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Contents

Symmetry, density, and formal alternatives

Andreas Haida · The Hebrew University of Jerusalem

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Sauerland (2004) shows how the logical relations between a sentence and its alternatives either support scalar inferences (SIs) or ignorance inferences (IIs). Specifically, the logical relations between a disjunctive sentence $p \vee q$ and its alternatives $p \wedge q$, p, and q support a SI about $p \wedge q$ and an II about p and about q because the latter alternatives are "symmetric" to each other relative to $p \vee q$ (i.e., $\neg p \Rightarrow q$ and $\neg q \Rightarrow p$ if $p \vee q$ is true) whereas the former has no symmetric partners. This insight carries over to explain the IIs observed in (1): if *at least 5* has *exactly 5* and *more than 5* as alternatives, their symmetry relative to *at least 5* leads to IIs about them (Büring 2008; Kennedy 2013; Buccola and Haida 2017; see also Mayr 2013; Schwarz 2016).

(1) Ann owns at least 5 dogs
$\rightsquigarrow$ the speaker is ignorant about whether Ann owns exactly / more than 5 dogs

As discussed in Nouwen 2008, (1) contrasts with (2) and (3).

(2) Ann owns more than 4 dogs
no inferences

(3) Ann owns no fewer than 5 dogs
$\rightsquigarrow \neg$ Ann owns no fewer that n dogs (for all $n > 5$)

The following three ingredients provide a coherent explanation of most of this paradigm:

a. The UDM hypothesis: Natural language scales are always dense (Fox and Hackl 2006).
b. *At least* and *no fewer than* express $\geq$; *more than* expresses $>$ (Nouwen 2008).
c. Speaker beliefs about the matter of conversation are relevant (Fox 2016).

(a) explains why (2) doesn't license SIs (Fox and Hackl 2006). (a) + (b) explains why (3) contrasts with (2) in licensing SIs (Nouwen 2008). (a) + (b) + (c) explains why (2) contrasts with (1) in not licensing IIs (Buccola and Haida 2017).

Here, I want to add that we might also have an understanding of the remaining contrast, i.e., an understanding of why (3) contrasts with (1) in licensing a SI instead of IIs. The SI of (3) is derived by excluding the disjunction in (4a) (Nouwen 2008). The symmetric partner of (4a) is the proposition in (4b).

(4) a. $\bigvee\{[\lambda w.\max_d(\text{Ann owns } d\text{-many dogs in } w) \geq n] : n \in \mathbb{Q} \wedge n > 5\}$
= 'Ann owns more than 5 dogs'

b. $[\lambda w.\max_d(\text{Ann owns } d\text{-many dogs in } w) = 5]$
= 'Ann owns exactly 5 dogs'

Here is why (4b) might not be an alternative of (3). The alternatives of a sentence *S* are derived by replacing constituents of *S* with other linguistic material, in particular, with a lexical item or a subconstituent of a replacement target (Katzir 2007). A structure denoting (4b) cannot be derived from (3) if (i) *no fewer than* is not a constituent (Heim 1985; Abney 1987; Corver 1990; Hackl 2000), which precludes replacement with *exactly*, and/or if (ii) *fewer than 5* is a constituent so that (4b) could only be derived as follows:

(5) $[_{\alpha}$ *no* $[_{\beta}$ $[_{\gamma}$ *fewer than*] *5*]] $\xrightarrow{\alpha/\beta}$ $[_{\beta}$ $[_{\gamma}$ *fewer than*] *5*] $\overset{\gamma/exactly}{\longrightarrow}$ $[_{\beta}$ *exactly 5*]

The second replacement above is precluded by the independently motivated constraint in (6).

(6) Atomicity: No replacement target (γ) may be a subconstituent of a previous replacer (β) (Trinh and Haida 2015; Trinh 2018).

Although there is support for (i) and (ii), a complete account of the contrast between (1) and (3) requires showing that the coordination in (7), provided by an anonymous reviewer, involves unpronounced elements at the right edge of the conjuncts (i.e. right node raising).

(7) John owns either [[no more than] or [no fewer than]] 5 horses

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Andreas Haida
andreas.haida@gmail.com
The Hebrew University of Jerusalem
Edmond J. Safra Campus
Edmond and Lily Safra Center for Brain Sciences
Goodman Building
Israel