

Book Reviews

Not Exactly: In Praise of Vagueness

Kees van Deemter

(University of Aberdeen)

Oxford: Oxford University Press, 2010, xvi+341 pp; hardbound,
ISBN 978-0-19-954590-2, \$29.95

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Let's start off by setting the scene for this book. A term is generally regarded as *vague* if it admits borderline cases, that is, cases where speakers are reluctant to say either that the term definitely applies or definitely does not apply. An example is the expression *bright*, say applied to lights. Although some lights are definitely bright, and others are definitely dim, there are in-between cases which seem to be neither bright nor dim. Borderline vagueness is often associated with the notion of *tolerance*, in the sense that small changes in objects don't affect the applicability of a vague term. Thus, suppose my sitting room light is definitely bright and I turn down the dimmer a very tiny fraction; then the light will still be regarded as bright. This principle of tolerance gives rise to a puzzling situation: If I keep on turning down the dimmer, small step by small step, the diminution in brightness will be imperceptible at each step. Thus, if the light is bright at step n , then tolerance dictates that it will also be bright at step $n + 1$. Yet inevitably at some stage in this process the light will no longer be bright—indeed, it might be entirely extinguished. Situations like this are often discussed under the heading of the sorites paradox.

Kees van Deemter has contributed several insightful papers to the literature on vagueness, and he would have been well placed to write a technical monograph on the subject. Instead, he has taken the brave step of producing a book for the general public, following in the 'popular science' footsteps of such luminaries as Richard Dawkins. In general, he has succeeded admirably. I'm not sure whether I would recommend giving this book to your grandmother, but van Deemter's informal style, vivid examples, and lucid exposition make it a pleasure to read.

A number of themes recur throughout the book: How does vagueness function in communication and why is it so prevalent? Are there situations in which vague terms are preferable to precise ones? And what is the relation between vagueness and context-dependence? Framed by an introduction and epilogue, the twelve chapters of the book that explore these themes are divided into three parts. Part I makes a case for the pervasiveness of vagueness, even "where one least expects it," such as in scientific measurement. Chapter 2 contains an interesting excursus on how apparently clearcut notions such as 'species' become more indeterminate on closer inspection, and Chapter 3 points out that attempts to turn vague terms such as *obesity*, *poverty*, and *intelligence* into precisely defined notions suitable for scientific investigation are subject to arbitrariness and residual vagueness. Examples of gradual change in the identity of individuals are addressed in Chapter 4, and issues of numerical approximation, rounding, round numbers, and levels of statistical significance appear in Chapter 5.

Part II surveys the main theoretical approaches to vagueness in linguistics, philosophy, and logic. The linguistic frameworks—and approaches to vagueness—discussed in Chapter 6 are likely to be familiar to readers of this journal. (One small surprise is the omission of Lakoff [1973] from the discussion of hedges and also from the presentation of fuzzy logic later in the book.) Probably more interesting to most readers is Chapter 7, devoted to “Reasoning with vague information.” The chapter starts with a presentation of three principles of reasoning with vague concepts. Admissibility is concerned with respecting rank ordering along a dimension, as in this example: If x is tall, and y is taller than x , then y too is tall. According to the second principle, the relation \sim of indistinguishability (with respect to some vague property) is non-transitive: if $x \sim y$ and $y \sim z$, it need not hold that $x \sim z$. Van Deemter motivates this principle with the example of a weighing balance. Given friction between the moving parts, the balance will have limited sensitivity, so that for some y that is fractionally heavier than x , the difference in weight will fail to register, and similarly for a z that is fractionally heavier than y . However, it may well be that there is sufficient difference between x and z for the balance to distinguish between the weight of the two. The third principle, tolerance, is similar to the notion mentioned in the first paragraph of this review, though couched in slightly different terms. Van Deemter uses these principles to present the sorites paradox, and then proceeds to review and critique the so-called epistemic solution, taking experimental results on color perception as one of the crucial sources of counter-evidence. Consideration of the sorites paradox continues into Chapters 8 and 9. Among the approaches considered are supervaluations, context-dependence, and fuzzy logic. Van Deemter finds the last of these sufficiently compelling that he devotes some time to pointing out its flaws. Fuzzy logic, he suggests, belongs to the class of *degree theories*, which he favors as the most promising overall approach to the semantics of vagueness. It is worth noting that his nomenclature is potentially confusing: Whereas linguists would expect a degree-theoretic approach to vagueness to involve quantification over degrees (e.g., the degree to which John is tall) in a classical logic, van Deemter is thinking here in terms of degrees of truth. From fuzzy logic, he segues into a brief but intriguing exploration of probabilistic logic, drawing particularly on little-known work by Max Black (1937).

Part III carries the story forward into artificial intelligence and computational linguistics. Artificial intelligence is exemplified by decision support systems using fuzzy logic. This is a point in the book where I would have liked to see mention of a topic that is missing, namely the pervasiveness of vagueness in geographical information systems (see, e.g., Bennett, Mallenby, and Third [2008] and references therein). Next, van Deemter turns to the challenge of getting a natural language generation (NLG) system to use vague terms appropriately, focusing on gradable adjectives in definite descriptions. One of the novel contributions at this point is to couch the NLG system’s choices in terms of game theory. Although this direction of inquiry seems extremely promising, I am not persuaded that the account of vagueness in strategic communication developed by Aragonés and Neeman (2000) deserves the amount of space that it receives here. By contrast, van Deemter presents a valuable and detailed response to Lipman’s (2006) argument that in a cooperative game, using vague terms can never be optimal. In considering a range of potential counter-arguments, van Deemter creates an opportunity to restate and review many of the themes running through the book. Although no conclusive answers are given, I certainly had a sense that this closing discussion tied together much of the earlier material as well as indicating promising new research directions.

In conclusion, although van Deemter goes to considerable pains to present the work of others in an even-handed manner, he has his own views on the right way to model vagueness and is not afraid to express them. The range of material covered is impressive. Even if you are well-versed in the literature on vagueness, you are likely to learn something new. And if you've never really thought about vagueness, this is a great starting point. In fact, the book would serve as an excellent jumping off point for a graduate seminar. Finally, I'd like to endorse a remark found in the Preface:

It has been a delight to discover how much complex material can be reduced to simple ideas. On a good day, it even seems to me that some themes are best explored in this informal way, free from the constraints of an academic straitjacket.

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