

The Scale of (Overt) Even : Problems and Solutions
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A. Background: The scalar presupposition of *even p* is standardly taken to require that *p* is less likely than all its contextually supplied focus alternatives, as seen in (1) (see e.g. [2], [7]):

(1) $\|even\|^{g,c} \lambda C. \lambda p. \lambda w. \forall q \in C q \neq p \rightarrow p <_{\text{likely}} q: p(w) = 1$ (where $C \subseteq \|p\|^F \wedge \|p\|^O \in C$)

This view can account for (2) (Getting 90 is less likely than getting 85 but not than getting 95).

Likelihood is reversed under Downward Entailing operators, so the reversed pattern of the negated versions of (2) in (3) is also predicted by this view (assuming *even* scopes over \neg ([7]):

(2) *Mary got 85 / #95 in the exam. And Bill even got [90]_F*

(3) *Mary didn't get 90 in the exam. And Bill didn't even get [85]_F / #[95]_F*

Notice that previous theories pointed out examples which may look problematic for this view:

(4) *John is a political non-conformist. He even read [Manufacturing Consent]_F although it has been banned by the censorship committee.*

(5) *Both tools are strong. This one is made of strong aluminum, and that is even made of [steel]_F*

[8] claims that (4) may be felicitous though given John's political views his reading

'Manufacturing consent' may be **more** likely than the alternatives. Similarly, (5) (from [3]) is

fine, though for a working tool being made of steel is not less, but probably more likely than

being made of strong aluminum. Such data was sometimes taken to indicate that the scale for

even is not based on likelihood, but on e.g. 'informativeness' or 'noteworthiness' (e.g. [5],[4]).

Such proposals, however, remained intuitive, and were not seriously integrated into current

analyses of *even*. The 'comparative-likelihood' view of *even*, then, remained predominant.

B. However, there are three novel observations which seem to indicate that the 'comparative likelihood' view of even should be more seriously re-considered:

Novel problem #I. Infelicity of *even* when a disjunctive alternative to *p* is salient. Consider (6):

(6) *A: Bill drank tea or coffee. B: He (#even) drank [tea]_F* (from [3])

Though *p* (*Bill drank tea*) entails and is less likely than its alternative in *C* (*Bill drank tea or coffee*), *even p* is infelicitous. [3] examines and rejects several potential explanations for this

infelicity. E.g. one may hypothesize that *C* in (6) contains not only *p* and $p \vee q$, but also *q*, and

then take (6) to be bad since *p* is not less likely than **all** alternatives in *C*: *Bill drank tea* is not

less likely than *Bill drank coffee*. But this hypothesis is refuted by (7b):

(7)a. *Ann hit Joe. Sue even [stabbed him]_F* b. *Ann stabbed or hit Joe. Sue (#even) [stabbed him]_F*

(7a) can be taken to be felicitous since *p* (*Sue stabbed Joe*) is less likely than *q* (*Sue hit Joe*). But

(7b) is infelicitous although *p* is less likely than **both** *Sue hit or stabbed Joe* and *Sue hit Joe*.

Novel problem #II. The need to exceed the standard. Consider the contrast in (8):

(8) a. *John wore his usual blue shirt for work yesterday, and he (#even) wore [a skirt]_F.*

b. *John wore a womanly-style shirt for work yesterday, and he (even) wore [a skirt]_F.*

The comparative likelihood view wrongly predicts (8a) to be felicitous, since *p* is taken to be less

likely than its salient alternative *q*. The improved felicity of (8b) seems to intuitively indicate that

for *even p* to be felicitous, both *p* and *q* need to be considered 'unlikely', i.e. the unlikelihood of

both needs to be above the contextually supplied standard. Consider also (9)-(11):

(9) *(Did Mary and Bill manage to get 60 in the exam?). Mary got #55 / 85. Bill even got [95]_F*

(10) *This tool is made of #weak plastic / iron. That one is even made of [steel]_F*

(11) *(The meeting started at 8.30). John arrived #at 8 / at 9. Bill arrived even [later]_F*

In (9)-(11) both *p* and *q* must 'lead' (in a sense to be made precise) to a degree on a salient scale

(of success, strength, lateness), which is higher than the standard. Consequently, both Mary and

Bill must be considered successful, both tools must be considered strong, and both John and Bill must be considered late. This is also what leads to the surprising evaluative effect with the comparative *later* in (11), i.e. the fact that when *even* is present it entails the positive form *late*, cf.[6]. Crucially, these effects are not captured by the ‘comparative likelihood’ view, nor, for that matter, by any other comparative-based view, requiring *p* to be merely higher than *q* on a scale. **Novel problem #III. Irreversibility under Downward-Entailing operators:** Unlike the pattern in (2)-(3), the reversibility-under DE operators sometimes breaks. E.g. the negated and reversed forms of the positive and infelicitous versions of (9) and (10) are felicitous:

(12) *Mary didn't get 95 in the exam. And Bill didn't even get [55]_F*

(13) *This tool isn't made of steel. That one isn't even made of [weak plastic]_F*

C. To solve these problems, we propose a revised scalar presupposition for *even*, inspired by an intuitive suggestion in [8]: *even p* presupposes that, **based on *p* we can infer that a salient *x*** (denoted by a non-focused or Contrastive Topic (CT) material in *p*) **has a higher degree above the standard of a salient scale *G*, than the degree we can infer based on *q*.** E.g. based on *That tool is made of steel* in (5) we can infer that that tool (denoted by the CT) has a higher degree of physical strength above the standard of strength, than the degree we can infer it has based on *that tool is made of strong aluminum*. Formally, as seen in (14), we require the extent to which *x*'s degree on *G* exceeds the standard (of *G*) to be higher in the accessible *p*-worlds (*w*₁) than in the accessible and minimally different *q*-worlds (*w*₂) (cf. [1] on comparative conditionals):

(14) $\forall q \in C \ q \neq p \rightarrow \forall w_1, w_2 \ [p(w_1) \wedge q(w_2)] \rightarrow [diff(max(\lambda d1. G(d1)(x)(w_1))) (standard(G)) > diff(max(\lambda d2. G(d2)(x)(w_2))) (standard(G))]$

D. Accounting for the data: In cases like (4)-(5) we map *p* and *q* to a salient *G*, measuring e.g. nonconformity, or physical strength. Cases where *p* seems less likely than *q* can be captured by either taking *G* to measure degrees of ‘surprise’, or more indirectly, by assuming that standards of relative gradable properties are often (though not always) ‘distributional’, i.e. represent the median point ([6]). In such cases, when *x* is higher above the standard in the *p*-worlds than in the *q*-worlds, it ends up being farther away from the median point. **Solving problem I:** Assume that in (7) *G* measures danger and *x* is Ann (denoted by the CT). In (7a) the revised presupposition in (14) is met: the extent to which Ann's degree of danger exceeds the standard (of danger) is higher in the worlds where she stabbed Joe than in the worlds where she hit him. In contrast, (14) fails in (7b): In the worlds where *Ann stabbed Joe* holds, her degree of danger (above the standard) is higher than or equal to her degree of danger in the worlds where *Ann hit or stabbed Joe* holds (since given the latter she might have stabbed Joe). I.e. in only SOME of the *q*-worlds (where Ann hit or stabbed Joe), Ann's degree of danger is lower than in the *p*-worlds (where she stabbed Joe). **Solving Problem#II:** (14) does not require merely a simple comparative relation where *p* leads to a higher degree than *q*, but also incorporates the need for both *p* and *q* to lead to a degree (of *x*) above the standard. Thus, when the resulting degree of *x* is below the standard as in (8a),(9)-(11) we get infelicity. Notice that this need also makes the new scale for *even* not necessarily reversible under DE operators, thus **solving problem#III:** E.g. unlike what happens in (2)-(3), in (12)-(13) we can rather easily find scales on which the negated versions of both *p* and *q* lead to degrees which are above the standard (e.g. a scale of disappointment, in (12), or of degrees to which buying that tool is not worthwhile in (13)).

References: [1]Beck 1997, ‘On the Semantics of Comparative Conditionals’, *L&P* / [2]Chierchia 2013, *Logic in Grammar OUP* / [3]Greenberg 2015, A Novel Argument Against Likelihood-Based Scales in the Presupposition of *Even*, Accepted (with revisions) to *Sem&Prag* / [4] Herburger 2000. *What Counts: Focus and Quantification*, MIT press / [5] Kay,1990. *Even*, *L&P*

/ [6] Kennedy 2007. Vagueness and grammar, *L&P* / [7] Lahiri, 1998. Focus and Negative Polarity in Hindi, *NLS*. [8] Rullmann, 2007. What Does *Even* Even Mean? ms. UBC