Comments on *Vagueness: A Mathematician's Perspective* by Thomas Vetterlein

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Thomas Vetterlein calls his reflections on the vagueness discourse "a mathematician's perspective", but he actually does not shy away from entering a perennial *philosophical* debate by referring to two distinct understandings of reality, contrasting a "realism-based viewpoint" with a "perception-based viewpoint". Mathematicians often foster a Platonistic view of the nature of mathematical entities and frequently favor realist interpretations of application scenarios, which seems to differ markedly from a perception-based view. Therefore it is very interesting to see a mathematician explicitly arguing in favor of the latter position, dismissing a "realism-based" approach to vagueness.

Let me right away emphasize that I strongly disagree with some essential assertions in the paper, but that I nevertheless deem it a very refreshing, well-informed, and spiritedly argued view on some important aspects of the philosophical discourse on vagueness. Moreover, Vetterlein highlights some aspects of vague language that are often neglected and arguably deserve more attention. In what follows I will first indicate my discontents, and only then briefly refer to what I take to be the most valuable contributions of the paper.

This comment is clearly not the right place to contribute to the philosophical debate on realism versus anti-realism, however I feel impelled to recall some well-known problems for a thoroughly "perception-based viewpoint" of language and reasoning. Any position that maintains that when people speak about tables, students, and motorcycles they actually do not really refer to furniture, persons, and vehicles but rather to *perceptions* runs into great troubles in explaining the meaning of (vague or non-vague) words and propositions. What are these "perceptions" anyway, if we cannot simply say that they are perceptions *of* objects, persons, etc.? I claim that I can, in all usual circumstances, very well distinguish between, say, a table and my perception of a table. I do not wish to deny that in attributing properties to tables I often, but certainly not always, *partly* rely on perceptions. However I always rely on semantic knowledge too: I know—and have to know sufficiently well to be able to communicate successfully—in which contexts it is adequate to call an object "a table" and when to call it "small" or "big". Philosophers and linguists speak of truth conditions here. Vetterlein seems to strongly dislike this terminology, but he does not show us how we can dispense with it in any theory about the meaning of words and sentences. Of course, one may follow no less than the late Wittgenstein and deny the possibility of coherent semantic theories of natural language altogether. Indeed, some of Vetterlein's remarks seem to point into that direction. However, the price to pay for this move is huge. Not only does it entail the dismissal of a substantial body of contemporary philosophical and linguistic research,

but it also severs the links between traditional theories of language—based on the syntax/semantics/pragmatics triangle—and their and engineering applications that call for more than just an *ad hoc* account of information processing in natural language.

Leaving fundamental semantic skepticism aside, I maintain, probably along with the vast majority of contemporary philosophers and linguists, that the attempt to systematically reconstruct statements about chairs, people, the weather, etc., as expressing just perceptions is doomed to failure. Based solely on perceptions how can we even start to explain in a systematic manner what happens if a speaker successfully informs a hearer by uttering an ordinary statement like "This table is somewhat small, but there should be a much bigger one in the next room"? Perceptions are notoriously unreliable, subjective, constantly in flux, and therefore hard to tie in any systematic manner to our actual or idealized use of language. In other words: how can one hope to find in perceptions the *robustness* that seems to be a precondition for a coherent theory of meaningful talk about physical objects, their size, color, temperature, etc.; not to speak of ordinary statements about luck, worries, hope and other not directly perceivable, but nevertheless very real phenomena, which ordinary language allows us to refer to effortlessly. Vetterlein's paper does not tell us how, in explaining successful communication with vague language, reasoning about perceptions could replace a realist, truth condition based semantics. By the latter term I mean any account of language that maintains that a speaker truthfully asserts "Peter is tall" if and only if the context of the utterance singles out a person P and a range of heights H, such that the height of P is within H, *independently* of whether the speaker (or anyone else) has certain perceptions.[1]

As witnessed by perennial philosophical debates, realist positions, whether "naive", "scientific", "internal", or of any other variety are beleaguered by their own deep problems. Nevertheless I contend that any successful model of vague language should at least remain compatible with a realist frame; i.e., it should allow to take speakers at face value, when they assert that certain objects *really* have certain properties and are not just *perceived* to have those properties. In particular, the model should not rely on a translation or re-interpretation of ordinary assertions like "Maria is young" in terms of perceptions.[2]

To sum up my criticism, I am convinced that the reference to perceptions is neither sufficient nor in general necessary to explain the nature of vague language. To use the same strong, but admirably clear language that Vetterlein employs in the title of Section 5 of his essay ("Three untenable theories of vagueness") I claim that any essentially perception-based theory of vague language is untenable: it simply does not get off the ground in explaining why and how we are able to convey information by uttering ordinary, and therefore often vague, sentences.

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[1]Note that realist semantics, in this sense, does not preclude possible refinements of the above condition that are based on the idea that "truthfulness" as well as "falling in a range" (i.e., set membership in mathematical parlor) may come in degrees. Whether and when such refinements are *adequate* is another matter, of course, that is the subject of other papers in this volume.

[2]For illustration, consider a leisurely conversation with my wife about, say, kids with parents of our own generation. Suppose I utter in this context "[My boss's daughter,] Maria, is young" without being able to ground my assertion on any relevant perception. I have never seen Maria; but I know that she still attends elementary school. I infer from this and from my knowledge about the meaning of the word "young" that, in the given context, it is adequate to call Maria young. I doubt that any theory that only refers to perceptions, rather than to (real) ages of (real) people can successfully explain what I am informing my wife about.

In spite of my misgivings about the feasibility of a perception-based theory of the meaning and use of (vague) language, I think that the paper contains a number of valuable insights that are seldom explicitly mentioned in the vast literature on vagueness. I recapitulate just three items, in the hope to thus draw further attention to them.

1. Vetterlein emphasizes that the discourse on vagueness has become winded and complex and that a rather wide range of approaches are discussed as competing 'theories of vagueness'. Philosophers hardly ever seem to doubt that at most one of those theories can be "correct". I agree with Vetterlein that this attitude is inadequate for the problem at hand. The idea that vagueness is a phenomenon about which our theoretical accounts are right or wrong in a sense comparable to theories about, say, the early universe, or the evolution of reptiles, is highly problematic. However, in contrast to Vetterlein, I do not think that a "realism-based" rather than "perception-based" attitude is primarily responsible for the widespread inclination to evaluate theories about the use and meaning of (vague) language in analogy to theories in natural science. But, whatever the roots of this situation may be, my sympathies are with Vetterlein's call for a pragmatic methodology that is prepared to create and adapt models of communication with vague language as triggered by an open and diverse range of application scenarios.

2. Related to the previous point, Vetterlein sketches a view of the role of mathematics and, in particular, mathematical logic that might explain why discussions on theoretical accounts of vagueness between philosophers (and linguists) on the one hand side, and mathematicians, logicians, and computer scientists on the other hand side, often seem to be afflicted by fundamental misunderstandings about the aims and nature of the whole endeavor. He points out that mathematics provides a rich toolbox for the construction of flexible models that can be adapted to varying applications, without committing the user of these tools to any position regarding "the real logic" of vagueness. This in particular also applies to the seemingly contentious use of fuzzy logic: routine applications of fuzzy logic and related formal machinery do not presuppose that there is a fixed, objective degree of truth associated with each vague proposition. Rather those degrees serve as formal counterparts of quickly shifting, spontaneous, and tentative judgments referring to highly context-dependent and often purely imaginary reference scales. To claim that such models are only of interest in the context of certain engineering tasks, but have no relevance for systematic investigations into the nature of vague language, reveals not only a problematic approach to vagueness, but also indicated a rather narrow and unimaginative view on scientific and philosophical investigations in general.

3. Finally, and probably most importantly, Vetterlein highlights a concrete feature of vagueness that seems to be largely ignored by philosophers: namely that frequently a switch between *different levels of granularity* of reference scales and measures is involved in the use of vague language. He not only draws attention to this fact, but insists on its centrality in getting to grips with vague language. He also indicates how the sorites paradox may be "solved" by reference to shifting granularities. Moreover, some concrete "logics for reasoning with tolerance" are briefly described in the final part of the paper. I sincerely hope that this line of research will be continued and finds wider attention. As a side remark, let me mention that Manfred Krifka and some of his collaborators in *LoMoReVI*'s sister project *VAAG* (Vagueness, Approximation, and Granularity) do ac-

tually investigate shifting levels of granularity from a linguistic perspective. It would be nice to see some connections between these two lines of research emerge in future.

After having declared in the first part of these comments that I strongly disagree with some basic tenets of Vetterlein's paper, I could leave it at the above conciliatory and sympathetic comments. However, I trust to have Thomas's approval when I rather opt for formulating a challenge, that must appear quite provocative to him: I claim that an appropriate model of vague language that focuses on shifting levels of granularity is perfectly compatible with a realist approach to semantics. Nothing in the indicated model precludes the assumption that we are actually referring to objective, mind-independent entities when using expressions like "small table" in the relevant manner. The reason that I would like to see a "realism-based" account of vagueness that involves shifts between differently fine reference scales worked out in detail is that I am convinced that it will tie in nicely with recent linguistic research on vagueness, mentioned in the previous paragraph. Moreover, it were certainly a pity if linguists and philosophers (including, in this context, Vetterlein himself!) remain under the false impression that one has to forsake straightforward talk of reference to mind-independent objects and of truth conditions to obtain useful models of important features of vague language.

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