Reply to Paul Égré's Comments on *Vagueness in Quantity: Two Case Studies from a Linguistic Perspective*

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I would first of all like to thank Paul Égré for his thorough and thoughtful reading of my paper, and for the further evidence he puts forward in favor of the proposals therein. Égré raises a number of interesting points, and I won't be able to address all of them here, but I would like to offer some fairly open-ended remarks on some specific aspects of his comments.

I'll focus first on the very interesting facts relating to infinite domains. As Égré notes, there seems to be a contrast in acceptability in pairs such as the following:

(1) a. Most of the natural numbers are composite.
b. ?More than half of the natural numbers are composite.

And indeed one finds naturally occurring examples of the form in (2), but corresponding *more than half* examples are absent even from the enormous Google 'corpus' (and replacing *most* with *more than half* in (2) leads to the same oddness as in (1b)).

(2) A paradoxical situation arises because, on the one hand, it seems evident that most natural numbers are not perfect squares ...[2]

Égré argues that contrasts of this sort are predicted by my analysis, and I concur, though I might frame the source of the contrast in slightly different terms. According to the logical forms I adopt (repeated below), calculating the truth value of (1b) would involve assigning the totality of natural numbers a measure that can be meaningfully divided by two—which of course is not possible. On the other hand, establishing the truth of (1a) requires merely establishing a relationship of 'greater than' between the sets of composite and prime numbers. This might be done in any number of ways. One of those proposed by Égré strikes me as particularly natural, namely, generalizing over finite segments of the number line of the form $[1,n]$, as it can readily be verified that for any sufficiently large n, the required relationship will hold.

(3) a. $[\![$more than half$]\!]$(A)(B) = 1 iff $\mu_{DIM}(A \cap B) > \mu_{DIM}(A)/2$.
b. $[\![$most$]\!]$(A)(B) = 1 iff $\mu_{DIM}(A \cap B) > \mu_{DIM}(A - B)$.

[1] I would like to thank the editors of this volume for the opportunity to include this reply, and again acknowledge the support I have received from the European Science Foundation (ESF) and the Deutsche Forschungsgemeinschaft (DFG) under the auspices of the EuroCORES Programme LogICCC.

[2] `http://lofi.forum.physorg.com/Galileo%26%2339%3Bs-Paradox_25289.html`

I would very much like to leave it at this, as this would indeed represent a nice argument in favor of my proposal. I fear, however, that the facts are more complicated. The problem is that the relevant *more than half* examples don't seem to be quite as deviant as this analysis would predict—not as bad, for instance, as the examples with non-enumerable domains discussed in my paper. Related examples of the form in (4a) are, to me, fairly acceptable, although here too it should be necessary to establish a measure for the totality of natural numbers and divide that value by 2. And (1b) also improves with the addition of a modifier, as in (4b). This suggests that the real source of the infelicity of (1b) might be that it is wildly underinformative—our naive intuition is that the proportion of composites among the natural numbers is far greater than 50%.

(4) a. Exactly half of the natural numbers are divisible by two.
b. Far/way/vastly more than half of the natural numbers are composite.

Égré relates the felicity of (1a) to the possibility of interpreting *most* with respect to a measure function other than a cardinality measure. But then the (at least marginal) felicity of the (4) examples suggests that something similar must be available in the case of *more than half*. This is not in itself incompatible with my proposal, in that (3a), like (3b), does not encode cardinality as a measure; but it is more difficult to see what the measure function in question might be, in that it must relate entities to points on a ratio scale.

In short, when we turn to infinite domains such as the natural numbers, the facts do not line up quite as predicted either by my measure function analysis or a more traditional one. I suspect that the underlying issue here is that we as humans aren't really equipped to deal with infinity. When faced with (fairly abstract) examples such as those discussed above, we somehow make them manageable—perhaps by reducing the domain to a finite one, perhaps by generalizing over a set of such finite domains. But how exactly we might do this, and what this could tell us about the semantics of expressions like *most* and *more than half*, are questions I will have to leave to the future.

I'll turn now from a very complex issue to a somewhat more straightforward one. Égré raises the possibility that *most* might fail to entail *more than half*, or put differently, that *most* might be felicitously used for proportions less than 50%. Some speakers do in fact allow this, as evidenced by naturally occurring examples such as the following (which are quite easy to find):

(5) Most respondents (43 per cent) were renters, 28 per cent lived in public housing, five per cent were paying off mortgages and 18 per cent were homeless.[3]

What is involved in cases such as this is the comparison of some contextually provided set of proportions; for example, in (5), the proportion of renters among respondents is compared to a salient set of alternatives, namely the proportions of mortgage payers, homeless, etc. (see also [1] for experimental evidence for the existence of this sort of reading).

[3] http://news.theage.com.au/breaking-news-national/women-and-singles-suffer-on-poverty-line-20090626-cz95.html

As written, the logical form in (3b) does not account for examples such as these, but I suspect they could be handled by a generalized version of this formula, in which the measures of three or more sets or entities are compared. I leave this, too, for further investigation.

Finally, Égré points out that I am not entirely explicit about whether I consider the 'significantly greater than 50%' component of *most*'s meaning to be truth-conditional or pragmatic in nature. He is correct in inferring that I see this as a pragmatic effect, the result of a preference for interpreting the logical form in (3b) relative to a 'tolerant' or semi-ordered scale, whose structure reflects our innate approximate numerical abilities. I discuss this in greater depth in [2]. Regarding the entailment relationship between *most* and *more than half*, the parallel to cases of Strawson entailment is a nice one, and I thank Égré for it.

BIBLIOGRAPHY

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[2] Solt, Stephanie. Submitted. On measurement and quantification: the case of *most* and *more than half.* Submitted to *Language.*