CASE STUDY – PART 2

English

Disjunction ‘A *or* B’

-appears to be ambiguous between inclusive-disjunction and exclusive-disjunction
-basic meaning is inclusive-disjunction
-may be strengthened to exclusive-disjunction in some contexts

Strengthening process:

-exhaustivity function, *exh* (meaning: *‘only’*)
-set of alternatives, C, for ‘A *or* B’ is C = {A, B, A *and* B}
-*exh* negates as many alternatives in C as possible while remaining consistent with ‘A *or* B’

exh(C)(A *or* B) = (A *or* B) & ¬(A and B) meaning: *‘only A or only B’*

English children

-in contexts where adults strengthen ‘A *or* B’ to exclusive-disjunction, children strengthen ‘A *or* B’ to conjunction ‘A *and* B’ (Paris, 1973; Braine and Rumain, 1981; Singh et. al., 2013)

Singh et al. (2013):

-the set of alternatives, C’, for ‘A *or* B’ for children is C’ = {A, B}
-reason: children are unable to access the lexicon when generating alternatives for ‘A *or* B’ and therefore do not generate ‘A *and* B’ as an alternative

However, applying *exh* is vacuous, since neither of the alternatives can be negated while remaining consistent with ‘A *or* B’:

exh(C’)(A *or* B) = A *or* B

Applying *exh* recursively (Fox, 2007) derives the conjunctive interpretation:

-the set of alternatives, C’’, for *exh*(C’)(A *or* B) is C’’ = {*exh*(C’)(A), *exh*(C’)(B)} - {*only A, only B*}
-both alternatives may be negated while remaining consistent with ‘*exh*(C’)(A *or* B) = A *or* B’

exh(C’’)(*exh*(C’)(A *or* B)) = *exh*(C’)(A *or* B) & ¬(*exh*(C’)(A)) & ¬(*exh*(C’)(B))
= (A *or* B) & ¬(A *and* ¬B) & ¬(B *and* ¬A)
= A *and* B

Warlpiri

Bowler (2014):

-a single coordinator ‘A *manu* B’, equivalent to English ‘A *or* B’
-appears to be ambiguous between conjunction and disjunction
-the set of alternatives proposed for ‘A *manu* B’ is C’ = {A, B}
-reason: Warlpiri lacks a conjunctive coordinator
-conjunctive interpretation is derived by recursive application of *exh*

Meyer (2014)

-asserted sentences appear under a covert knowledge operator, K (meaning: *'I know that'*)
-the logical form of a sentence S is: K(S)

English (adult): There are two logical forms of K(S) for S = 'A *or* B':

K(*exh*(A *or* B)) meaning: *'I know that only A or only B'* (exclusive-disjunction)

exh(K(A *or* B)) meaning: '*I know that A or B, I don't know whether A, I don't know whether B'* (inclusive-disjunction)

-which logical form is intended must be gleaned from the context

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American Sign Language - Davidson (2013)

-nonmanual coordinator 'A COORD-SHIFT B'
-appears to be ambiguous between conjunction and disjunction

-ambiguity may be resolved by nonmanual signals:
CONJUNCTION – neutral face, head nod
DISJUNCTION – squint, bit lip

American Sign Language – our proposal

Following Singh et al. (2013) and Bowler (2014):
-'A COORD-SHIFT B' is equivalent to English 'A *or* B'
- the set of alternatives for 'A COORD-SHIFT B' is C' = {A, B}
-reason: ASL effectively lacks a conjunctive coordinator
-recursive application of *exh* on 'A COORD-SHIFT B' expresses conjunction in ASL

But that's not the whole story...

Both of the younger native signers in our study had a very strong intuition that the disjunctive nonmanual signal (squint/furrowed brow) was an indication of uncertainty

We also notice that the nonmanual signals for conjunction are very similar to the nonmanual signals that convey assertions or statements in ASL, and the nonmanual signals for disjunction are very similar to the nonmanual signals that convey wh-questions in ASL (Baker-Shenk and Cokely, 1980)

We therefore propose that K is overtly realized in ASL in the following way:

Neutral face, head nod: knowledge/certainty
Squint/furrowed brow: uncertainty

Together with 'A COORD-SHIFT B':

Neutral face, head nod picks out the logical form: K(*exh*(*exh*(A *or* B), which is equivalent to 'KA *and* KB', and derives the conjunctive interpretation of 'A COORD-SHIFT B', meaning: *'I know that A and I know that B'*

Squint/furrowed brow picks out the logical form: *exh*(K(A *or* B), which is the basic (inclusive-disjunction) interpretation of 'A COORD-SHIFT B', meaning: *'I know that A or B, I don't know whether A, I don't know whether B'*

Summary

A conjunctive coordinator is not a requirement in natural human language. In languages without a conjunctive coordinator, a conjunctive interpretation is derived from the disjunctive coordinator. In such languages, a conjunctive interpretation is preferred when there is a lack of disambiguating cues. In ASL, a signer's knowledge (certainty/uncertainty) is overtly conveyed by nonmanual signals. Together with 'A COORD-SHIFT B,' these nonmanual signals indicate which logical form is intended.

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