

Alternative vs Polar questions: the *cornering effect*

The problem: The standard Hamblin/Karttunen semantics for Polar Questions (PolQ), (1a), and alternative questions composed of two polar alternatives (AltQ \vee N), (1b), induces equivalent partitions: (1a-i) and (1b-i) (the canonical intonation is as indicated ([7, 5])).

- (1) a. Are you making pasta_{L*H-H%}? (final raising) [PolQ]
 i. $\llbracket(1a)\rrbracket(w_o) = \lambda q[q = \lambda w.make(pasta, you, w) \vee q = \lambda w.\neg make(pasta, you, w)]$
 b. Are you making pasta_{L*H-} or not_{H*L-L%}? (final fall) [AltQ \vee N]
 i. $\llbracket(1b)\rrbracket(w_o) = \lambda q[q = (\lambda w.make(pasta, you, w) \vee \lambda w.\neg make(pasta, you, w))]$

The denotations in (1a-i) and (1b-i) do not explain the differences pointed out by [2]: in *requests*, (2a), *rethorical questions*, (2b), *invitations*, (2c), and *conversation starters*, (2d) it is only appropriate to use a PolQ (in those cases, using AltQ \vee Ns, as in (2), is inappropriate).

- (2) a. Will you marry me or not?(odd) c. Do you want a beer or not? (odd)
 b. Are you crazy or not? (odd) d. Do you like to play golf or not?(odd)

[8] have recently provided a purely pragmatic account of PolQs vs. AltQ \vee Ns according to which PolQs are special because their positive answer has a higher utility value for the questioner. However, there are problematic examples as well as new data that remains unexplained (3): the *cornering effect*.

- (3) A: Are you making pasta_{L*H-H%}? (4) A: Are you making pasta_{L*H-H%}?
 B: (Silence and dubitative faces) B: (Silence and dubitative faces)
 A: Are you making pasta_{L*H-} or not_{H*L-L%}? A: Com'n, are you making pasta_{L*H-H%}?

The use of an AltQ \vee N triggers the *cornering* of the addressee, (3), an effect not found if instead a PolQ is uttered again: see (4), where any effect is just the mere result of insistence.

Proposal overview: We derive the differences between AltQ \vee N and PolQ with a semantics that characterizes both as involving lists of alternatives (spelled out or not): PolQs involve an open list (just one alternative is spelled out), indicated by its final raising intonation, whereas AltQ \vee Ns involve closed lists (all alternatives spelled out), indicated by its final falling intonation ([10] establishes a connection between intonation and open vs. closed lists for assertive disjunctions). Open and closed lists differ semantically with respect to the presence/absence of a *Closure* operator acting on the possible alternatives ([10]). We treat the information provided by the closure operator as a presupposition associated with closed-lists questions. This difference in the semantics makes a difference in the discourse. I use a hierarchical discourse model ([6], [3]) to illustrate these differences and ultimately explain the *cornering effect*. The claims are supported by the results of two processing experiments.

The semantics: In what follows I treat lists within Hamblin semantics ([1]): (i) the denotation of a simple proposition is the set containing the proposition; (ii) there is no *or* in the semantics ([10,4,1]) and disjunction only presents lists: sentences with *or* denote the union of the sets corresponding to the disjuncts ([1]). I slightly modify the standard question operators in Hamblin/Karttunen semantics to scope over sets of propositions via functional application.

- (5) $\llbracket Q_{yes/no} \rrbracket = \lambda S_{\langle\langle s, t \rangle, t \rangle} \lambda w \lambda q. \forall r_n \in S [q = (r_1 \vee r_2 \dots \vee r_n) \vee q = \neg(r_1 \vee r_2 \vee \dots \vee r_n)]$
 (6) $\llbracket Q_{Alt} \rrbracket = \lambda S_{\langle\langle s, t \rangle, t \rangle} \lambda w. \lambda q. \forall r_n \in S q = r_1 \vee r_2 \vee \dots \vee r_n$

a. AltQ \vee N: AltQ \vee Ns are a special instance of questions with overt disjunction like *Are you making pasta or fish?* These questions have two possible intonational patterns, (7), with 2 readings [7, 5] (following [7] I assume ellipsis in the second disjunct (~~*are you making fish*~~)).

- (7) a. Are you making pasta_{L*H-} or fish_{H*L-L%}? (final fall) [Alternative reading]

b. Are you making pasta_{H*L} or fish_{L*H-H%}? (final raise) [Yes/No reading]

With raising intonation, (7b), the questioner doesn't assume that making pasta or making fish are the only possible alternatives amongst which the addressee may choose, others may be (contextually) available. With final falling intonation, (7a), the questioner assumes that the only possible alternatives are either making pasta or making fish: the final fall indicates the presence of *closure*. I propose the operator in (8), (inspired by [10]'s) as a presupposition operator. Γ combines with a set of propositions and checks the epistemic closure of that set.

(8) $\Gamma := \lambda G_{\langle\langle s, t \rangle, t \rangle} : (\forall x)(\forall P)[[q = P(x) \ \& \ \textit{EpistemicallyPossible}(q)] \rightarrow q \in G].G$

Questions with disjunction of two polar (complementary) alternatives can only have final fall (closed list, Γ is present), (1b): $\llbracket Q_{\text{Alt}} \rrbracket$ scopes over a set of propositions epistemically closed.

(9) $\llbracket (1b) \rrbracket = \lambda w. \lambda q. q = \textit{make}(2sg, \textit{pasta}) \vee \neg \textit{make}(2sg, \textit{pasta})$ [AltQVN]

Presup.: the only epistemic alternatives are $\textit{make}(2sg, \textit{pasta})$ and $\neg \textit{make}(2sg, \textit{pasta})$

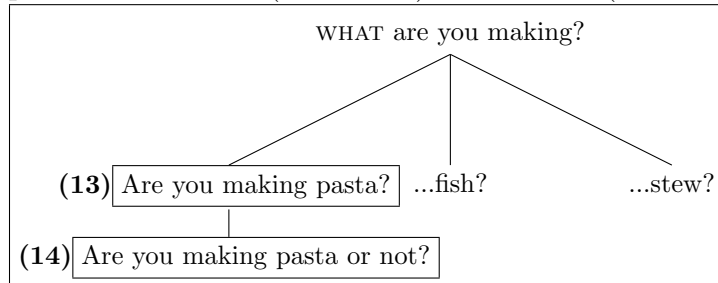
b. PolQ: Non-*wh* questions without overt disjunction also have two possible intonations with 2 readings. The default/canonical intonation is as in (10) [PolQ], but (11) is also possible.

(10) Are you making pasta_{L*H-H%}? [PolQ] (11) Are you making pasta_{H*L-L%}?

With final raising intonation, (10), the questioner does not assume that the addressee can only make pasta: there may be other things that the addressee may want to do (the question is ultimately *what are you making? maybe pasta?*). However, with final fall, the only alternative considered by the questioner is *making pasta*, and s/he does not care about any other possibility: Γ is present in the semantics in (11), but not in (10), (12) (cf. (12) and (9)).

(12) $\llbracket (10) \rrbracket \lambda w. \lambda q. q = \textit{make}(2sg, \textit{pasta}) \vee q = \neg \textit{make}(2sg, \textit{pasta})$ [PolQ]

The Discourse: Making use of a hierarchical discourse model ([6, 3]), we can make further predictions. PolQs (without Γ) have sisters (=discourse alternatives), (13), available to the



addressee (A: *Are you making pasta?* B: *I am making stew*). AltQVNs (with Γ) do not have sisters, (14): the questioner (and the addressee when accepting the *move*) (pretends to) accept ([9]) that no discourse alternatives other than those spelled out are available at the

time of utterance. AltQVNs can be used as *substrategies* to get an answer to PolQs, but no strategy can be used to get an answer for an AltQVN: AltQVNs are a *cul de sac*, the last possible *questioner's move*. **Consequences:** (i) PolQs can point to more general questions and are good conversation starters; (ii) AltQVNs are the last questioner's move and do not leave the addressee space to maneuver: they are the preferred question to close previously opened issues (bad conversation starters). The *cornering effect* is the result of Γ in AltQVNs and its discourse impact (it makes them the last *move*). Experimental results support (i) and (ii), and disconfirm the predictions in [8]. The differences also explain [2]'s data in (2).

Conclusion: The closure of alternatives marked by intonation ([10]) has consequences for the semantics of questions. We have shown that such differences in the semantics shape discourse structure and account for pragmatic effects.

References: [1] Alonso-Ovalle 2006. [2] Bolinger 1978. [3] Büring 2003. [4] Geurts 2005. [5] Pruitt 2008. [6] Roberts 1996. [7] Romero and Han 2003. [8] van Rooy and Šafářová 2003. [9] Stalnaker 2002. [10] Zimmermann 2000.