EMPHATIC VS. EXCLUSIVE MODIFICATION BY *SINGLE*: A UNIFIED APPROACH

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Introduction: A well-known feature of the emphatic modifier *single* is that it gives rise to two sorts of interpretations when it occurs in an indefinite noun phrase. In simple affirmative sentences, *single* semantically conveys 'no more than one', and thus patterns with other exclusive modifiers (e.g., *only*, *sole*, *mere*) in producing upper-bounded truth conditions. In NPI-licensing environments, *single* fails to trigger such an inference, and instead has a purely emphatic effect. In these environments, *single* patterns with scalar minimizers (e.g., (*see*) *a soul*, (*have*) *a clue*).

(1) {A single, Only one} student came to my office yesterday. (#In fact, several of them did.)

(2) John didn't see {a single person, a soul} during his morning walk.

While uses of *single* as in (2) have figured in the NPI literature, little attention has been paid to the use of *single* in positive contexts, much less to the relation between the two uses illustrated in (1) and (2). This paper presents a unified approach to these uses, one which takes their emphatic character as its starting point. In line with much recent work on NPIs, I account for this shared property via *single*'s mandatory association with the silent operator EVEN. This assumption derives its behavior in negative sentences like (2) straightaways. I further show that in positive sentences like (1), the semantic upper-bounding that *single* produces can also be made to follow from its mandatory association with EVEN. The paper thus broadens our understanding of two empirical domains that have figured prominently in the semantics literature, namely scalar minimizers and exclusive modifiers (see, e.g., Coppock & Beaver 2011,2013).

Minimizers and EVEN: In NPI-licensing environments, *single* exhibits two characteristic properties of minimizers, viz., co-occurrence with (overt) *even* and bias towards negative answers in questions.

(3) a. John didn't see <u>even</u> {a single person, a soul} during his morning walk.
b. Did you see (even) {a single person, a soul} out there? (biased: 'No' answer expected)

Following Chierchia (2013) (see also Krifka 1995 and esp. Lahiri 1998), I assume that minimizers serve to pick out low-points along a scale while obligatorily activating their scalar alternatives, which for *single*, correspond to the higher numerals.

(4) a. $[\![\text{single}]\!] = \lambda x.\text{one}(x)$ b. $[\![\text{single}]\!]_{ALT} = \{ \lambda x.\text{one}(x) , \lambda x.\text{two}(x) , \lambda x.\text{three}(x) , \dots \}$

(5) a. $[\![$ John didn't see a single person $]\!] = \neg\exists x[\text{person}(x) \,\&\, \text{one}(x) \,\&\, \text{see}(j, x)]$
b. $[\![$ John didn't see a single person $]\!]_{ALT} = \{ \neg\exists x[\text{person}(x) \,\&\, \text{n}(x) \,\&\, \text{see}(j, x)] : n \geq 1 \}$

These alternatives are consumed by the silent operator EVEN, which requires that the proposition in its scope (its "prejacent") be the least likely one amongst its (contextually-relevant) alternatives. It is this likelihood requirement that EVEN imposes on its prejacent that gives minimizers their characteristic emphatic quality.

(6) [EVEN [I didn't see a single person]]

(7) $[\![\text{EVEN S}]\!](w) = 1$ iff $[\![\text{S}]\!](w) = 1$ and $\forall\varphi[(\varphi \in [\![\text{S}]\!]_{ALT} \,\&\, \varphi \neq [\![\text{S}]\!]) \rightarrow [\![\text{S}]\!] <_{\mu} \varphi]$,
where μ is a contextually-relevant likelihood measure on propositions

The likelihood relation in (7) respects entailment: if $p \subseteq q$, then $p \leq_{\mu} q$. Since the prejacent (5a) entails all of the alternatives (5b), EVEN's requirement is automatically satisifed in negative sentences like (2). I further show how this proposal can account for certain other purely emphatic uses of *single*, namely its occurrence in universal noun phrases (e.g., *Every single student passed the exam*). Here again, EVEN's likelihood requirement will be satisfied, due to the prejacent's entailing all of its alternatives.

Likelihood, (non-)entailment, and EXH: The above proposal yields incorrect predictions regarding *single* in positive sentences like (1). The truth-conditions in (8a) fail to impose an upper bound on the number of students that came to my office. Furthermore, since (8a) is now entailed by all of its alternatives (8b), the likelihood requirement that EVEN imposes on its prejacent cannot be satisfied.

(8) a. ⟦ A single student came to my office ⟧ = $\exists x$[student(x) & one(x) & come(x, o)]
b. ⟦ A single student came to my office ⟧$_{ALT}$ = { $\exists x$[student(x) & n(x) & come(x, o)] : n > 1}

To resolve these problems, I propose that EVEN's prejacent in (1) is parsed with the silent operator EXH, which demands that its prejacent be the most informative true proposition amongst its alternatives.

(9) [EVEN [EXH [A single student came to my office]]]

(10) ⟦ EXH S ⟧(w) = 1 iff ⟦ S ⟧(w) = 1 and $\forall\varphi$[($\varphi \in$ ⟦ S ⟧$_{ALT}$ & $\varphi(w)$ = 1) $\rightarrow$ ⟦ S ⟧ $\subseteq \varphi$]

The presence of EXH results in strengthened, upper-bounded truth conditions for EVEN's prejacent in (1), and is thus responsible for the exclusive interpretation that *singl*e produces here. Simultaneously, EXH disrupts any entailments amongst the alternatives to EVEN's prejacent, which permits the likelihood requirement to again be satisfied.

(11)a. ⟦ EXH [A single student came to my office] ⟧
= $\exists x$[student(x) & one(x) & come(x, o)] & $\neg\exists x$[student(x) & two(x) & come(x, o)]
b. ⟦ EXH [A single student came to my office] ⟧$_{ALT}$
= { $\exists x$[student(x) & n(x) & come(x, o)] & $\neg\exists x$[student(x) & n+1(x) & come(x, o)] : n > 1}

Since the scalar alternatives in (11b) are not ordered by entailment, they are free to stand in any likelihood relation to each other. Specifically, EVEN's likelihood requirement will be satisfied in any context which furnishes the expectation that more than one student will come to my office, since this will make EVEN's prejacent less likely than any of its (contextually-relevant) alternatives (see Crnic 2012 for a similar appeal to EXH as a "rescue strategy" under EVEN). This is a welcome consequence, since apart from its 'no more than one' semantic effect, *single* in (1) indeed manages to convey such an expectation. The examples in (12), which create differing expectations regarding the amount of time that it will take to solve the problem, further illustrate the effect of EVEN's presence in positive sentences with *single*.

(12)a. Everyone else needed ten minutes to solve the problem, but I solved it in a single minute.
b. #Everyone else needed thirty seconds to solve the problem, but I solved it in a single minute.

Another welcome consequence of this proposal is its prediction that the existence and upper-bounding conveyed by (*a*) *single* may scope independently of each other. That such differentiated scope is possible is demonstrated by the contrasting interpretations of (13a) vs. (13b).

(13)a. You are allowed to submit a single invoice per month, instead of multiple invoices for each transaction.
b. Fans attending the game are allowed to bring a single bag into the stadium

In both (13a) and (13b), the indefinite noun phrase receives a *de dicto* reading, indicating that it takes scope under the possibility modal *allowed*. But whereas (13a) grants the addressee permission to submit exactly one invoice without ruling out the possibility of submitting more than one, (13b) instead imposes an upper limit on the number of bags that may be brought into the stadium. The two interpretations can be derived by varying the relative scope of *allowed* and EXH, as shown in (14).

(14)a. ⟦ allowed [EXH [you submit a single invoice]] ⟧ = $\Diamond$[**1** & $\neg$**2**]
b. ⟦ EXH [[allowed [you bring a single bag]] ⟧ = $\Diamond$[**1**] & $\neg\Diamond$[**2**]

The possibility of non-local scope for EXH thus separates this proposal from a plausible alternative, according to which the upper-bounding conveyed by *single* is "hard-wired" into its lexical meaning.

References [1] Chierchia, G. 2013. *Logic in Grammar*. [2] Coppock, E. & D. Beaver 2011. Sole sisters. [3] Coppock, E. & D. Beaver 2013. 'Mere'-ology. [4] Crnic, L. 2012. Focus particles and embedded exhaustification. [5] Krifka, M. 1995. The semantics and pragmatics of polarity items. [6] Lahiri, U. 1998. Focus and negative polarity in Hindi.