

Why the distributive/collective ambiguity is (sometimes) a myth

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Overview. I argue that what has been claimed to be a preference for collective readings in sentences like (1), where a predicate containing an indefinite takes a plural argument, is the result of a basic underspecified meaning together with an ‘only one raft’ implicature.

(1) The two kids built a raft.

Why there is no collective reading. If (1) had a collective reading, we would incorrectly predict its negation, (2), to have a reading which is true if every kid built a different raft and there was no collective raft-building. (2) shows that the predicate *build a raft* is interpreted as underspecified wrt distributivity and collectivity (Schwarzschild 1994 makes a similar claim).

(2) The two kids didn’t build a raft.

Why there seems to be a collective reading. There is ample evidence however that sentences like (1) are marginal if each kid built a different raft (a ‘co-varying’ situation), which is often interpreted as a preference for collective readings (see Pagliarini *et al.* 2012; Dotlačil 2010; Champollion to appear a.o.).

Frazier *et al.* (1999) provide a more direct evidence for a distributive/collective ambiguity by showing that in sentences like (3), there is a garden path effect in the region of *each* which is absent when *each* is replaced with *together* and when either *each* or *together* are pre-verbal.

(3) Jackson and Beverly painted a room each over the long weekend.

They conclude that *painted a room* is by default interpreted collectively, and post-verbal *each* requires costly reanalysis. I focus on two questions that arise from this state of affairs:

- (4) a. Why should there be a preference for collectivity at all?
b. Why can predicates like *build a raft* only have underspecified meanings under negation, given that they otherwise seem to have (preferred) collective meanings?

Proposal. I propose the following answers to these questions:

- (5) a. The apparent preference for collectivity in (1) results from an implicature that excludes situations where more than one raft is cumulatively built by the kids.
b. Predicates like *build a raft* show their true *underspecified* nature when under negation, due to the tendency of implicatures not to be computed under negation.

I assume following Schwarzschild (1994) that Link’s * operator, (6), applies to the sister of every plural DP in the structure. Furthermore, I assume that two-place predicates are ** -ed (this is done for transparency; *built* could instead be lexically cumulative, as in e.g. Kratzer 2007). So the LF for (1) is (7), which has an underspecified meaning. While ** in (7) is vacuous, in (8) where *a raft* is replaced with *two rafts* it no longer is.

(6) $[[*]] = \lambda P_{\langle e,t \rangle} . \lambda x_e . \exists P' \subseteq \{y : P(y) = 1\} [\oplus P' = x]$

(7) [The two kids] [*[[** built] [a raft]]]

(8) [The two kids] [*[[** built] [two rafts]]]

Crucially, a situation where each of the two kids built a different raft is compatible with both (7) and (8). But only (8) *requires* that there be two rafts built overall. This, I claim, is the reason why (1) is marginal in co-varying situations: because it has an implicature that excludes the cumulative reading of *the kids built two rafts*, namely (7) is accompanied with the negation of (8). This has the effect that co-varying situations are excluded. To achieve this result, I make the assumption in (9) about the alternatives of indefinites, an assumption

that's motivated independently by the inference in (10) (see also Fox 2007, ex. (83)).

(9) Two NPs \in *Alt*(a NP)

(10) John built a raft \sim John didn't build two rafts

Further evidence I: Garden path. The idea that the indefinite is the source of marginality in co-varying situations is supported by Dotlačil and Brasoveanu's (2015) findings that in the absence of an indefinite in object position the garden path effect found by Frazier *et al.* disappears. To explain this effect with post-verbal *each* in the presence of an indefinite, I would like to point out that the 'only one' implicature generated derives a meaning that's incompatible with *each* (since *they painted a room each* is only compatible with more-than-one-room-overall). In contrast, post-verbal *together* is compatible with this implicature. So when one encounters *each* (but not *together*) post-verbally, one of the meanings derivable for *painted a room* has to be discarded—the one where an 'only one' implicature is computed (see e.g. Sun and Breheny 2019 for the claim that implicatures are computed immediately in upward entailing contexts). This, I suggest, is the source of the garden path effect.

Further evidence II: 'Meta-linguistic' negation. With a 'metalinguistic negation' intonation and stress on the indefinite article, sentences like (2) can be used to exclude just a collective situation: (11) is felicitous in response to (1) if each kid built a different raft. This is expected given that meta-linguistic negation allows for implicatures under negation.

(11) The two kids DIDN'T build A/ONE raft, they built TWO! (small caps indicate stress)

Further evidence III: Acquisition. Pagliarini *et al.* (2012) present experimental evidence showing that young children accept sentences like (1) in co-varying situations much more often than adults. This is entirely in line with our proposal, given that young children are known not to compute implicatures the way adults do (see e.g. Barner and Bachrach 2010).

Comparison with some alternatives. Pagliarini *et al.*'s own view (following Dotlačil) is very similar to ours in that it also relies on implicatures. They assume that there is a distributive/collective ambiguity and that an implicature is derived at the level of ambiguity resolution which leads to choosing the collective reading. Our proposal has an advantage in generating the implicature without stipulations about alternatives, but more importantly, by assuming a basic underspecified meaning it accounts for negation data like (2), which they do not account for. Dotlačil and Brasoveanu (2015) propose that phrasal distributivity is costly, but similarly assume a distributive/collective ambiguity and hence do not explain the data in (2). Another possibility, brought up by Schwarzschild (1994), is that indefinites may prefer to take scope above the pluralization operator *. On top of not being explanatory, there are some empirical issues with this idea; see Dotlačil (2010, § 3.4.1).

Open issues. The scope of the theory is limited to cases like (1) where (i) the predicate can be shown to have a basic underspecified meaning (unlike e.g. *weigh 250 kg* which is ambiguous; see recently Bar-Lev 2019); (ii) what's in object position generally gives rise to upper bound inferences (unlike e.g. *at least one raft*). It remains to be tested whether a preference for collectivity is found in cases that are outside the purview of this theory. Furthermore, the theory does not predict any preference for collective situations over distributive ones which do not involve co-variation; whether such a preference can be found in predicates which are compatible with distributive situations of this sort (e.g. *lift a box*) will also have to be tested.

Selected references. Bar-Lev, M. E.: 2019, ‘Specification and Homogeneity in Plural Predication’, Manuscript. Champollion, L.: to appear, ‘Distributivity, collectivity and cumulativity’, in L. Mathewson, C. Meier, H. Rullmann and T. E. Zimmermann (eds.), *Wiley’s Companion to Semantics*, Wiley. Dotlačil, J.: 2010, *Anaphora and Distributivity: A study of same, different, reciprocals and others*, Ph.D. thesis, Utrecht University. Dotlačil, J. and A. Brasoveanu: 2015, ‘Processing Pluralities: Syntax and the Lexicon’, Poster Presented at CUNY 28. Frazier, L., J. M. Pacht and K. Rayner: 1999, ‘Taking on semantic commitments, II: collective versus distributive readings’, *Cognition* 70(1), 87–104. Pagliarini, E., G. Fiorin and J. Dotlačil: 2012, ‘The acquisition of distributivity in pluralities’, in *Proceedings of the Annual Boston University Conference on Language Development*, vol. 2, pp. 387–399. Schwarzschild, R.: 1994, ‘Plurals, presuppositions and the sources of distributivity’, *Natural Language Semantics* 2(3), 201–248.