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Title: **The processing cost of scalar implicatures**

Date: Monday, January 29, 2007
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Place: Rosenfeld Hall (corner Temple & Grove Streets)

Abstract:

A central debate in the current research of scalar implicatures is between the "pragmatic", or context-driven approaches, and the computational system (CS) approaches (Chierchia, Fox). In many cases, it appears that such debates may be more conceptual than empirical, but I will focus on one empirical criterion for theory selection, based on processing findings.

As of the early 2000s, experiments repeatedly found the 50% range of performance in the acquisition of scalar implicatures. E.g. Chierchia et al. 2001 showed that in downward entailing (DE) contexts, as (1), where no implicature is involved, children perform essentially like the adult control group, judging the sentence as true in a situation where some of the dwarfs chose both a banana and a strawberry.

- (1) Every dwarf who chose a banana or a strawberry received a jewel.
- (2) Every boy chose a skate-board or a bike.

However, in the implicature case (2), uttered in a similar context, the adult control group rejected it in 100% of the trials, while children performed at the 50% range. (These findings do not extend to numeral scalar items.) The question then, is which of the competing approaches can explain all these acquisition findings.

A close examination of the CS analysis reveals that it cannot explain these findings. First, it seems "too easy" - it is not clear why children should have problems with processing active implicatures, as (2), given that it involves just local optimality evaluation of alternatives with which children do not have massive problems in other areas. The crucial next question is why they have no problems with (1). Under Chierchia's analysis, filtering out the implicature in DE contexts requires precisely the same local optimality procedure of comparing the plain and the scalar value. While in (2), which children fail to process, this computation applies only once, in (1), it applies twice, so it should have been harder, or at least equally hard for children to process.

The source of the problem is Chierchia's assumption that implicatures are associated with scalar items by default. I argue that the actual semantic computation of implicatures is as defined in (any of the variants) of the CS approach. However, as in the context-driven approach, in the standard cases, it is triggered only by the context. Hence, when required by the context, a derivation that has been completed under its plain value has to be reopened and an alternative with the scalar value must be constructed compositionally. The two representations must then be compared against the context. This has all the properties of a costly global optimality computation (reference-set), that children are known to be unable to perform.

Given that the scalar computation itself is available in UG, it is in principle possible that there are areas where it applies indeed during the derivation.

Suppose that with numerals, Chierchia's procedure is lexicalized, i.e. it does apply as default. A numeral, then, is always computed locally against its scalar alternatives, carrying the 'at most' implicature through the derivation, unless it is cancelled by a DE operator, or by other contextual factors. As we saw, this type of computation should not cause a processing crash with children. So this would explain why they have no problem with numeral scalar implicatures.