderline cases can also allow a theory to do so. In Chapter 4, I develop a theory of vagueness based upon unsharp, lax borderline cases. That theory, I argue, does meet both BOUNDARYLESS and REASON.
4. A THEORY OF VAGUENESS

It remains to be seen whether my account of borderline cases can be the key component of a psychologically plausible and suitably rigorous theory of vagueness (that is, whether it can enable a theory of vagueness to meet REASON). I will now propose a theory of vagueness with lax, unsharp borderline cases as its central explanatory mechanism. If the theory is successful, as I believe it is, then it is excellent evidence for the success of my account of borderline cases. If I am mistaken about my theory’s success, all is not lost. My account of borderline cases could still be used as part of a different theory.

Section 4.1 is a description of my theory of vagueness, which I call “vagueness as permission.” There, I present the theory, explain the role of lax, unsharp borderline cases in it, and show that it meets (and excels at) my two success criteria for descriptive theories of vagueness. Section 4.1 is divided into sub-sections that account for different uses of vague predicates, which I call “the normal case” and “the tougher case.” Section 4.2 is a comparison between vagueness as permission and epistemicism. The two theories have some interesting similarities, particularly with respect to their handling of “the normal case” of vague predicate use. Section 4.3 is a comparison between vagueness as permission and supervaluationism. The similarities between those two views are particularly notable with respect to “the tougher case” of vague predicate use; one purpose of Section 4.3 is to clearly differentiate vagueness as permission from supervaluationism. There, I also discuss truth according to vagueness as permission, by
contrast with the notion of truth employed by supervaluationism. In Section 4.4, I conclude the chapter and the work as a whole, with a summary of what has been accomplished, and some thoughts about directions for future research.

4.1 Vagueness as permission

According to the theory of vagueness as permission, a predicate is vague if and only if it has lax, unsharp borderline cases. A lax borderline case for a predicate $F$ is an item that may be described correctly in any one of these ways: $F$, not-$F$, or borderline-$F$. And so laxness is characterized by a certain kind of permission: it is permissible to describe the case in any of those ways. The borderline cases for a predicate $F$ are unsharp just in case they do not form a clearly bounded set. Unsharp borderline cases are also distinguished by a kind of permissibility: it is permissible to count some items either as among the borderline cases or not.

That minimal description is insufficient to illustrate how the theory works as a resolution to the sorites paradox, or as an account of actual linguistic practice. In particular, it is difficult to see how to make sense of unsharpness, especially in a theory that preserves classical logic. I think of ordinary uses of vague terms as belonging to one of two kinds, and so my demonstration has two parts. I must show that it works in what I call “the normal case,” and also in “the tougher case.”

4.1.1 The normal case
First, in the normal case, vague terms are given no more attention than non-vague
terms. They require no special explanation, and create no special difficulties in
communication. That is because most of the time we use vague terms cautiously.
Consider again the sequence of 32 tiles from blue to green, with which I began Chapter 1.
If you asked me to hand you all and only the blue tiles, I would be right to ask for
clarification. But now suppose that the ten tiles in the middle of the sequence had been
removed before you made your request. There would be nothing puzzling about your
request under those new circumstances. Ordinarily, people do not make requests of the
first sort, but do make requests of the second sort.

Or imagine that I am trying to help you find my car, as you stand in a parking lot
and talk with me on the phone. I would describe it using only predicates of which it is a
clear case. I would tell you its make and model, and I might mention its various scratches
and dents, but since it is a blue-gray color, I would not describe it as either blue or gray.
If a car is anywhere near the borderline cases between blue and gray, I would cautiously
avoid calling it either ‘blue’ or ‘gray’. Instead, I would choose a color word of which it
is a clear case, such as ‘blue-gray’. The color word ‘blue-gray’, like ‘blue’ and ‘gray’, is
vague. So my preference for ‘blue-gray’ does not indicate an aversion to the use of vague
terms. What I avoid, and what I think people generally avoid, is the use of a vague term

54 There is a sense in which ‘cautious’ is misleading. When I am just chatting comfortably, my uses of
vague words will tend to be cautious, but my attitude will not—my attitude is likely to be quite
unreflective. People do not usually think very carefully about their word choices, including their uses of
vague terms. So it would often be a mistake to describe a person as cautious in her use of vague terms, even
when her uses themselves can be correctly described as cautious.
to describe something that is not a clear case of it. Such incautious uses, when they do occur, are likely to hinder communication.

Consider one more example of a normal case: Suppose I ask my husband to put all of the folded T-shirts on the top shelf in the closet. There are probably a great many borderline cases of T-shirts in the world. There are art objects that look like T-shirts but lack the characteristic function of T-shirts. There are undershirts that could reasonably be called T-shirts, but that would only be worn under another shirt, rather than by themselves, as paradigm T-shirts are worn. There are henleys. If my husband had all of those borderline cases to contend with, I would not make such a vague request. Under those more complicated circumstances, my request would be an incautious use of a vague term, and would probably irritate my husband. In ordinary communication, we only use vague words when we expect their meaning to be clear, given the cases that are relevant in the particular context in which we find ourselves.\(^{55}\)

Those examples illustrate several important points about the normal case. First, when borderline cases of \(F\) (for some vague predicate \(F\)) are salient in a conversational context, there are certain ways in which we avoid using \(F\) and not-\(F\). For example, I should not describe my car as ‘blue’ in the circumstances described above, since it is a borderline case of blue. And I should not ask my husband to put away the T-shirts if there

\(^{55}\) Vagueness is often purposely exploited. Neither I nor my husband knows the precise boundaries of any T-shirt, so we both leave open the question of which particles of a given T-shirt count as part of it. Since the two of us have similar perceptual and cognitive resources, we are likely to leave ‘T-shirt’ vague to approximately the same degree. That is one essential sort of exploitation of vagueness. Less essential, but equally interesting, is the very conscious exploitation of vagueness that we find in, say, legal and academic writing. In order to avoid making the strong claim that \(x\) causes \(y\), one might write, “There is an apparently causal relation between \(x\) and \(y\).” Is that “causal relation” causation? The author sidesteps the question by very carefully avoiding precise words. Vagueness allows us to be evasive, to avoid commitments, to remain open to further developments, and so on.
are borderline T-shirts lying around. On the other hand, if my car were a paradigmatic
shade of blue, then it would be fine to call it blue, even if many of the cars in the parking
lot were borderline cases.\footnote{It could be a bit confusing since you might wonder whether my car is a paradigm case of blue or one of
the borderline cases, but you would probably suppose that I was using ‘blue’ in a cautious way, and so look
for a car that is clearly blue.} That is, we avoid using a vague predicate $F$ when universally
quantifying over items some of which are borderline cases of $F$, and also when making a
claim about a single item that is a borderline case. We can confidently use a vague word
when we are universally quantifying over a restricted domain in which there are no
borderline cases, and also when making a claim about a single item that is not a
borderline case.

Second is a related point: the mere possibility of borderline cases does not affect
ordinary judgments. That is, when no borderline cases of $F$ are in the domain of
discourse, we use $F$ and not-$F$ just as we would use a non-vague predicate. It may be
perfectly possible to imagine borderline cases, but those do not prevent us from
classifying any of the things before us as either $F$ or not-$F$. For example, once the unclear
cases are removed from a sorites sequence, it is easy to classify all the remaining items as
either $F$ or not-$F$. And if there are no borderline T-shirts in the laundry basket, I can use
the vague term ‘T-shirts’ as if the things of that sort form a sharply bounded set.

Third, it is often unclear what counts as a borderline case; the unsharpness of
borderline cases is accommodated in practice by our reluctance to describe something as
$F$ unless it is a clear case of $F$. To avoid causing confusion, we do not use $F$ to describe
anything that even approaches a borderline region for $F$. For example, suppose after some
reflection I decide that my car is sufficiently blue to be called ‘blue’. I would still have to concede that it is not a perfectly clear case of ‘blue’. And so caution requires that I avoid using ‘blue’ to describe my car to my friend on the phone. I should (and probably would) recognize the possibility of miscommunication, and so describe the car using a color term of which my car is a very clear case. Similarly, I might think it is obvious that art objects, undershirts, and henleys are not T-shirts. Still, I should recognize the possibility of confusion and so use ‘T-shirt’ only when the domain of discourse does not include anything even approaching its borderline region.

Fourth, describing a thing using only predicates of which it is a clear case sometimes requires the use of more specific predicates. In the example of my blue-gray car, a person might initially intend to describe it using a very broad color name (say, a color name drawn from a box of eight crayons). On reflection, though, it is apparent that the car is not a clear case of any of those colors. To avoid confusion, a more specific color name should be used.

What is characteristic of the normal case is the apparent irrelevance of vagueness to a vague term’s successful use. The vagueness of ‘T-shirt’ is unlikely to be noticed if the only shirts under consideration are either clear cases of T-shirts or clear cases of non-T-shirts. Because we normally use vague terms under just such circumstances, their vagueness does not arise as a problem for communication, and so does not come to our attention. We notice vagueness, and find it problematic, precisely on those occasions when a vague term is used incautiously, or when we are pressed to use a vague term
incautiously. (The latter kind of circumstance is “the tougher case,” described below in section 4.1.2.)

In the Preface, I argued for the ubiquity of vagueness by calling attention to the vagueness of these apparently non-vague terms: ‘now’, ‘six feet tall’, and ‘organism’. Our tendency to think of those terms as non-vague can now be explained. It is very rare to be confronted with borderline cases of those terms, and so we do not often have to decide whether to use them incautiously or to use a different term. (E.g., most of the time, we are confronted only with things that are either clear cases of ‘organism’ or are clear cases of ‘non-organism’.) Vague terms that appear to be non-vague, like organism, are those that are easy for us to use cautiously. Paradigmatically vague terms, on the other hand, like ‘heap’, ‘bald’, ‘tall’, and ‘blue’, are terms that confront us with unclear cases more often, and so are harder to use cautiously. Vagueness comes to our attention when we realize that we are in danger of using a term incautiously, or when we become aware that someone else has used a term incautiously. (I notice the vagueness of ‘organism’ either when I catch myself about to lump viruses together with sheep and ferns, or when I realize someone else has done so.)

All of that is on the way to explaining what it could be for borderline cases to be lax and unsharp. In the normal case, not only do we refuse to pinpoint a sharp boundary between the extension of a vague predicate and its anti-extension, we also refuse to make judgments anywhere near such a boundary. Such a practice does not establish sharp boundaries around a set of borderline cases because it recommends avoiding judgments of \( F \) or not- \( F \) for any items that are not well outside the unclear, borderline region. It
leaves undecided what to say about the borderline cases, and where the borderline cases begin and end. In that way, no sharp boundaries are posited at all. Vague terms have no genuine sharp boundaries because of the two kinds of permissibility common to all vague terms. And so we see that the theory of vagueness as permission meets BOUNDARYLESS in the normal case.

What about REASON? There are two parts to REASON: psychological plausibility and suitable logical rigor. I have chosen examples that I think illustrate well the psychological plausibility of my theory, but I was not “cherry-picking.” Such examples are easy to come by. Most ordinary uses of vague terms are plausibly described as instances of the “normal case” of vagueness. (When a diner orders steak “medium rare,” he expects it to be clearly medium rare, not a borderline case. If a product labeled ‘ground coffee’ at the grocery store is 10% roasted acorns and dirt, customers have a legitimate complaint. By calling the product ‘ground coffee’, the producer induces a reasonable expectation that it is 100% coffee—being 10% acorns and dirt makes the product at least a possible borderline case of non-coffee. And so on.) Another point in favor of the plausibility of vagueness as permission is that the normal case of using a vague term requires no special, complicated reasoning. Vague terms are used in much the same way as non-vague terms, except that vague terms have some flexibility built into their meanings. That is, we may choose to be somewhat more or less cautious in our use of a vague term, depending upon the circumstances in which we use it. But in the normal case, our uses of vague terms are always sufficiently cautious that vague terms fit into the same logical models as non-vague terms. And so vagueness as permission, in the normal
case, is also suitably logically rigorous. It is consistent with classical logic, including bivalence.

A bit more explanation is perhaps warranted. In the normal case, the key to preserving bivalence is that the only items evaluated with respect to a vague predicate $F$ are all either clearly $F$ or clearly not-$F$. That is, in practice, we simply do not make judgments about whether an item is $F$ unless we can do so cautiously. There are two ways in which that can happen. In one, it is as though every sorites sequence has all of the possibly controversial middle cases removed. In the limited domain of discourse that remains, it is easy to say which items are $F$ and which are not-$F$, even though $F$ is vague. One might even say that, relative to that domain of discourse, $F$ is not vague. Or, more carefully, the vagueness of $F$ would only be apparent relative to some other domain of discourse (but if that other domain were operative, then we could not cautiously use $F$ to describe the items in it). Bivalence holds here because all of the items in the domain of discourse simply are either $F$ or not-$F$.

The other kind of cautious use occurs when someone says of just one item, $x$, that it is $F$, and in fact, $x$ is a clear case of either $F$ or not-$F$. Here, we also remain silent about borderline cases of $F$, but for a different reason than above. The question of where to draw the line between the $F$s and the not-$F$s does not even arise in this case, because we do not universally quantify over the items in the domain of discourse. By saying that $x$ is $F$, I do not thereby commit myself to a full theory of $F$s, nor do I even commit to a fully determinate domain of discourse. If I know that $x$ is $F$, I need no additional knowledge about $F$s for my belief to be true. In this sort of case, we reason not so much as if there is
a sharp boundary between $F$s and not-$F$s, but rather without attending to the presence or absence of a sharp boundary. Where is the boundary, then, that will allow us to use the principle of bivalence? When considering only one statement, which is either true or false, bivalence holds of that statement. No boundary is needed for that. If pressed to indicate a boundary, in order to adjudicate some other, less straightforward claims about $F$-ness, we would be put into “the tougher case.” But a single claim about an individual item that is a clear case of $F$ does not require that we think about $F$’s boundaries at all. There is nothing contrary to bivalence in this, nor anything contrary to boundarylessness. It would be foolish to deny that the concept of $F$ has some sort of boundaries somewhere (since not everything is $F$), but boundaries are irrelevant to our reasoning in this sort of case.

I do not insist that it is necessary for a theory of vagueness to preserve bivalence in order to meet REASON; what counts as suitable logical rigor for a theory of vagueness is debatable. What is certain is that the preservation of classical logic including bivalence does count as suitable logical rigor. Furthermore, since vagueness as permission is consistent with all of classical logic, it might be thought to raise the bar for other theories of vagueness. That is, it may previously have seemed alright for a theory of vagueness to abandon bivalence only because we were convinced that it could not be preserved in any plausible way.\footnote{That is a bit unfair. Bivalence is preserved by Williamson’s and Sorensen’s epistemicist theories. But those theories are often thought to be implausible, and to fail to accommodate boundarylessness adequately. While those versions of epistemicism preserve bivalence, they are often rejected on the grounds that they fail to meet the other criteria necessary for success.}
4.1.2 The tougher case

I have so far argued that vagueness as permission, in the “normal case,” includes lax, unsharp borderline cases, and retains bivalence, and that as a result, it meets both BOUNDARYLESS and REASON. What about the “tougher case?” There are times when we find ourselves inclined to make judgments about borderline cases or possible borderline cases. In the tougher case, we do not avoid the problems of vagueness by caution alone. Instead, we confront vagueness directly, by making a stipulation about the extension of a vague term.\(^{58}\) What is characteristic of vague predicates is that there are items to which we may either apply them or not, and those items do not form a sharply bounded set: lax, unsharp borderline cases. In the normal case, we cautiously avoid making judgments about those problematic items. In the tougher case we do not. For example, when we use vague predicates in circumstances that require a higher-than-usual degree of precision, we must make judgments even about borderline cases. We can do so by taking advantage of the permission we have to stipulate boundaries.

For example, the United States’ Centers for Disease Control and Prevention (the CDC) has stipulated that a person is overweight if and only if his or her body mass index (BMI), a simple function of height and weight, is between 25 and 29.9.\(^{59}\) It is perfectly obvious that one pound does not make a difference between a healthy weight and an unhealthy weight, but one pound can make a difference between one body mass index

\(^{58}\) I call it the “tougher case” because it requires more effort on the part of the ordinary speaker, not because it is tougher for a theorist of vagueness to accommodate.

\(^{59}\) http://www.cdc.gov/healthyweight/assessing/bmi/
and another. The CDC’s stipulation is useful for many purposes: researchers can use it as a standard metric in studies on the health consequences of being overweight and in studies that need to control for that factor, individuals can use it to tell whether they should consider losing weight, and so on. Nevertheless, the stipulation is somewhat arbitrary. One pound more or less does not have a measurable effect on a person’s overall health. We speak as though there is a sharp boundary because it is useful to do so, and because we are permitted to do so, not because there is actually a sharp boundary between people of a healthy weight and people who are overweight.

‘Overweight’ is certainly vague in ordinary usage, and is still vague according to the CDC’s definition, though less so. The stipulation made by the CDC makes their meaning of ‘overweight’ more precise—not perfectly precise, but sufficiently precise for the ordinary research and diagnostic purposes we have. Vagueness is a kind of semantic indecision, and stipulatively narrowing what a vague word means, by making a further decision about how we will use it in some contexts, is a way of handling problematic vagueness, while still leaving the vague word vague. The CDC’s definition of ‘overweight’ has been somewhat further decided in just that way. The effects of that decision ripple throughout the rest of the language. For example, the meanings of ‘healthy weight’ and ‘obese’ must obviously be decided in tandem. That is, if ‘overweight’ refers to people with a BMI between 25 and 29.9, then the BMI of a person

60 Presumably if a person’s weight routinely varies by 1 pound over the course of each day, such that his BMI is 24 in the morning, but 25 in the evening, we would not say that he is a healthy weight every morning, but overweight every evening. Furthermore, it would be absurd for a doctor to give different recommendations to people who are in very similar physical condition, except that one is a single ounce heavier than the other, and has a BMI of 25 (rather than 24) only because of that ounce and ordinary numerical rounding conventions.
with a healthy weight cannot be 25 or greater, and the BMI of an obese person cannot be 29.9 or less. In a less direct way, the meanings of words like ‘fat’ and ‘fit’ are affected; even less directly, what is meant by ‘reasonable serving size of food’ is affected. When such a decision is made about a vague term, let us call the whole shift in meaning that results from it a “partial stipulation.” (This is akin to the supervaluationist notion of a “precisification” except that a precisification is fully determinate, whereas a partial stipulation is only somewhat further decided. I discuss the differences between those two concepts more fully in section 4.3.) Vague terms are often most useful when their meanings are left open, as in the normal case, but sometimes we encounter a tougher case, and a stipulation is appropriate. Under those circumstances, it is permissible to stipulate a sharp boundary (where “sharp” is relative to one’s domain of discourse), and thereby to choose an entire partial stipulation.

Handling the tougher cases can be thought of as a two-step process. First, you determine where a line may be drawn, that is, you determine roughly which items are borderline cases. Second, you choose where, within that range, to draw your sharp boundary, subsequently speaking and reasoning as if it were a metaphysically and semantically significant line. Both steps require some explanation. Suppose a medical researcher, prior to the standardization of the CDC’s definition of ‘overweight’, wanted to determine whether being overweight increases a person’s risk for heart disease, as compared to people of a healthy weight.\(^6\) The ordinary usage of ‘overweight’ is not

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\(^6\) I am simplifying the case somewhat. One obvious point I have omitted is that the meaning of ‘overweight’ not only needs a lower boundary, but also an upper boundary (a line between ‘overweight’ and ‘obese’). Discussing that additional line would not change my story in any significant way, but would
without meaning—it does constrain who may be counted as overweight, to some extent. However, it is not sufficiently precise to permit reproducible research. In choosing where to draw the line between ‘healthy weight’ and ‘overweight’, the researcher may not violate ordinary usage (at least not very much). The lines should be drawn somewhere within the borderline case regions. It can be visualized in this way:

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healthy weight-----------------|----------------overweight
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The sequence represents people who are organized by the degree to which they are overweight. Those toward the far left are clearly of a healthy weight, those toward the far right are clearly overweight. The vertical line in the middle is a stipulated boundary somewhere in the midst of the borderline cases. The ordinary meanings of our terms partly constrain who can correctly be described by ‘is a healthy weight’ and ‘is overweight’. But those partial constraints are inadequately precise for scientific research; a sharper boundary (like our vertical line) must be drawn.

The researcher should begin by considering how to quantify the factors that are relevant for ordinary judgments about whether someone is overweight. For example, she might choose a simple numerical ratio of height to weight, such a ratio adjusted for differences in muscle mass relative to fat mass, or the circumference of the waist or neck. After arranging the sequence according to some quantifiable principle, and determining roughly which cases are borderline cases, the researcher could either arbitrarily stipulate a boundary between ‘healthy weight’ and ‘overweight’, or could perform a study and then draw lines on the basis of the results. If the researcher finds a sharp rise in the

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require that I tell the same story for two sorites sequences at once. I will spare you that unnecessary complexity.
incidence of heart disease just at the line between people with a BMI of 24.9 and those with a BMI of 25, she would have excellent reason to draw the line there. Absent such an unlikely natural break, it is up to her to choose where, in the range of borderline cases, to stipulate a boundary.

Once the needed boundary has been drawn, the problematic vagueness has been eliminated. The cases in the relevant domain of discourse are divided neatly into the Fs and the not-Fs, so we may employ the predicate ‘F’ in our reasoning without requiring a non-classical or many-valued logic. In our example, ‘overweight’ is no longer a problematically vague term because all of the people in the domain of discourse can be classified either as overweight or not. And so future research on, say, the effects of smoking on the incidence of heart disease, can easily control for the factor of being overweight. The meanings of ‘overweight’ and related terms have been rendered sufficiently precise for the purpose of medical research; the chosen partial stipulation does not include any problematic vagueness, given the relevant domain of discourse.

That is basically how bivalence is preserved in the tougher case (though I say more about it below, in section 4.3.2), but what about the absence of sharp boundaries? I have proposed that a boundary should be posited. That seems antithetical to the boundarylessness of vague predicates. Here we see the theoretical importance of the partial stipulation. The boundary drawn between ‘healthy weight’ and ‘overweight’ is sharp only relative to a given domain of discourse. As a result, it does not eliminate all the boundarylessness in ‘overweight’; relative to a more precisely specified sequence, the line our researcher draws would not be sharp. In addition, the boundary drawn between
‘healthy weight’ and ‘overweight’ is essentially contestable and revocable.\textsuperscript{62} As a result, it does not indicate a genuine sharp boundary; the boundary is a semantic and conceptual tool, a component of our partial stipulation, not of the world itself. Until such a boundary becomes standardized and codified (as by the CDC), a researcher is perfectly within her rights in choosing a different place to draw the line, within the borderline region. We avoid problematic vagueness by choosing a partial stipulation when needed, then reasoning with classical, bivalent logic; doing so can give the chosen partial stipulation an air of semantic or metaphysical importance, but it in fact has none. Choosing a partial stipulation is a strategy for eliminating problematic semantic indecision, it is not semantically or metaphysically committing.

What about the danger of sharp boundaries dividing the borderline cases from the clear cases? Above, I said that the first step in drawing a line is to determine which cases are borderline cases, but that seems to imply that the borderline cases are themselves sharply bounded. That is, we are permitted to draw a boundary only within the range of borderline cases. But that range must itself be only vaguely determined. How, then, can we know whether a stipulation is acceptable? In keeping with my account of borderline cases, they must not only be lax but also unsharp. Choosing a partial stipulation by stipulating a boundary anywhere within the borderline cases captures the \textit{laxness of}

\begin{footnotesize}
\begin{itemize}
\item It is tempting to say of such decisions that they are \textit{arbitrary}, and much of the time that is accurate. Sometimes, though, closer scrutiny results in what appears to be a very natural place to draw a sharp boundary. In that case, our choice of where to draw the line is not arbitrary; there is good reason to draw a line where it is most natural to do so. Future discoveries could later incline us to revoke the boundary, however. It remains contestable and revocable. For example, if heart disease is far more likely for people with a BMI of 25 or higher than for people with a BMI of 24.9 and lower, that is a natural place for the line. But if diabetes risk increases sharply just at the break between a BMI of 25.4 and 25.5, we would have a competing, equally natural place to draw the line. Most of the time, of course, there is not even one natural place to draw a line in a sorites sequence.
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borderline cases; we are permitted to decide of each borderline case whether it is $F$ or not-$F$.

Unsharpness requires that the borderline case region does not have sharp boundaries at its edges. The key to preserving unsharpness is caution. As in the normal case, there is a kind of caution at work in our practical decision making about the meanings of vague predicates. Just as a cautious use of ‘blue’ is one that applies the predicate only to clear cases of blueness, similarly, a cautious use of ‘borderline case’ results in a boundary that is drawn clearly within the range of cases that could be called ‘borderline’. Caution requires that we do not specify a sharp boundary anywhere near the edge of the borderline cases. The difference can be visualized thus:

- **Cautious:** healthy weight-----------------|----------------------overweight
- **Incautious:** healthy weight----------------------|overweight

Compare that to a cautious and incautious use of the term ‘blue’ in the normal case.

- **Cautious:** The French flag includes one blue stripe.
- **Incautious:** My car is blue. (Recall, my car is blue-gray.)

In the normal case, caution manifests itself in our tendency to use vague predicates only when no borderline cases present themselves. In the tougher case, when there are borderline cases on the table, caution manifests itself in our tendency to stipulate a boundary only well within the range of the borderline cases.

A question immediately presents itself. What if someone asks where the edge of the borderline cases is? That is, what is last place in the sequence where it is permissible

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63 That is, we may do so provided our decisions are consistent. Part of the point of speaking in terms of an entire partial stipulation is that it ensures that if someone with $n$ hairs is bald, then someone with $n-50$ hairs is also bald.
to draw a line? The asker of that question is treating ‘borderline’ as a new first-order category, like ‘blue’ or ‘green’, and we are being asked to choose another boundary between $F$ and not-$F$, where not-$F$ now denotes what was previously called ‘borderline cases’. The very same mechanism I described above can be used for this more specific question. Rather than choose a boundary between ‘blue’ and ‘green’, I must choose a boundary between ‘blue’ and ‘turquoise’ (I will not persist in calling the not-$F$ category ‘borderline’, since that would be unnecessarily confusing). As in the case of ‘blue’ and ‘green’, there are borderline cases between ‘blue’ and ‘turquoise’, so I should draw my new boundary cautiously in the middle of those borderline cases. I can iterate the procedure as needed, although in practice it is not often necessary to iterate very much.

The process can be illustrated in this way:

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blue----------------------------------------(borderline)----------------------------green
blue-----------------(borderline)----------turquoise
RB-----(BDLN)-----REB
```

(where RB stands in for ‘royal blue’, BDLN for ‘borderline’, and REB for ‘robin’s egg blue’)

In the first sequence, we may draw a boundary between blue and green. That line will allow us to use blue and green in bivalent classical logic, on our chosen partial stipulation. The line is drawn somewhere cautiously in the midst of the borderline cases. The second sequence is aligned with the first sequence so that the borderline cases of the first are directly above the turquoise cases of the second. When someone asks, about the first sequence, where the boundary between blue and borderline is located, they (perhaps unwittingly) move us down to the second sequence. Their question is answered by stipulating a line in the midst of the borderline cases between blue and turquoise. If the same question is asked about the second sequence (where is the boundary between blue
and this new sort of borderline?), then we are moved down to the third.\textsuperscript{64} In each case, when asked to specify more precisely what is meant by a term, we are able to fix an approximate range for the borderline cases between that term and another, and to draw a line cautiously in the midst of those borderline cases. But in none of the sequences depicted above are the borderline cases themselves sharply bounded. Each time we draw a boundary, it is within a set of lax, \textit{unsharp} borderline cases. Moving down to the next sequence indicates a shift in the domain of discourse, and requires a new partial stipulation. So, on each partial stipulation there is a “sharp” boundary, drawn cautiously within the lax, unsharp borderline cases; on no partial stipulation is there a set of sharp borderline cases.\textsuperscript{65}

The same process could be described in terms of higher-order borderline cases. It is just a different way of describing the same thing, and I think it adds unnecessary complication, so I prefer the formulation given above. Nevertheless, it is interesting to see how the process would work if higher-order borderline cases were part of the theory:

\begin{verbatim}
blue--------------------------------------------BDLN------------------------green
blue--------------------------2\textsuperscript{nd} order BDLN-------BDLN
blue----3\textsuperscript{rd} order BDLN------2\textsuperscript{nd} order BDLN
\end{verbatim}

This is clearly not what speakers are doing in ordinary conversations. It is structurally parallel to the formulation in terms of turquoise and robin’s egg blue, but it is a far less plausible description of actual practice. To the extent that higher-order borderline cases

\textsuperscript{64} In a discrete sorites sequence, this process can only be iterated so many times. Once each item is in its own category, no further stipulation can be requested or made.

\textsuperscript{65} Why is ‘sharp’ in scare quotes? Because the boundary is sharp only relative to the partial stipulation for which it was drawn. It is not sharp simpliciter, or sharp relative to all partial stipulations.
are a good way to describe ordinary uses of vague terms, their usefulness is parasitic on the formulation that does not make use of higher-order borderline cases.

To summarize, the difficulty I have just attempted to resolve is the following: When the meaning of a term is further stipulated, a decision is made about where to draw a boundary, and thereby a partial stipulation is chosen. I have said that a partial stipulation further decides the meaning of a vague term only partially, not fully. Given that, is it a *sharp* boundary? The boundaries we draw must be sharp enough to preserve bivalence, but not sharp in a way that undermines the boundarylessness of vague terms.

Bivalence is preserved because, in the tougher case, every use of a vague predicate occurs within some particular domain of discourse, and a suitable partial stipulation determines what to say about each item within that domain. There may be other items in a different domain that remain undecided, but those items are irrelevant. For example, if I decide to use ‘blue’ and ‘green’ in such a way that tiles 1-16 are blue, and tiles 17-32 are green, I thereby choose a partial stipulation and a sharp boundary between blue and green. Every statement of the form, ‘Tile number \( n \) is blue’ is either true or false, given our partial stipulation and the limited domain of discourse. There are, of course, possible color tiles between tiles 16 and 17, on the blue-green continuum. With respect to those colors, the boundary I have stipulated is not sharp. But those in-between colors were not under consideration, and so it is right that my partial stipulation is silent about them. With respect to the relevant domain of discourse, and given my chosen partial stipulation, the notions of ‘blue’ and ‘green’ are perfectly apt for use in classical, bivalent logic.
In order to meet the principle BOUNDARYLESS, a theory of vagueness must somehow respect the intuition that there are no sharp boundaries in the sorites sequences of vague predicates. I might seem to have violated that principle, in the tougher case, by proposing that we should respond to a sorites sequence by positing a sharp boundary. Boundarylessness is respected, though, in two ways. First, the sharp boundaries we posit are not semantically or metaphysically committing. They are essentially contestable and revocable, merely a semantic and conceptual tool. In that way, laxness is ensured. Second, caution requires that we choose our sharp boundaries only well within the range of borderline cases, and so we avoid pronouncing upon where the edges of that range might be. When asked where the edges of the range of borderline cases are, we treat the borderline cases as a new, fixed category (call it $G$), and then stipulate a sharp boundary somewhere well within the range of borderline cases between $F$ and $G$. In that way, unsharpness is ensured. Lax, unsharp borderline cases are well-suited to the task of ensuring that BOUNDARYLESS is met.  

I have argued that vagueness as permission meets (and excels at) the success criteria for a theory of vagueness, in both the normal case and the tougher case. If I am right that those two cases are jointly exhaustive of how vague terms are used in practice, then vagueness as permission is a successful theory of vagueness.

4.2 Vagueness as permission and epistemicism

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66 At this point, all the essential parts of the theory of vagueness as permission are on the table. However, in section 4.3.2, I do a bit more to motivate my claim that bivalence is preserved. In particular, I there say more about which statements are true, and what truth is.
Epistemicism is laudable for its preservation of bivalent classical logic, but it preserves it only at the cost of proposing that vague predicates all harbor secret sharp boundaries—boundaries that we competent speakers do not (and maybe cannot) know. According to epistemicism, the predicate ‘heap’ is vague not because there is no determinate, semantically and metaphysically significant, perfectly sharp boundary between heaps and non-heaps, but because that boundary is unknown or unknowable. I disagree with the characterization of vague predicates as having genuine sharp boundaries, but I think ordinary reasoning may often be described as working in such a way that it is as if there were such sharp boundaries. Specifically, vagueness as permission is comparable to epistemicism in certain instances of the normal case.

Recall, in the normal case, we sometimes universally quantify over a restricted domain of discourse (one that includes no borderline cases of $F$, for some vague predicate $F$), and so within that domain, statements of the form ‘$x$ is $F$’ are either true or false of each item. At other times we apply a vague predicate to just one item that is a clear case of that predicate. Such a statement is either true or false. Although the domain of discourse may include items that are borderline cases of $F$, judgments about those items are cautiously avoided. What unites those two uses of a vague predicate, making it reasonable to call them both “the normal case,” is that neither of them requires

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67 I suspect that epistemicists need only be committed to the existence of semantically significant sharp boundaries; it is something of an historical accident that they tend to commit themselves to metaphysically significant sharp boundaries as well. The difference between the two is in whether vagueness is caused by our ignorance of precise meanings, or of precise metaphysical boundaries. Part of the attraction of epistemicism is that it allows the world to be sharply divided into real natural kinds, in spite of the ineradicable vagueness in our concepts and terms. Such a view requires metaphysically significant sharp boundaries, though epistemicism itself need not.
stipulation. They are, therefore, less complex than the “tougher case,” and more ordinary. It is the former sort of “normal case” use that is most like epistemicism.

An appropriately restricted domain of discourse allows us to use a vague predicate without attending to the possibility of borderline cases. When the domain of discourse contains only clear cases of blue and not-blue, it is easy to use the predicate ‘blue’ as if there were a sharp boundary between its extension and anti-extension, even though there is no such sharp boundary. The reason is that, relative to that limited domain of discourse, there is a sharp boundary. It is not sharp enough to classify all the possible cases, but it is sharp enough to classify the cases under consideration. Given that there are only clear cases of T-shirts in the laundry basket, my request to put the T-shirts on the top shelf is not problematically vague. Such a use of a vague predicate is cautious; it avoids the troublesome, unsharp range of borderline (and possibly borderline) cases. And so it is that we can use bivalent logic to reason about things that admit of vague characterization: The relevant cases are all clearly $F$ or not-$F$. We reason as if there were a genuine sharp boundary dividing $F$’s extension from its anti-extension, when that is really just a happy accident of the relevant domain of discourse.

The main similarity between epistemicism and vagueness as permission (particularly in the sort of normal case just described) is that both theories use boundaries to preserve bivalent classical logic. The main difference is in the kind of boundaries proposed by each theory: The perfectly sharp boundaries of epistemicism are genuine metaphysical boundaries, so there is a fact of the matter about whether each borderline-$F$ item is $F$ or is not-$F$. The boundaries of vagueness as permission are only precise relative
to a domain of discourse. In the normal case, there is no question of further stipulation, and yet we reason as if our concepts are bounded. It is as though epistemicism were true, but without any of the implausible semantic and metaphysical baggage. Suppose, as epistemicists do, that the (real) sharp boundaries of vague predicates are unknown and perhaps unknowable. Then when we use the principle of bivalence in our ordinary reasoning with a vague claim, the best we can do is to reason as if there is a sharp boundary somewhere within the borderline cases. We do not know where the real boundary lies. The existence of a genuine sharp boundary, therefore, would make no difference to ordinary linguistic practice. An unknowable sharp boundary can play no part in our use of a vague term.

Both vagueness as permission and epistemicism, I contend, are successful in preserving classical logic. Vagueness as permission, however, excels at BOUNDARYLESS, and is more plausible than epistemicism. Epistemicism meets BOUNDARYLESS only by proposing an error theory of meaning. The ordinary intuition that vague predicates lack sharp boundaries comes about because we fail to see that the meanings of our words outstrip what we know (or can know) about them. You think you know what ‘T-shirt’ means, but you are wrong. That is a way of respecting the intuition that vague predicates lack sharp boundaries, but it is not a plausible one. Since plausibility is, to some extent, in the eye of the beholder, I have allowed that epistemicism may be thought to meet my success criteria. It does not excel at them, though. Vagueness as permission, on the other hand, excels with respect to the plausibility clause of REASON and with respect to
BOUNDARYLESS. Thus, while both theories are at least minimally successful, vagueness as permission is more resoundingly successful.

4.3 Vagueness as permission and supervaluationism

Supervaluationism treats vagueness as a matter of semantic indecision, that is, a term is vague because we have not yet decided on its precise meaning. On that point, I agree. There are other parts of standard supervaluationism that I find less plausible, though. First, the logic of supervaluationism is “gappy” in that it describes borderline cases as leaving a truth-value gap—borderline cases are neither true nor false. That is not compatible with bivalence, and so it is a somewhat undesirable result. Second, like many semantic theories of vagueness, popular versions of supervaluationism frequently make use of an unexplained notion of borderline cases. As I argued in Chapter 2, section 2.5, that sometimes leads to serious trouble.

There are two important objections to supervaluationism that directly result from those two issues. First, because of the truth-value gap, supervaluationists must deny the principle of bivalence, and so they are often thought not to preserve classical logic adequately. Second, because supervaluationists generally do not sufficiently explain the nature of borderline cases, their theory is open to the accusation of being “wimpy”—that is, supervaluationism appears to describe vagueness as having no sharp boundaries, but ultimately does depend upon sharp boundaries (for example, between $F$ and borderline-

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68 As discussed in Chapter 2, Raffman rejects supervaluationism precisely because of its truth-value gaps.
F). I argue in the following subsection (4.3.1) that both objections are perfectly reasonable, given the wrong account of borderline cases. The theory of vagueness as permission has a defense against them because it employs lax, unsharp, borderline cases. It is worth noting that those objections parallel the two success criteria I proposed in Chapter 1; my account is designed to handle them.

I conclude my discussion of supervaluationism with a subsection on truth. In 4.3.2, I discuss the similarities and differences between the supervaluationist notion of truth and the vagueness-as-permission-ist notion of truth. Again, I argue that vagueness as permission has the advantage.

4.3.1 Problem-solving

As I said in section 4.1, I do not think it is obviously necessary for a theory of vagueness to retain the principle of bivalence in order to be suitably logically rigorous. However, the fact that vagueness as permission can preserve bivalence is a minor advantage. Wimpiness is a far more serious objection to standard accounts of supervaluationism. A theory does not account for genuine “robust” vagueness, that is, it does not properly accommodate BOUNDARYLESS, if it involves arbitrary precision. A non-robust theory is wimpy. Here is the original charge of wimpiness leveled against supervaluationism:

[T]ake the 'supervaluationist' approach. The leading idea is this: since a vague predicate can be assigned any of a variety of equally eligible potential extensions, a statement of the form 'Fa' is true if the referent of 'a' belongs to every eligible candidate-extension of 'F'; is false if the referent of 'a' belongs to no eligible
candidate-extension of 'F'; and otherwise is neither true nor false. On the surface, this way of treating vagueness looks laudably robust, since it explicitly acknowledges and accommodates a range of equally good ways to precisify a vague predicate. But its underlying wimpiness becomes evident as soon as one considers its implications for sorites sequences […] the approach is committed to a sharp dividing point between the last statement in the sequence that is true and the first statement that is not, and to a sharp dividing point between the last statement that is not false and first that is. But the choice of any specific dividing points is just another form of arbitrary precisification; for, a crucial aspect of the robustness of genuine vagueness is that there is no precise fact of the matter about truth-value transitions in sorites sequences. (Horgan, 1994, pp. 162-3)

One way of thinking about the problem is that the borderline cases typically employed by supervaluationists are sharp. Because the set of borderline cases is sharply bounded, there is arbitrary precision at the edges of the borderline cases. All the items in a sorites sequence can be divided (sharply) into those that are $F$, those that are borderline-$F$, and those that are not-$F$. But vague predicates do not seem to include any such sharp boundaries. If supervaluationism were bolstered with an account of lax, unsharp borderline cases, it could avoid wimpiness. The difficulty, of course, is in working out a supervaluationist theory that employs unsharp borderline cases. I have not been able to discover such a theory. Vagueness as permission, on the other hand, does use lax, unsharp borderline cases. As a result, it is not wimpy.

Finally, the theory of vagueness as permission solves the sorites paradox by denying the major premise: For all $n$, such that $n$ is an integer between 1 and 31 (inclusive), if tile $n$ is blue, then tile $n+1$ is blue. In practice, when confronted with a forced march along a sorites sequence, we are permitted to declare that tile $n$ is blue and that tile $n+1$ is not blue, for any $n$ that is clearly in the midst of the sequence’s borderline
cases. There is no particular \( n \) at which the line must be drawn, but there are some tiles at which it is permissible for us to draw a sharp line.

### 4.3.2 Truth

Perhaps the most important difference between supervaluationism and vagueness as permission is in their accounts of truth. Supervaluationism commonly makes use of two different notions of truth.\(^\text{69}\) One is truth on a precisification: the statement that ‘\( x \) is \( F \)’, for some borderline case \( x \) of a vague predicate \( F \), is either true or false on every precisification. The other is “supetruth,” truth on all permissible precisifications: the statement that ‘\( x \) is \( F \)’ is neither true nor false on all permissible precisifications (since \( x \) is a borderline case, it is true on some permissible precisifications and false on others), and so it is said to be neither supertrue nor “superfalse.”\(^\text{70}\) It is the latter sort of truth, supertruth, that supervaluationists typically take to play the role of truth in the rest of our philosophical theorizing. So, for example, most philosophers would agree that in order to know a proposition, it must be true. To be true, for a supervaluationist, is to be supertrue. That means we can know propositions that include only non-vague terms, like ‘Three is a prime number’. And we can know propositions like, ‘A man with no hairs on his head is bald’, since it is true on all permissible precisifications of ‘bald’. What we cannot know,

\(^{69}\) McLaughlin and McGee (2000) illuminate the two sorts of truth at issue, truth on a precisification and supertruth, by noting that they correspond to the fairly ordinary philosophical notions of disquotational truth and correspondence truth, respectively.

\(^{70}\) A precisification is deemed “permissible” if it is not in conflict with the pre-theoretical meanings of our words. (For example, it is not permissible to precisify ‘bald’ in such a way that a man with a full head of hair counts as bald.) There is no standard supervaluationist line on how to determine which precisifications are permissible, but many supervaluationists have proposed ways of doing so. I will not survey them here.
because of vagueness, are propositions that include vague predicates applied to borderline cases like, ‘A man with 2,000 hairs on his head is bald’. That much seems fairly plausible. It captures the uncertainty involved in applying vague predicates to borderline cases by denying that we can know such propositions. At the same time, it explains why such propositions sometimes seem true: it is because they are true on some precisifications. There are precisifications of ‘bald’ on which it is true that a man with 2,000 hairs on his head is bald. Mere truth on a precisification counts for little, though. Supertruth is what matters, when it comes to describing how the world really is.

Vagueness as permission does not use either of supervaluationism’s two notions of truth, but it has a correlate of each one. Akin to the supervaluationist notion of truth on a precisification is the notion of truth on a partial stipulation. Replacing precisifications with partial stipulations causes this change: a statement like ‘x is F’ (for a borderline case x of a vague predicate F) does not have a truth value relative to every partial stipulation. Many possible partial stipulations are silent about whether x is F. Another difference is in how we conceive of the nature of vagueness. Williamson writes of supervaluationism:

[V]ague meanings are conceived as incomplete specifications of reference. … To make ‘heap’ precise is to assign it a meaning that makes it true of the clear cases, false of the clear non-cases, and either true or false of the borderline cases. … The original vague meaning of ‘heap’ is reflected not in any one sharpening but in the class of all its sharpenings [i.e., precisifications] (1994 pp. 142-3).

I think the final sentence reflects a mistake in supervaluationism. The original vague meaning of ‘heap’ is not reflected in the class of all its precisifications, but in its ability to be made further precise. The meaning of a vague term is not a perfectly precise set of perfectly precise precisifications. The meaning of a vague term is genuinely open. That
openness is preserved by vagueness as permission, even after one chooses a partial stipulation, since a yet more specific partial stipulation could always be chosen. When we consider actual practice, it is obvious that people only precisify to the extent needed. ("Do you want a large glass or a small one?" “How large is the large glass?” An appropriate response would be, “It’s a pint glass.” An inappropriate response would be, “Wait a moment while I confirm that I know the volume of the glass to the nearest nanoliter.”) Truth on a partial stipulation seems to capture what is characteristic of vagueness as used in actual practice better than truth on a precisification.

In so far as statements are made within a determinate domain of discourse, this account of truth is all that is needed. Within some domains of discourse, all the items will be clear cases of \( F \) or not-\( F \). There, the vagueness of \( F \) is irrelevant. Within others, there may be items that are less clear, but they always can be made clear by one’s choice of a partial stipulation. The truth of a statement depends, unsurprisingly, on what we mean by our terms. And in the case of vague terms, the extent to which they are undecided sometimes leaves the details of their meanings up to us.

The fact that that account makes truth relative to a partial stipulation is initially rather unattractive. Some facts, it may seem, are objectively true—not relative to this or that, but simply, plainly true. I am inclined to agree. It should be noted, though, that ‘\( p \) is objectively true’ does not indicate that \( p \) is true regardless of the meanings of words in \( p \). Rather what we mean by objective truth is that the fact expressed by \( p \) (given the meanings of the words in \( p \)) is true. You may understand the sense of ‘true’ according to your own preferred account of objective truth. Now add to that the minor complication
that the meanings of vague words are not fully decided in advance. That in no way undermines the objectivity of truth.

There is a second, more troubling problem with that account of truth, though. Much of the time, statements are made without our intending them to be understood as part of some particular domain of discourse. I would be willing to claim that my car is blue-gray even if I were not quite sure what other objects or colors might be on the table in our conversation. I might have in mind some standard of ordinary conversational context, but that does not fix a determinate set of items that are in the domain of discourse. How could a partial stipulation work, if it does not determine the truth of statements within a domain of discourse? Here we see the value of the other notion of truth that is available to the vagueness-as-permission-ist.

Vagueness as permission has not only a correlate of truth on a precisification, but also has a correlate of supertruth: truth on any cautious partial stipulation. A partial stipulation is the whole collection of interrelated meanings that follow from one’s decisions about the meanings of vague terms. If I decide to draw a line between tall and not-tall, and I place it somewhere in the midst of the borderline cases between the two, then I have created a cautious partial stipulation. Suppose I want to know whether it is true that President Obama is tall. He is over six feet tall, which makes him clearly tall. No cautious partial stipulation could draw a line between tall and not-tall such that President Obama would fall on the not-tall side. It follows that ‘President Obama is tall’

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71 There is a much larger issue looming: whether unrestricted quantification is possible. I will not directly address that issue here, since I could not give it a satisfactory treatment in a cursory way. Of course, I do think that vagueness as permission has the resources to succeed whether unrestricted quantification is possible or not.

72 Assume something like the context: tall for an adult, male American, in the early 21st century.
is true on any cautious partial stipulation. Using this heftier notion of truth, truth on any cautious partial stipulation, vagueness as permission can work even when there is no single, determinate domain of discourse.

The question of higher-order vagueness, discussed briefly in section 4.1.2, arises again here. Given the weight I have put on the notion of a cautious partial stipulation, it is natural to wonder which partial stipulations, exactly, are cautious. The answer is to iterate the mechanism described in section 4.1.2. Here is how that would work. First, I am considering the truth of the claim that President Obama is tall. I begin with a sorites sequence like this one:

\[
\text{not-tall (average height)} \rightarrow \text{tall}
\]

President Obama’s height would place him somewhere around the far right side of that sequence, and so any line that is drawn cautiously, that is, somewhere near the middle of the sequence, will categorize President Obama as tall.

\[
\text{not-tall (average height)} \rightarrow \text{tall}
\]

The next question, about where exactly the boundary for a cautious partial stipulation may be drawn, requires me to move down to a more specific sorites sequence, or, rather, to two sorites sequences: one from not-tall (average height) to borderline-tall, the other from borderline-tall to tall. The reason for the move is that a question about which lines in the first sequence are cautious is just the same as a question about the limits of the borderline cases in the first sequence. There is no determinate fact of the matter about which cases are borderline cases (they are unsharp), so the right thing to do is to move to a more specific partial stipulation. The new sorites sequences are:
And I answer the question of which partial stipulations are cautious by drawing lines in each of the new sorites sequences (as shown). The partial stipulation that results is, as always, essentially contestable and revocable. Further questions of that sort can be answered in the same way each time, by repeating our use of the mechanism of partial stipulations.

In addition to allowing for the possibility of statements that are not made within a determinate domain of discourse, the notion of truth on any cautious partial stipulation offers a solution to another problem. Namely, given only truth on a partial stipulation it seems that I would not be able to say what vagueness is. A supervaluationist distinguishes vague propositions from non-vague propositions by their truth-values across precisifications. Non-vague propositions have the same truth-value across all precisifications. Vague propositions have different truth-values in some precisifications than in others. I rejected precisifications in favor of partial stipulations, and I rejected the notion of truth on all supervaluations. How, then, can I distinguish vague propositions from non-vague ones?

Using only the notion of truth on a precisification, I would have to answer in this way: Which propositions are vague is also relative to a partial stipulation. The predicates we call ‘vague’ are those that demonstrate problematic vagueness, relative to whatever partial stipulation is currently in use. They cause some trouble for our communication because we have not yet specified the meaning of the predicate sufficiently for it to handle all of the items in the relevant domain of discourse. There are expressions that are
more prone to cause such trouble than others, and those are the paradigmatic cases of vagueness, but most expressions are vague given the right partial stipulation and the right domain of discourse.\(^73\) The exceptions are those terms that have been stipulatively defined with full precision, such as ‘integer’ or ‘prime’. In one sense vagueness is ubiquitous, but in another, it rarely arises. There is latent vagueness in practically everything we say. On the rare occasions when we notice vagueness, it is because it has caused a problem. Those problems are usually resolved very easily, by an agreement about a more specific partial stipulation. Latent vagueness is never “resolved,” but it does not need to be.

I have said what vagueness is without really saying what vagueness is. I have only defined vagueness on some given partial stipulation. A more satisfying answer defines vagueness in terms of which propositions are vague on any cautious partial stipulation. That is also not a complete definition, but it can be as complete as we want it to be—that is, it can always be made more complete by iterating the mechanism of cautiously choosing another partial stipulation. Consider the predicate ‘vague’ in the same way that we have considered other vague predicates, in terms of a sorites sequence from paradigmatically \(F\) items (in this case, items like ‘bald’, ‘heap’, and ‘blue’ are all paradigmatic cases of vague predicates) to paradigmatically non-\(F\) items (‘prime’, ‘is an odd number’).

\[\text{vague} \quad \text{--------------------------} \quad \text{not-vague}\]

\(^73\) Note that such a view is not a version of contextualism about vagueness. Contexts are relevant, but vagueness is not just context-sensitivity. Specifying a context, however precise, without sometimes choosing a partial stipulation would not resolve every instance of vagueness.
From here, we may decide upon a cautious partial stipulation between vague and not-vague. To determine exactly which partial stipulations are cautious, we consider the two sorites sequences from ‘vague’ to ‘borderline-vague’ and ‘borderline-vague’ to ‘not-vague’, and choose where we wish to draw lines in each of those sequences. The result is a definition of vagueness that is as determinate as we care to make it, bearing in mind that our answers are essentially contestable and revocable.

4.4 Conclusions and directions for future research

I have here presented a clearer and more useful account of borderline cases than has previously been seen in the philosophy of vagueness. As evidence of the usefulness of the account, it is the central explanatory mechanism of my theory of vagueness, called “vagueness as permission.” By evaluating vagueness as permission with respect to the two success criteria I developed in Chapter 1, I have attempted to demonstrate that it is a workable theory of vagueness, and that it has nontrivial advantages over some major current theories of vagueness. My overarching goal was to develop a descriptive theory of vagueness, as opposed to a prescriptive theory. To that end, I have heavily emphasized the importance of actual practice in our understanding of vagueness, and I have de-emphasized the importance of machine computability.

In future research, I think it will be profitable to further consider the viability of vagueness as permission in these two contexts: First, I think my argument for the theory is wanting in empirical linguistic evidence. Since the theory is meant to be based on
actual linguistic practice, it should be possible to gain linguistic evidence to ground my claims about the nature of ordinary practice. I have not yet done the empirical research necessary to demonstrate the truth of my claims about the ordinary usage of vague predicates. Second, it may be that vagueness as permission could be shown to meet the goals of a prescriptive theory of vagueness as well. That is, although vagueness as permission was designed to meet the criteria of REASON and BOUNDARYLESS, it might also be apt to meet the very different goals of a prescriptive theory. The main goal of such theories, as I have described them, is to ensure that vague language can be formally modeled. To the extent that the vagueness of a natural language prevents it from being modeled, particularly in a formal language that can be used by computers, prescriptive theories of vagueness recommend adjusting natural language or our understanding of it. If, as I suspect, vagueness as permission can be modeled in a computer-usable formal language, then it could satisfy the goals for both descriptive and prescriptive theories of vagueness. The simplicity of such a unified solution would be an excellent argument in its favor. While the absence of empirical linguistic evidence is a genuine lacuna in this work, I do not believe any ground would be lost if it turns out that vagueness as permission is not compatible with the goals of a prescriptive theory of vagueness. The theory may gain ground by meeting those goals, but loses nothing if it fails to meet them.
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