A QuD-driven approach to incremental constraints on exhaustification*

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Data

Singh2008b<empty citation> noticed that the disjunctions in (1) (Hurford Disjunctions, Hurford1974), and the sequences of conditionals in (2) (Sobel Sequences, Sobel1970, Sobel1970) 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* (Fox2007; Spector2008). 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** (Singh2008; Fox2018; Tomioka2021; HenotMortier2022). 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*** (Bassi2021), and that a Question under Discussion (QuD, (Roberts1996)) should not be answered *via* presupposition accommodation (Heim2015; Aravind2023; Doron2024), 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 Bassi2021; Doron2024<empty citation>, 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 (Buring2003; Zhang2024; HenotMortier2024a). 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 $\tilde{\exists}$

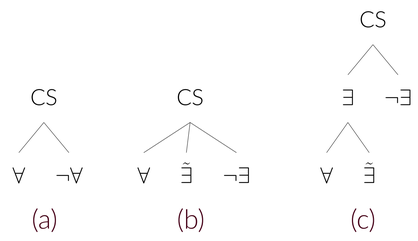

Fig. I. QuDs evoked by *all*.

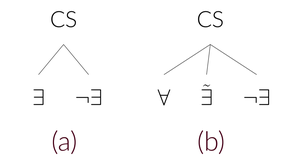

Fig. II. QuDs evoked by *some*.

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* (Simons2001; Zhang2024). 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 Bassi2021, we assume that *pex*(∃) asserts ∃ and presupposes ¬∀, while *only*(∃) asserts ¬∀ and presupposes ∃. 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. ¬∀ (as done by *pex*) and ∃ (as done by *only*), on the trees evoked by *all* from Fig. I.

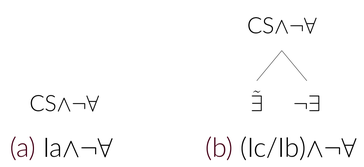

Fig. III. Accommodating ¬∀ on the QuDs from Fig. I.

Fig. IV. Accommodating ∃ on the QuDs from Fig. I.

Felicitously answering incremental QuDs

QuDs cannot be fully addressed *via* accommodation (Heim2015; Aravind2023; Doron2024). This explains why (3) is infelicitous with *only*: *only*(∃) forces the answer to the overt question to be accommodated. When the question shifts to ∀/¬∀, as in (4), *only* (which *asserts* ¬∀) becomes ok. Without *only*, (4) is either parsed as *pex*-less, and uninformative (∃ does not settle ∀ vs. ¬∀), or it is *pex*-ed, and thus presupposing the answer (¬∀) – causing infelicity.

Doron2024'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*(∃) in the 2nd disjunct leads to accommodate ¬∀ as done in Fig. III. But in tree IIIa, the assertion ∃ does not rule out any node i.e. is uninformative. (★) is thus violated. Having *only*(∃) instead, leads to accommodating ∃, as done in Fig. IV. In this tree, the assertion ¬∀ 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* (Singh2008b). Here, we elaborated on a third family of accounts (Tomioka2021; HenotMortier2022) 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).

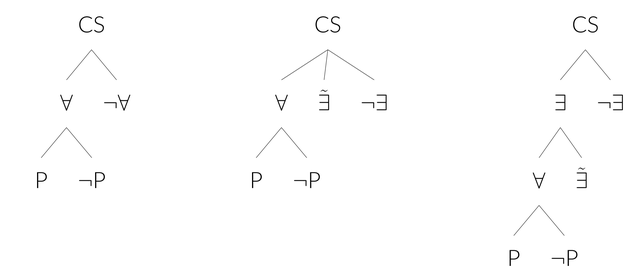

Fig. V. QuDs evoked by *if all then pass*.

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 ¬M (as contributed by *pex*(*some*)) and ∃ (as contributed by *only some*) are shown in Fig. VII & VIII. Underlined nodes are those ruled-out by the assertion.

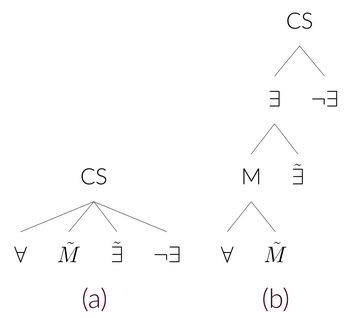

Fig. VI. QuDs evoked by *all* if *most* is made salient ($\tilde{\exists}$=∃ ∧ ¬M).

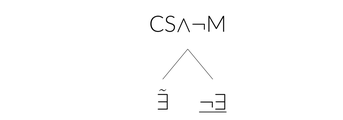

Fig. VII. Accommodating ¬M on the QuDs in VI ($\tilde{\exists}$=∃ ∧ ¬M).

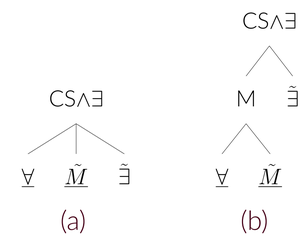

Fig. VIII. Accommodating ∃ on the QuDs in VI ($\tilde{\exists}$=∃ ∧ ¬M).

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