Book review

'Not Exactly' shows vagueness is key to scientific advances

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In a recent episode of the TV series "Lie To Me," Cal Lightman, the main character (played by Tim Roth), is being sworn in for a court appearance. Naturally, he is asked the standard question: "Do you swear to tell the truth, the whole truth and nothing but the truth, so help you God?"

Much to the chagrin of the judge, Cal responds, "That's not possible." Eventually he is asked, "Well, how about promising to be honest to the best of your ability?" to which he replied, "Now you're talking!"

This simple exchange constitutes the basic premise behind "Not Exactly: In Praise of Vagueness," the new book by Kees van Deemter, a professor of computing science at the University of Aberdeen in the United Kingdom.

"Vagueness is everywhere," van Deemter asserts. "If you believe a concept to be completely crisp, then examine it more closely and it will often prove to be vague."

It becomes apparent while reading "Not Exactly" that van Deemter is an experienced researcher who is quite adept at making relevant connections across different disciplines such as biology, psychology, economics, philosophy, mathematics and especially linguistics.

Occasionally, he ventures a little too far into the abstract and can go into more explanation than is really necessary when discussing an idea that is fairly straightforward. But van Deemter does make a powerful case that vagueness, not exactness, is the fundamental driver behind most social movements and scientific advances.

Moreover, he is not shy about making his point. When confronting rigid proponents of the scientific method, he can be rather frank in his appraisal of their narrow-mindedness.

"Statistical significance is a gradable concept," van Deemter asserts. "The thresholds that are commonly used to decide whether something is statistically significant are different for different research communities, and almost entirely arbitrary."

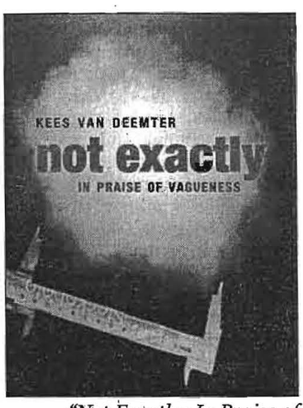
Particularly intriguing is his discussion of how "hedges" permeate our language and influence our decision-making on a number of tangible levels. A hedge is a qualifier that reminds the recipient that the information being conveyed is not assured. In an almost paradoxical sense, hedges allow us to convey a more realistic message, which is why authoritative statements are typically more difficult to defend than those which are less dogmatic.

At the same time, hedges tend to diminish the dramatic effect of communication; i.e., they lessen the appeal and interest of the listener or reader.

In one particularly poignant example, van Deemter describes how the removal of hedges from an official document helped hasten the onset of the Iraqi War.

"The British government, in a document that came to be known as 'the dodgy dossier,' decided to remove certain hedges from classified documents," van Deemter explains. "The original documents were careful assessments by the intelligence community concerning Saddam Hussein's weapons of mass destruction."

With reference to Hussein's capacity to use weapons of mass destruction, the initial report developed by analysts was careful to avoid any claims that could not be explicitly substantiated. But with the removal of important hedges such as "indicates" and "could be," the final version stated unequivocally that "the Iraqi military are able to deploy these weapons within 45 minutes of a decision to do so."



"Not Exactly: In Praise of Vagueness," by Kees van Deemter. New York: Oxford University Press, 2010. 341 pages, $29.95.

This declaration was much less truthful with respect to what the evidence actually supported. Unfortunately, the more definitive but inherently less precise statement became the basis for the ultimate decision to invade the country.

As van Deemter argues, the use of hedges in language is a nontrivial point.

"In an extensive study by the linguists William Grabe and Robert Kaplan, some interesting patterns emerged when hedges were compared in various types of texts," van Deemter writes. "It turned out that hedges occurred more than 10 times as often in science texts than in business reports and newspaper editorials, and that they occurred hardly at all in narrative texts."

Chapter 10, Artificial Intelligence, is undoubtedly one of the best in the book; it is here that van Deemter attempts to answer the proverbial question, "Are computers intelligent?" After carefully dissecting the applicable issues, the author arrives at the conclusion that "fuzzy logic" (vagueness) is at the heart of the problem.

"Vagueness and a number of problems structurally very similar to vagueness are implicated in many of the greatest obstacles facing artificial intelligence at the moment," van Deemter notes. "Fuzzy logic has certain inbuilt features that hamper its practical applications and its relevance for the analysis of natural language." He sees the ability to use natural language as a distinguishing characteristic of intelligence, artificial or otherwise.

As Cal Lightman knew, we live in a world where "the truth" is often difficult to ascertain. In his deceptively complex treatise, van Deemter accentuates the need to "invent new ways of thinking about truth, meaning, and communication." He could be on to something.

— Reviewed by Aaron W. Hughey, Western Kentucky University, Department of Counseling and Student Affairs.