Let alone, informativeness, and the pragmatics of scales
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Informativeness, or pragmatic strength, is usually understood model theoretically: a proposition \( p \) is more informative than a proposition \( q \) if adding \( p \) to the Common Ground (CG) removes more worlds from the context set than adding \( q \). Here, I consider an expression that seems to pose a problem for this view of informativeness, *let alone*, which is illustrated in (1a), a sentence that expresses the conjunction of two propositions in (1b), and requires, for reasons to be made more precise, that the first be more informative than the second.

(1) a. Tristan didn’t take ONE COOKIE, let alone THREE.
   b. \( \neg (\text{one}(\text{cookie})(\lambda x[\text{take}(x)(\text{tristan})])) \land \neg (\text{three}(\text{cookie})(\lambda x[\text{take}(x)(\text{tristan})])) \)

The first conjunct reduces the size of the context set more, since the worlds where one cookie is not taken comprise a proper subset of those where three cookies are not taken. In the problematic example in (2), however, the first conjunct is intuitively the more informative, though, logically, it does not entail the second conjunct. It’s easy to come up with situations in which someone has climbed Mt. Everest, but not the Catskills (e.g. an expert mountaineer who has never been to America).

(2) a. Oswald hasn’t climbed THE CATSKILLS, let alone MT. EVEREST.
   b. \( \neg (\text{climb}(\text{the-catskills})(\text{oswald})) \land \neg (\text{climb}(\text{mt-everest})(\text{oswald})) \)

I provide a semantics for *let alone* that preserves intuitions about the relative strength of the conjuncts in (2) without abandoning the model theoretic understanding of informativeness.

Fillmore et al. (1988) describe *let alone* as an expression that helps to mediate the conflicting demands of the Gricean maxims. The second conjuncts of (1–2) address a topic under discussion (obeying Relevance), while the first conjuncts allow the speaker to be maximally informative (obeying Quantity). The first conjunct is thus always more informative than the second; reversing this order, as in (3–4), is infelicitous.

(3) # Tristan didn’t take three cookies, let alone one.
(4) # Oswald hasn’t climbed Mt. Everest, let alone the Catskills.

In (1), the first conjunct is stronger than the second because the two propositions are identical except for their internal arguments: \( \text{one}(\text{cookie}) \) and \( \text{three}(\text{cookie}) \), which I call the CORRELATES, and which are related on the scale of ordinal determiners \( \langle \ldots, \text{three}, \text{two}, \text{one} \rangle \) (Horn 1972:37–47). Since negation reverses scales (Ladusaw 1980:143–146), the first conjunct, which contains the lowest member of the scale, \( \text{one} \), entails every analogous proposition containing a higher member, including \( \text{three} \).

For the problematic example in (2), the correlates again form a scale, \( \langle \text{mt-everest}, \text{the-catskills} \rangle \), though it is not ordered by entailment, but rather a contextually-determined relation, such as height or climbing difficulty (Hirschberg 1985). Nonetheless, in the context of the evaluation of (2b), inferences based on this scale have the properties of entailments. Consider a scenario in which we are members of a mountain climbing club who aim to climb Mt. Everest by first ascending the Catskills (1,905 feet), then Mt. Whitney (14,505 feet), and finally Mt. Everest (29,028 feet). The
scale of mountains is thus \(\{\text{mt-everest, mt-whitney, the-catskills}\}\). By uttering (5a) in this context, I assert that Oswald hasn’t climbed the Catskills, the lowest element on the scale, but I also convey that he hasn’t climbed any of the mountains higher on the scale—including Mt. Whitney. This inference is an entailment, rather than an implicature, since it cannot be cancelled (5b).

(5)  
   a. Oswald hasn’t climbed the Catskills, let alone Mt. Everest.  
   b. # In fact, he’s climbed Mt. Whitney.

To summarize, even though the scale of mountains is not ordered by entailment, in the context of the utterance of (2a), inferences based on this scale have the status of entailments. This property of \textit{let alone} can be captured with an ancillary entailment (Bach 1999) that restricts the context set to just those worlds that obey the scale of mountains given above—but only locally, for the evaluation of the primary entailment in (2b). The sentence in (2a) thus expresses a tuple of propositions (which can be derived compositionally using Krifka’s (1992) \textsc{structured meanings} approach to focus):

\[
(6) \quad \langle \forall x, x' [x \succ x' \land \neg (\text{climb}(x')(\text{oswald})) \rightarrow \neg (\text{climb}(x)(\text{oswald}))], \neg (\text{climb(\text{the-catskills})(oswald)}) \land \neg (\text{climb(\text{mt-everest})(oswald)})) \rangle ; (t \times t)
\]

After updating the CG with the first proposition in (6), the first conjunct of the second proposition will remove more worlds from the context set than the second conjunct, thus capturing our intuitions about their relative informativeness.