Free Choice disjunctions under only
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The goal of this talk is to investigate Free Choice inferences (FC) under only. FC is the inference of e.g. allowed(p) and allowed(q) from disjunctive sentences like allowed(p or q): ⊨ (p ∨ q) ∈ FC[p ∧ q]. The talk draws attention to three data points, and tests Fox’s (2007) implicature-based account of FC against them. My main example is (1), uttered in a context where three types of dessert are made salient: there is cake, ice cream, and cookies. (Note that (1) is intended without pitch accent on or).

(1) You are only allowed to eat [cake or ice cream].

(i) The first data point is that the exclusive inference, that you are not allowed to eat both (¬ ⊨ (p ∧ q)), is much weaker than the prohibition against having cookies (¬ ⊨ r). This is witnessed in the contrast between (2) and (3). A asks B, who is an authority, ‘Which of these desserts can I have?’

(2) B: For sure you are allowed cake or ice cream. ✓ Let me check if you can have both.

(3) B: For sure you are only allowed [cake or ice cream]. ✓ Let me check if you can have both.

#Let me check if you can have cookies.

To account for (3), the alternatives to only must include the sentence [you are allowed to eat cookies], but must not include [you are allowed to eat cake and ice cream]; including both would make only negate both alternatives, and would therefore make both continuations in (3) seem odd; including neither would make the two continuations acceptable, and would fail to distinguish between (2) and (3).

(ii) The second data point is that the FC inference in (1) behaves like a presupposition, rather than an implicature or an assertoric inference. (4) demonstrates this:

(4) A contest host presents a deck of cards to John. John is to draw as many cards as he can, but if he draws a ‘bad’ suit he loses. The host refers John to an assistant, whose job is to instruct John in indirect but truthful ways. The assistant says ‘I don’t think that you’re only permitted to draw hearts or clubs’. John draws a club. #John loses.

If FC in (4) were an implicature, we would predict no difference between (4) and the minimally different (4′), where the putative implicature is cancelled under negation.

(4′) … The assistant says ‘I don’t think that you’re permitted to draw hearts or clubs’. John draws a club.

✓ John loses.

If the FC inference were part of the semantic meaning of (4), then the negation embedded in the assistant’s utterance should deny FC, and by denying it the assistant would be understood to say that one of hearts and clubs is such that John is not allowed to draw it. It would therefore not be strange for John to lose.

(iii) The final data point, already alluded to in (2,3), is that the exclusive inference has the same status with and without only. To the extent that it is an implicature of (2), the inference is also an implicature of (3). The equally acceptable continuations in (2,3) show the presence of the inference, and its disappearance in the DE environments in (5,6), suggests that it is not part of the semantic meaning of the utterance.

(5) Guests who are allowed to eat cake or ice cream are lucky.

✓ Guests who are allowed both are lucky (no exclusive inference in restrictor).

(6) Guests who are only allowed to eat [cake or ice cream] are unlucky.

✓ Guests who are allowed both (but not cookies) are unlucky (no exclusive inference in restrictor).

Consequences: From (i), we learn that the alternatives to only, set A, must not include (p ∧ q). This makes the embedded sentence onlyA(p ∨ q) mean (¬r) onlyA(p ∧ q), where subscripts mark presuppositions. From (ii), we learn that pragmatic strengthening (through an operator Exh) must employ a form of negation that projects presuppositions. Exh must therefore be defined as in (7): alternatives are false if they are innocently excludable (see (16)).

(7) Exh ALT(S) = [S] = 1 & ∀ {[S'], 0 : S' ∈ IE(S)(ALT)}

If we assume S = onlyA(p ∨ q), and A′ (8) as a set of alternatives to S, then applying (7) to S gives us (9).

(8) A′ = {onlyA(p), onlyA(q), onlyA(r), onlyA(p ∧ q)}

(9) Exh A′(onlyA(p ∨ q)) = [onlyA(p ∨ q)] = 1 ∧ [onlyA(p)] = 0 ∧ [onlyA(q)] = 0 ∧ [onlyA(r)] = 0

= (¬r) onlyA(p ∨ q) ∧ (q ∨ r) ∧ (p ∨ r) ∧ (p ∨ q) ∧ (p ∨ q) ∧ (r ∨ q) ∧ (r ∨ q)

= (¬r) onlyA(p ∨ q) ∧ (p ∨ q) ∧ (p ∨ q) = (¬r) onlyA(p ∨ q)
The struck-out exclusions are non-innocent because they contradict the utterance: $\Diamond r \land q = 0$ only if its presupposition $\Diamond r$ is true, which conflicts with the utterance $(\neg \Diamond r)_{(p \land q)}$. $\Diamond (p \land q) = 0$ asserts $\Diamond r$, which also conflicts with $(\neg \Diamond r)_{(p \land q)}$.

The problem is that (9) fails to derive (iii), i.e. the exclusive inference. This is because $\Diamond (p \land q)$ appears in an alternative that cannot be excluded. Note that a weak (plug-like) negation in Exh, as in (10), succeeds in deriving the exclusive inference, but it fails (ii) because it incorrectly makes FC an implicature rather than a presupposition. (This is exactly parallel to Fox’s doubly-exhaustified structures). Exhausification by weak negation is shown in (11): Recall that $\Diamond (p \land q) = 0$ iff its presuppositions, are false.

(10) $\text{Exh}'_{\text{ALT}}(S) = [S] = 1 \land [(S') \neq 1 : S' \in \text{IE}'(S)_{\text{ALT}}]$

(11) $\text{Exh}_{\text{ALT}}(\text{only} A \Diamond (p \lor q)) = [\text{only} A \Diamond (p \lor q)] = 1 \land [\text{only} A \Diamond (p)] \neq 1 \land [\text{only} A \Diamond (q)] \neq 1$

(12) For any $A$, if $[S] = \phi \land \psi$, then $[\text{IE}(S)] = \phi \land \psi$

(13) $A'' = A' \cup \{\text{Acc}(S') : S' \in A\}$

(14) $\text{Exh}_{\text{ALT}}(\text{only} A \Diamond (p \lor q)) = [\text{only} A \Diamond (p \lor q)] = 1 \land [\text{only} A \Diamond (p)] = 0 \land [\text{only} A \Diamond (q)] = 0 \land [\text{only} A \Diamond (r)] = 0$

Assuming a strong Exh together with the Acc parse gives us the FC inference as a presupposition, and the exclusive inference as an implicature (from Exh). The admission of Acc alternatives makes correct predictions elsewhere, e.g. with the factive verb know. (see Spector and Sudo 2013).

(15) The crew is unhappy and some (maybe all) workers are considering going on strike.

✓ The boss knows that some of his crew are thinking of striking.

✗ Exh$_{\text{IE}(K \text{alt})}$(K(some)) = $K(\text{some}) = 1 \land K(\text{all}) = 0$ = [some & B(some) & all & $\neg B$(all)]

✓ Exh$_{\text{IE}(K \text{alt})}$(K(some)) = $K(\text{some}) = 1 \land K(\text{all}) = 1$ = [some & B(some) & all & $\neg B$(all)]

(16) IE$(S)(A) = \bigcap\{M : M \text{ is a maximal consistent set of exclusiblables (MCSE) of } S \text{ given } A\}$

(17) $M$ is a consistent set of exclusiblables (CSE) of $S$ given $A$ iff $M \subseteq A$ and $\bigwedge\{[S'] = 0 : S' \in M\} \neq [S] = 0$

(18) IE$'(S)(A) = \bigcap\{M : M \text{ is a maximal consistent set of exclusiblables (MCSE) of } S \text{ given } A\}$

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