A QuD-driven approach to incremental constraints on exhaustification*

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Data

Singh (2008a) noticed that the disjunctions in (1) (Hurford Disjunctions, Hurford, 1974), and the sequences of conditionals in (2) (Sobel Sequences, Sobel, 1970) exhibit similar asymmetries:

- the b. variants, in which the stronger disjunct or antecedent precedes the weaker one, are odd (subtle);
- the a. variants, in which the order is reversed, are fine;
- *only* repairs the b. variants; cf. the c. variants.

(1) a. Jo did (only) some or all of the problems.
 b. ?? Jo did all or some of the problems.
 c. Jo did all or **only** some of the problems.

(2) a. If Jo (only) solved some problems she'll fail, but if she solved all she'll pass.
 b. ? If Jo solved all problems she'll pass but if she solved some she'll fail.
 c. If Jo solved all problems she'll pass but if she **only** solved some she'll fail.

We will focus on explaining (1). Such sentences, without *only*, feature entailing disjuncts, which makes them odd. The asymmetry between (1a) and (1b) has been linked to local exhaustification, as allowed by the covert operator *exh* (Fox, 2007; Spector et al., 2008). But *exh*, whose meaning is close to that of *only*, allows to break the problematic entailment between disjuncts in *both* (1a) and (1b), at least in principle. ***Exh* must then be incrementally constrained s.t. the a. variants can have their weaker items exhaustified, while the b. variants cannot** (Singh, 2008b; Fox & Spector, 2018; Tomioka, 2021; Hénot-Mortier, 2022). Additionally, **the fact that both (1a) and (1b) are fine with *only*, suggests *only* "escapes" whatever constraint applies to *exh*.**

Questions, and upshot

1. Can (1-2) be explained by a unified (and independently motivated) incremental constraint on *exh*?
2. Can the scope of this constraint naturally exclude overt *only*, without further stipulations?

Building on the idea that scalar implicatures are presupposed *via* the operator ***pex*** (Bassi et al., 2021), and that a Question under Discussion (**QuD**, Roberts, 1996) should not be answered *via* presupposition accommodation (Heim, 2015; Aravind et al., 2023; Doron & Wehbe, 2024), we answer 1) by proposing that *pex* should be inserted only if the inferences it gives rise to do not trivialize the *incremental* QuD evoked by preceding material (typically, 1st disjunct, 1st conditional).

Based on Bassi et al. (2021) and Doron and Wehbe (2024), we answer 2) by arguing that *only* obeys the same general constraint, but does not violate it in (1-2) because it introduces a different division of labor between presupposition and assertion. The contrast between *pex* and *only* then boils down to the idea *pex*(*some*) cannot answer a question about *all* vs. *not all*, while *only some* can.

(3) Did Jo do some of the problems, or none of them?
 – Jo did (#only) some of the problems.

(4) Did Jo do all of the problems, or not all of them?
 – Jo did #(only) some of the problems.

Incremental questions

Out-of-the-blue declaratives evoke the possible QuDs they could answer in the form of trees, which organize the Context Set hierarchically (Büring, 2003; Hénot-Mortier, 2024; Zhang, 2024). In such trees, **we assume nodes are all subsets of the Context Set (CS), and get partitioned by their children nodes**.

For instance, *Jo solved all of the problems* may evoke the QuDs in Fig. I, and *Jo solved some of the problems* may evoke the QuDs in Fig. II. We abbreviate $\exists \wedge \neg\forall$ as $\tilde{\exists}$

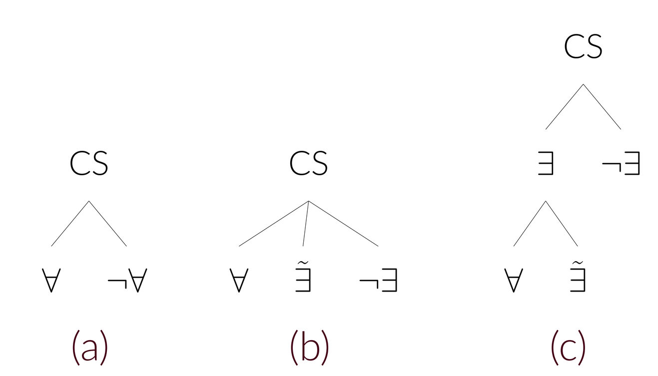

Fig. I. QuDs evoked by *all*.

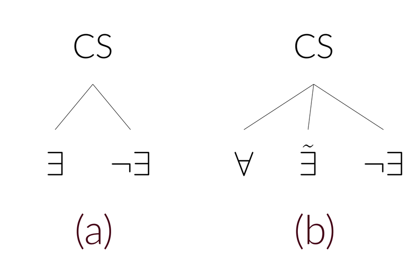

Fig. II. QuDs evoked by *some*.

In complex LFs, QuD-trees are incrementally computed: we take contrastive LFs like *A or/but B*, to raise a global question which addresses A and B *in parallel* (Simons, 2001; Zhang, 2024). A QuD-tree for *A or B* is thus the union of the QuD-trees of A and B. This implies that once *all or* ... is processed, one knows that the global QuD will contain a tree from Fig. I.

Effect of accommodation on QuD-trees

Following Bassi et al., 2021, we assume that *pex*($\exists$) asserts $\exists$ and presupposes $\neg\forall$, while *only*($\exists$) asserts $\neg\forall$ and presupposes $\exists$. Accommodating p normally amounts to intersecting the CS with p. If T is a QuD-tree, we argue that accommodating p on T amounts to intersecting every node of T with p ($T \cap p$), and deleting empty nodes and trivial links. Figs. III-IV show the effect of accommodating resp. $\neg\forall$ (as done by *pex*) and $\exists$ (as done by *only*), on the trees evoked by *all* from Fig. I.

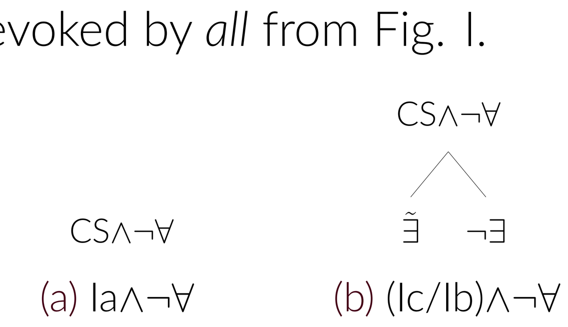

Fig. III. Accommodating $\neg\forall$ on the QuDs from Fig. I.

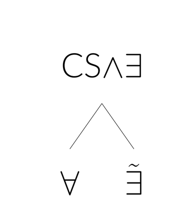

Fig. IV. Accommodating $\exists$ on the QuDs from Fig. I.

Felicitously answering incremental QuDs

QuDs cannot be fully addressed *via* accommodation (Heim, 2015; Aravind et al., 2023; Doron & Wehbe, 2024). This explains why (3) is infelicitous with *only*: *only*($\exists$) forces the answer to the overt question to be accommodated. When the question shifts to $\forall/\neg\forall$, as in (4), *only* (which *asserts* $\neg\forall$) becomes ok. Without *only*, (4) is either parsed as *pex*-less, and uninformative ($\exists$ does not settle $\forall$ vs. $\neg\forall$), or it is *pex*-ed, and thus presupposing the answer ($\neg\forall$) – causing infelicity.

Doron and Wehbe, 2024's version of this constraint states that if S presupposes p and intends to answer Q, S has to be informative w.r.t. Q *after the CS gets updated with* p. A sentence S is informative w.r.t. Q if it allows to rule-out some cells in Q. We adapt this to incremental QuD-trees: given a partial LF C evoking a set of possible QuD-trees $\mathbb{T}_C$, and a continuation S of C presupposing p, for any $T \in \mathbb{T}_C$, S should rule-out a node in $T \cap p$ (★).

Capturing (1)

In (1a), presuppositions carried by *only*/*pex* occur in the 1st disjunct, so at that point C and $\mathbb{T}_C$ are empty and constraint (★) is trivially verified. Both *pex* and *only* can thus rescue (1a).

In (1b), *only*/*pex* occur in the 2nd disjunct, so at that point $C = \forall \vee \ldots$ and $\mathbb{T}_C =$ Fig. I. Having *pex*($\exists$) in the 2nd disjunct leads to accommodate $\neg\forall$ as done in Fig. III. But in tree IIIa, the assertion $\exists$ does not rule out any node i.e. is uninformative. (★) is thus violated. Having *only*($\exists$) instead, leads to accommodating $\exists$, as done in Fig. IV. In this tree, the assertion $\neg\forall$ rules out the left leaf, i.e. is informative. (★) is thus verified. The licensing contrast between *pex* and *only* in (1b) is therefore explained.

Discussion & extensions

Previous accounts either captured (1) but did not explain why *only* differed from *exh*; or did explain the difference, but by appealing to extra principles, and non-trivial assumptions about *only* (Singh, 2008a). Here, we elaborated on a third family of accounts (Tomioka, 2021; Hénot-Mortier, 2022) based on the interplay between alternatives and contrastive focus. This allowed to provide a more general grounding to the incremental constraint at stake, and to explain the *exh*/*only* contrast.

As for the Sobel asymmetry (2), it is dealt with assuming *but* and *or* create similar QuDs (*via* union), and that conditionals "stack" antecedent and consequent QuD-trees (cf. Fig. V). This allows the antecedents in (2) to incrementally interact like the disjuncts in (1).

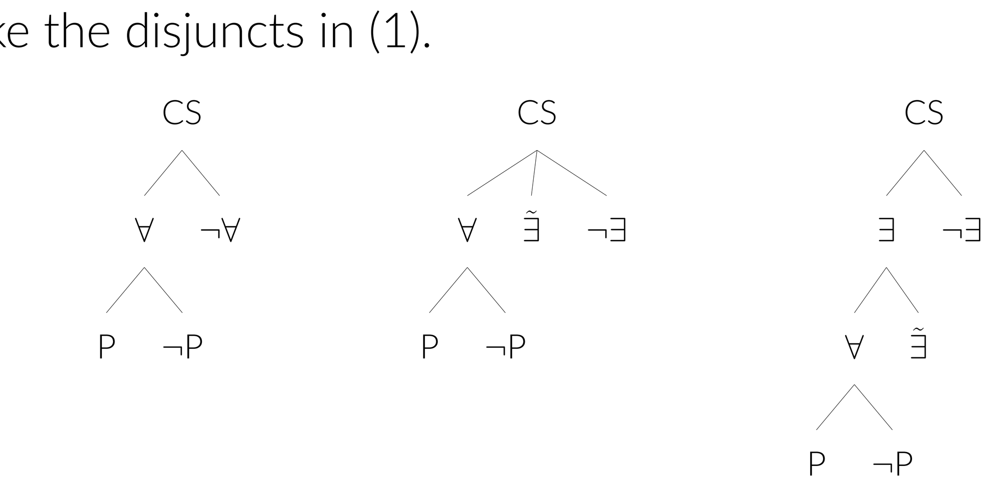

Fig. V. QuDs evoked by *if all then pass*.

Sobel, J. H. (1970).Utilitarianisms: Simple and general. *Inquiry*. Hurford, J. R. (1974).Exclusive or inclusive disjunction. *Foundations of language*. Roberts, C. (1996).Information structure in discourse: Towards an integrated formal theory of pragmatics. *Sem&Prag*. Simons, M. (2001).Disjunction and alternativeness. *L&P*. Büring, D. (2003).On d-trees, beans, and b-accents. *L&P*. Fox, D. (2007). Free choice and the theory of scalar implicatures. In *Presupposition and implicature in compositional semantics*. Singh, R. (2008a). *Modularity and locality in interpretation* [Doctoral dissertation]. Singh, R. (2008b).On the interpretation of disjunction: Asymmetric, incremental, and eager for inconsistency. *L&P*. Spector, B., Fox, D., & Chierchia, G. (2008).Hurford's Constraint and the Theory of Scalar Implicatures. *Ms*. Heim, I. (2015). Lecture notes. Fox, D., & Spector, B. (2018).Economy and embedded exhaustification. *Natural Language Semantics*. Bassi, I., Del Pinal, G., & Sauerland, U. (2021).Presuppositional exhaustification. *Semantics and Pragmatics*. Tomioka, S. (2021).Scalar implicature, hurford's constraint, contrastiveness and how they all come together. *Frontiers in Communication*. Hénot-Mortier, A. (2022).Alternatives are blind to some but not all kinds of context: The view from Hurford Disjunctions. *SuB27*. Aravind, A., Fox, D., & Hackl, M. (2023).Principles of presupposition in development. *L&P*. Doron, O., & Wehbe, J. (2024).On the pragmatic status of locally accommodated presuppositions. Hénot-Mortier, A. (2024)."One tool to rule them all"? An integrated model of the QuD for Hurford sentences [Draft (https://adelemortier.github.io/files/SuB_2024_TMT_paper.pdf), to appear]. *Proceedings of the 29th Sinn un Bedeutung*. Zhang, Y. (2024).A qud-based account of redundancy. *Ms.*

We also cover the improvement of (1b-2b) when *most* (M) is made salient, assuming that whatever QuD is raised by *all* in that case, must involve the *most* and *some* alternatives. Such QuDs are shown in Fig. VI, and the effects of the accommodation of $\neg$M (as contributed by *pex*(*some*)) and $\exists$ (as contributed by *only some*) are shown in Fig. VII & VIII.

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[Aravind et al., 2022] Aravind, A., Fox, D., and Hackl, M. (2022). Principles of presupposition in development. *Linguistics and Philosophy*, 46(2):291–332.

[Bassi et al., 2021] Bassi, I., Del Pinal, G., and Sauerland, U. (2021). Presuppositional exhaustification. *Semantics and Pragmatics*, 14(11):1–48.

[Büring, 2003] Büring, D. (2003). On d-trees, beans, and b-accents. *Linguistics and Philosophy*, 26(5):511–545.

[Doron and Wehbe, 2024] Doron, O. and Wehbe, J. (2024). On the pragmatic status of locally accommodated presuppositions. Available on Lingbuzz https://lingbuzz.net/lingbuzz/008279.

[Fox, 2007] Fox, D. (2007). *Free Choice and the Theory of Scalar Implicatures*, page 71–120. Palgrave Macmillan UK.

[Fox and Spector, 2018] Fox, D. and Spector, B. (2018). Economy and embedded exhaustification. *Natural Language Semantics*, 26(1):1–50.

[Heim, 2015] Heim, I. (2015). Lecture notes.

[Hurford, 1974] Hurford, J. R. (1974). Exclusive or inclusive disjunction. *Foundations of Language*, 11(3):409–411.

[Hénot-Mortier, 2022] Hénot-Mortier, A. (2022). Alternatives are blind to some but not all kinds of context: the view from Hurford Disjunctions. In *Proceedings of the 27th Sinn und Bedeutung*.

[Hénot-Mortier, 2024] Hénot-Mortier, A. (2024). "One tool to rule them all"? An integrated model of the QuD for Hurford sentences. In *Proceedings of the 29th Sinn und Bedeutung*. Draft (https://adelemortier.github.io/files/SuB_2024_TMT_paper.pdf), to appear.

[Roberts, 1996] Roberts, C. (1996). Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics*, 5:1–69.

[Simons, 2001] Simons, M. (2001). Disjunction and alternativeness. *Linguistics and Philosophy*, 24(5):597–619.

[Singh, 2008a] Singh, R. (2008a). *Modularity and locality in interpretation*. PhD thesis, MIT.

[Singh, 2008b] Singh, R. (2008b). On the interpretation of disjunction: asymmetric, incremental, and eager for inconsistency. *Linguistics and Philosophy*, 31(2):245–260.

[Sobel, 1970] Sobel, J. H. (1970). Utilitarianisms: Simple and general. *Inquiry: An Interdisciplinary Journal of Philosophy*, 13(1-4):394–449.

[Spector et al., 2008] Spector, B., Fox, D., and Chierchia, G. (2008). *Hurford's Constraint and the Theory of Scalar Implicatures*. Ms.

[Tomioka, 2021] Tomioka, S. (2021). Scalar implicature, Hurford's constraint, contrastiveness and how they all come together. *Frontiers in Communication*, 5.

[Zhang, 2024] Zhang, Y. (2024). *A Questions-Under-Discussion-Based Account of Redundancy*. Unpublished manuscript.