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Some contexts requiring precise number meanings

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Round numerals can sometimes convey approximate meanings. In cases such as (1), this is straightforwardly possible, conjecturally, because the round numeral 100 represents a point on a coarse-grained number scale (Krifka 2009). (1) can be judged true in situations in which 98 or 102 people attended, which can be explained only by *100 people* acquiring an approximate interpretation.

(1) 100 people attended.

Krifka argues that approximate interpretations of numerals might be cognitively preferred because they involve less complex representations. But curiously, when numerals are modified, the approximate interpretation appears generally to be suppressed, as discussed by Solt (2014). Even though *100 people* on its own might mean 98 or 102 people, (2) and (3) are judged as false.

(2) #More than 100 people attended – to be precise, 99.

(3) #Fewer than 100 people attended – to be precise, 101.

One potential explanation of this is that adopting the approximate interpretation of the number term, if it were available, would obligatorily interact with *more/fewer than n* such that, for instance, *more than 100 people attended* was true only if the attendance exceeded anything that could be referred to as just "100 people" (for instance, 102 people). Under this assumption, the approximate interpretation would make the overall meaning of these sentences stronger, whereas it makes the meaning of (1) weaker.

Solt (2014) adopts a similar explanation for the distributional restrictions on the explicit approximator *about*, which cannot be felicitously added to rescue (2) or (3), although it can rescue *no(t) more/fewer than*, as in (4).

(4) No(t) more than about 100 people attended – to be precise, 101.

On Solt's account this is because *about* explicitly strengthens the speaker's commitment in the *more/fewer than* case, but weakens it in the *no(t) more/fewer than* case, thus making it possible for a speaker to utter (4) in cases where they could not commit to its truth without *about*.

Given that round numbers *per se* fail to contribute approximate meaning in (2)-(4), a broader question is to what extent they can contribute approximate meaning to complex sentences in general. Consider (5) and (6).

(5) You can have 2000 calories a day without putting on weight.

(6) If you consume 700mcg of Vitamin A per day, that will improve your health.

In these cases, precise interpretations would be superficially useless to the hearer, who could not achieve the precise intake of calories or Vitamin A that would guarantee them the beneficial consequences mentioned. Background knowledge might induce us to interpret (5) as though the number were upper-bounding, but this does not apply to (6).

Again, in both (5) and (6), interpreting the number as approximate serves to make the speaker's claim stronger, as the condition imposed on the grant or assertion would be satisfied in more circumstances than it would under a precise interpretation. By analogy with (2) and (3), the approximate interpretation should be blocked in this context, in which case any inferences about what should happen if you consume 2001 calories or 699mcg of Vitamin A per day must rely on real-world knowledge about the likely (non-)effect of a sufficiently small change in intake. However, it is not intuitively obvious that the hearer has to rely on this kind of indirect method to obtain the required inference, rather than simply adopting the convenient approximate interpretation of the round number. If the latter explanation is correct, it suggests that the licensing of approximate interpretation of numerals cannot simply be explained by assertion strength.

References

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