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Negative comparison between exactness, ignorance, and evaluativity

Puzzle. Consider the negative comparison expression *no more than n* and the negative comparison expression *not more than n*. These expressions look extremely similar. Naively speaking, they also carry the same non-strict comparison meaning, *less than or equal to n*. However, they differ in major ways, as shown below: *no more than n* yields an exact meaning (EX) but *not more than n* does not (NO EX). And *no more than n* give rise to an evaluative meaning (EVAL) whereas *not more than n* gives rise to ignorance (abbreviated as NEG-IG, to mark the fact that it arises in the presence of negation, and thus distinguish it from the better known ignorance effect that arises in positive contexts, POS-IG, which I believe has a different source).

(1) Cody found **no more than 10** marbles.
= She found ≤ 10 marbles.
$\rightsquigarrow$ She found exactly 10. (EX)
$\rightsquigarrow$ Speaker thinks this is few. (EVAL)

(2) Cody found **not more than 10** marbles.
= She found ≤ 10 marbles.
$\not\rightsquigarrow$ She found exactly 10. (NO EX)
$\rightsquigarrow$ Speaker not sure how many. (NEG-IG)

Existing literature and this talk. All these patterns are noted in Nouwen (2008) (who cites Jespersen 1949, 1966, who in turns credits Stoffel 1894). A solution is also offered for EX. This solution however suffers from important drawbacks, as I show, and no solution is offered for NO EX, NEG-IG, and EVAL. In this talk I reconsider all and propose solutions for all.

Proposal: EX. Nouwen (2008) notes that Horn (1972)'s classical view of scalar implicatures straightforwardly derives EX. However, due to independent issues with this view for modified numerals known since Krifka (1999), Nouwen (2008) adopts instead Fox and Hackl (2006)'s Universal Density of Measurement (UDM) view of scalar implicatures, which he shows can also capture the EX pattern for *no more than n*. Still, Mayr (2013) shows that there are significant issues with the UDM view as a solution for the scalar implicatures of modified numerals also, and ends up proposing a solution of his own. In the talk I show that, like UDM, this view suffers from empirical (and conceptual) issues also. Indeed, I show that, with certain systematic gaps aside, modified numerals give rise to all the scalar implicature predicted by the Horn (1972) view, that none of the alternatives to this view can capture all these patterns, and that the gaps themselves can be addressed in a principled way once we consider the interaction between scalar implicatures and IG-POS, as well as independently known issues of granularity. In short, my proposed solution for EX is the classic Horn (1972) view considered and dismissed by Nouwen: *no more than n* asserts $\neg > n$ and, by negation of its non-entailed scalar implicatures (henceforth, SA), implicates $\neg\neg > n - 1$, which is $> n - 1$, so altogether means $= n$.

Proposal: NO EX and IG. The Horn view of scalar implicatures can explain why *no more than n* carries an exact meaning, EX, but not why *not more than n* does not, NO EX, nor why instead it carries ignorance, NEG-IG. Why is *not more than n* different? I propose that NO EX and NEG-IG come from the following: A scalar under *not* has as SA not just the negated versions of its scalemates but also their positive counterparts, obtained, e.g., by deleting *not* (as on the structural view of SA generation). Thus, *not more than m* has as SA not just expressions of the form *not more than n* but also expressions of the form *more than n*. This makes it such that the SA of a scalar under *not* are actually symmetric. Thus, not only do they not give rise to an exact meaning, capturing NO EX, but they also give rise to ignorance, capturing NEG-IG. The reason why negative comparison expressions that are otherwise identical may differ in that one gives rise to EX and the other to NO EX+IG-NEG is thus because some negations, like *not*, can be deleted in SA-generation, while others, like *no*, cannot.

Proposal: EVAL. We have argued that the solution to all of EX, NO EX, and NEG-IG lies with SA. But what is the solution to EVAL? In the following I will argue that it involves SA also.

Before we spell out the solution for EVAL, a note concerning EX, NO EX, and NEG-IG. Although we have generally upheld the Horn view of scalar implicatures, we have been agnostic about how exactly these implicatures come about. On the original view from Grice, implicatures are a matrix phenomenon. However, the literature has shown that they occur at embedded levels also. This has led to the view that scalar implicatures are computed in the grammar via a silent exhaustivity operator akin to a silent *only*, O. I adopt this view also. Specifically, I assume that the key to EX, NO EX, and NEG-IG is exhaustification of the SA via O, where $O_C(p)$ asserts p and negates its alternatives in C that are not entailed by p (Chierchia 2013).

Now, regarding EVAL, adopting a similar discussion of evaluative effects in the literature from Crnič (2011), I propose that it involves an additional exhaustification of an item's SA via another silent exhaustivity oeprator akin to a silent *even*, E, where $E_C(p)$ imposes a presupposition that p is less likely/more noteworthy than all its alternatives in C. Here we need to clarify two points. First, which SA are we talking about? Crnič (2011) discusses cases where the scalar element is an end-of-scale item, but our numeral expressions are typically not end-of-scale, so their SA-set contains both weaker and stronger SA. I propose that, while O pitches a prejacent up against those of its SA that it *does not* entail, E pitches it up against those of its SA that it *does* entail. For example, E pitches *no more than 10* up against SA such as *no more than 11/12/...* Second, how is likelihood assessed? A natural assumption is that 'least likely' aligns with 'logically strongest'. However, if the prejacent is always compared to the SA that it entails, the presupposition of E will always be trivially satisfied. I propose, following similar suggestions for other items in Crnič (2011), that both the prejacent and the SA are all in fact used by E in an exact sense, as if pre-exhaustified via $\mathrm{O_{SA}}$. Thus, what is compared is actually $\mathrm{O_{SA}}$*(no more than 10) = exactly 10* vs. $\mathrm{O_{SA}}$*(no more than 11) = exactly 11*, and so on. As a result, *Cody found* ***no more than 10*** *marbles* gives rise to the scalar presupposition that the speaker thought that Cody finding exactly 10 marbles was less likely than her finding, e.g., exactly 11 marbles. This explains why *no more than 10 marbles* sounds like few (or, *mutatis mutandis*, why *Cody found* ***no less than 10*** *marbles* sounds like many!), capturing EVAL. The reason why some negative comparatives give rise to evaluative interpretations is because some allow, or prefer, silent strengthening via E(ven), whereas others don't.

Predictions. I will argue that all the proposed solutions make welcome predictions more generally. The proposal for EX: We have mentioned some already, and more will be given in the talk (or appendix, if time doesn't permit). The proposal for NO EX and NEG-IG helps capture why, e.g., *Coby did**n't** find* ***more than 10*** *marbles* does not convey that she found exactly 10 but does convey that the speaker isn't sure how many of 0-10 she did find, or why *Coby didn't talk to Alice* doesn't mean that she talked to everyone else. Finally, the new proposal for EVAL helps capture why *Coby found at least 3 marbles* sounds like she found many marbles, but also why, e.g., *Coby is already young* sounds odd. Note: Of course, any predictions for *more than* or *at least* can also be replicated, *mutatis mutandis*, for *less than* and *at most.*

Conclusion and outlook. Negative comparatives pose a triple challenge: They vary with respect to whether they give rise to an exact meaning, and some give rise to ignorance whereas others give rise to evaluativity. The existing literature offers some suggestions, but for the most part the triple challenge remains unmet. I offer a solution for each challenge. The solutions are all anchored in scalar alternatives, but innovations include: (1) a rehabilitation of the Horn (1972) view of scalar implicatures; (2) the suggestion that the scalar alternatives of scalars embedded under certain negations include not just negative but also positive variants; and (2) the suggestion that evaluativity in scalar expressions more generally comes from exhaustification via E(ven) relative to exhaustively interpreted variants of the *entailed* scalar alternatives.

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