

Disjunction in *Wh*-Questions

It has been observed ([viii], [vii]) that *wh*-questions cannot be joined disjunctively, s. (1a). According to [vii], (1a) is deviant for pragmatic reasons: disjunction is not part of speech-act logic. The only way (1a) can be interpreted is that the first question is revoked and replaced by the second, s. (1b). Question disjunctions have also been argued to be semantically deviant. According to [iii], a question defines a partition of the logical space, and the union of two partitions (= the disjunction of two questions) is not again a partition because of overlapping cells in the resulting division. In this talk we argue that • *wh*-question disjunctions do denote proper semantic questions (we concentrate on *wh*-questions because of alternative questions of the form of (2), which require a different analysis) • these questions are pragmatically deviant outside specific contexts which we identify as contexts that license polarity-sensitive items (PSIs) • in these contexts the pragmatic inadequacy disappears due to a pragmatically induced recalibration of the implicature triggered by *or* (as argued in [i]). Our proposal has far-reaching consequences for the analysis of the licensing of PSIs.

With [v] we assume that (A) a question denotes the set of its true answers, and suggest further that (B) a *wh*-question disjunction Q_1 *or* Q_2 denotes the set of propositions that results from the pairwise disjunction of any two propositions from $\llbracket Q_1 \rrbracket$ and $\llbracket Q_2 \rrbracket$, respectively, s. (3). So (4a) has the denotation in (4b) if in fact Paul came home by bus at 3 a.m. (and in no way and at no time else). The deviance of (4a) can now be informally explained as follows: When trying to give an exhaustive true answer to (4a) (= the disjunctive proposition in (4b), if we consider the weakly exhaustive answer) the answerer cannot avoid violating Grice's Maxim of Quantity: the use of *or* is infelicitous because both disjuncts are true (since they are *true* answers to the disjoined questions). The use of *and* would be more informative and would not violate the Maxim of Quality. This renders *wh*-question disjunctions unanswerable, and hence deviant. This result can be derived in a more direct way when considering the strongly exhaustive (= enriched) answer, s. below.

An extension of the empirical domain to embedded questions reveals that *wh*-question disjunctions become felicitous in PSI-licensing contexts, viz. downward-entailing contexts (DE contexts) and non-DE contexts that are non-veridical (for *non-veridicality* s. [ii]). This is illustrated in (5a-e) for *wh*-word coordinations which – due to sentences like (5e) – we assume to be derived by ellipsis, s. (8a) for the PF deletion (marked by strike-through) that leads to (5a). (6a) is an example with a context that does not license PSIs. (6a) is unacceptable except for two irrelevant readings: the *or rather* reading in (6b), which is comparable to (1b), and the matrix-ellipsis reading in (6c): if (6a) is read with the accents marked in (6c) a larger ellipsis site is indicated, viz. ellipsis of the matrix clause, where it is no longer the embedded questions that are disjoined. Such 'large' ellipsis is not available in (5a-e): the purported non-elliptic versions differ in meaning from the elliptic ones. E.g., (5a) has not the same meaning as its purported non-elliptic version (7a), but the meaning in (7b). We assume therefore that (5a) has the LF structure in (8a). By standard assumptions, this LF yields (8b) as its unenriched meaning, where 'ans' gives the weakly exhaustive answer (cf. [iv]).

The deviance of (6a) is formally derived from (A) and (B) as follows. Consider first the declarative disjunction in (9a), where the preferred reading of *or* is the exclusive one: (9a) could describe the findings of the police if the busses stop at 12 p.m.: Paul would have been home at 12 at the latest if he took the bus, or later – such as at 3 a.m. – if he did not take the bus. Thus, (9a) exemplifies that non-DE contexts give rise to local implicatures. According to [i], this means that the scalar enrichment operator O_{ALT} (s. (10) for definition) applies to the embedded proposition, i.e. the enriched interpretation of (9a) is the proposition in (9b). In the case of (6a), local enrichment leads to a kind of presupposition clash: (11a) is the enriched meaning of (6a). Assume, e.g., that the answer operator in (11a) applies to the question denotation in (4b). Then (11a) is equivalent to (11b), where p_1 and p_2 are as given in (9b), however with the difference that by the semantics of the disjoined questions, p_1 and p_2 are true in the actual world. Hence, the embedded proposition is false in the actual world, and this leads to a presupposition failure in all contexts due to the factivity of the matrix predicate *find out*. This explains the deviance of (6a). In the case of (5a), in contrast, the DE property of the matrix negation induces a recalibration of the implicature (s. [i]), i.e. in this case the operator O_{ALT} applies to the overall denotation of (5a)/(8a), see (12a). If we again assume that the operator 'ans' applies to (4b), (12a) is equivalent to (12b) (since $\neg \text{find_out}(x, p_1 \vee p_2) \subseteq \neg \text{find_out}(x, p_1 \wedge p_2)$). This is the correct result, as can be seen when considering the equivalence in (13) (with embedded declaratives we must use a non-factive matrix predicate to avoid interfering presuppositions). This result carries over to the other examples in (5)

involving DE contexts. To account for the felicity of *or* in the context of an embedding question, s. (5d), we follow [vi], who argues that for questions weakening can be pragmatically preferred. I.e. we assume that non-local enrichment can serve other purposes than strengthening (s. also [i]).

Our analysis lends strong support to the central claim of [i] that the syntactic distribution of PSIs is determined by grammatically conditioned pragmatic principles. The above discussion shows that *wh*-question disjunctions are PSIs. However, the PS property cannot be ascribed to a single lexical item (in contrast to e.g. *any* in *any*-phrases). Rather, this property is semantically composed of two independent properties of the involved constituents: the semantic/pragmatic property of *or* to induce (scalar) alternatives, and the semantics of the disjoined questions. Hence, the syntactic distribution of *wh*-question disjunctions cannot be determined by a syntactic feature that is independent of the alternative-inducing property of *or*, i.e. it must be determined by Chierchia's feature [+σ]. Parsimony demands that we assume the same for all PSIs.

Data:

- (1) a. *Which dish did Al make or which dish did Bill make? (Krifka 2001)
b. Which dish did Al make? Or, which dish did Bill make?
- (2) Are you coming or are you going?
- (3) $[[Q_1 \text{ or } Q_2]] = \{p_1 \vee p_2 \mid p_1 \in [[Q_1]] \wedge p_2 \in [[Q_2]]\}$, where $p \vee q = \wedge (\vee p \vee \vee q)$ for p, q of type *st*
- (4) a. *How or when did Paul come home?
b. $\{ [[\text{Paul came home by bus}]] \vee [[\text{Paul came home at 3 a.m.}]] \}$
- (5) a. The police did not find out how or when Paul came home that night. (negation)
b. If the police find out how or when Paul came home that night they can solve the crime. (antecedent of conditional)
c. Few detectives found out how or when Paul came home that night. (DE quantifier)
d. Have the police found out how or when Paul came home that night? (question)
e. The police did not find out if or when Paul came home that night.
- (6) a. *The police found out how or when Paul came home that night.
b. The police found out how, or rather when Paul came home that night.
c. The police found out HOW, or ~~the police found out~~ WHEN Paul came home that night.
- (7) a. The police did not find out how, or the pol. did not found out when Paul came home that night.
b. The police did not find out how, and the pol. did not found out when Paul came home that night.
- (8) a. [the police did not [find out [[CP₁ how ~~P. came home that night~~] [or [CP₂ when P. came home that night]]]]]
b. $\neg \text{find_out}(\text{the_police}, \text{ans}(\{p_1 \vee p_2 \mid p_1 \in [[CP_1]] \wedge p_2 \in [[CP_2]]\}))$, where $\text{ans}(Q) = \bigcap_{p \in Q} p$
- (9) a. The police found out that Paul came home by bus or that he came home at 3 a.m.
b. $\text{find_out}(\text{the_police}, O_{ALT}(p_1 \vee p_2)) = \text{find_out}(\text{the_police}, (p_1 \vee p_2) \wedge \neg(p_1 \wedge p_2))$,
where $p_1 = [[\text{Paul came home by bus}]]$, $p_2 = [[\text{Paul came home at 3 a.m.}]]$
- (10) $O_{ALT}(p) = p \wedge \forall q [(q \in ALT \wedge q) \rightarrow p \subseteq q]$, where $ALT = \{p_1 \vee p_2, p_1 \wedge p_2\}$ for $p = p_1 \vee p_2$
- (11) a. $\text{find_out}(\text{the_police}, O_{ALT}(\text{ans}(\{p_1 \vee p_2 \mid p_1 \in [[CP_1]] \wedge p_2 \in [[CP_2]]\})))$
b. $\text{find_out}(\text{the_police}, (p_1 \vee p_2) \wedge \neg(p_1 \wedge p_2))$, where p_1 and p_2 are true in the actual world: ✎
- (12) a. $O_{ALT}(\neg \text{find_out}(\text{the_police}, \text{ans}(\{p_1 \vee p_2 \mid p_1 \in [[CP_1]] \wedge p_2 \in [[CP_2]]\})))$
b. $\neg \text{find_out}(\text{the_police}, p_1 \vee p_2)$, where p_1 and p_2 are true in the actual world
- (13) The police do not believe that Paul came home by bus or that he came home at 3 a.m.
= The police believe neither that Paul came home by bus nor that he came home at 3 a.m.

References:

- [i] Chierchia, G. (2006). 'Broaden your views.' *LI* 37: 535-590. [ii] Giannakidou, A. (1998). Polarity Sensitivity as (Non)Veridical Dependency. Amsterdam: Benjamins. [iii] Groenendijk & Stokhof (1984). *Studies on the Semantics of Questions and Pragmatics of Answers*, Diss., Univ. of Amsterdam. [iv] Heim, I. (1994). 'Interrogative semantics and Karttunen's semantics for *know*,' in R. Buchalla and A. Mittwoch (eds.), *Proceedings of IATL 1*, pp. 128-144, Jerusalem: Akademon. [v] Karttunen, L. (1977). Syntax and semantics of questions. *L&P* 1: 3-44. [vi] Krifka, M. (1995). 'The semantics and pragmatics of polarity items.' *Ling. Analysis* 25: 209-257. [vii] Krifka, M. (2001). 'Quantifying into question acts.' *NLS* 9, 1-40. [viii] Szabolcsi, A. (1997). 'Quantifiers in Pair-List Readings', in A. Szabolcsi (ed.), *Ways of Scope Taking*, pp. 311-347. Kluwer, Dordrecht.