Even gives even more information: Scalar particles and discourse structure

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1. Introduction

1.1 Focus Particles: The standard picture

Exclusive particles (*only, nur*), **scalar-additive particles** (*even, sogar*), and plain **additive particles** (*also, too, auch*) are commonly treated on par as *focus particles*, a subclass of *focus-sensitive elements*.

- The interpretation of a sentence with focus particles depends on the position of the focus accent: "We say that semantic operators whose interpretational effects depend on focus are ***associated with focus***. The best-known cases are focus-sensitive particles like *only, also* and *even.*" [Krifka 2007: 25]

(1) a. John *only/even* introduced BILL$_F$ to Sue.
    b. John *only/even* introduced Bill to SUE$_F$.

- Focus particles operate over the set of (contextually given) alternatives indicated by the focus structure of the sentence. They exclude or include alternatives, or they rank alternatives high or low on a scale (Jacobs 1983, König 1991, Krifka 2007).

i.	**exclusive particles (*only*):**	focus denotation is the only true alternative
ii.	**additive particles (*also*):**	there is at least one true alternative to the focus denotation
iii.	**scalar particles (*even*):**	focus denotation is extreme when compared to other alternatives

- Placement of focus particles is flexible, but focus particles must (precede and) c-command focus associate (Jackendoff 1972, Rooth 1985, Büring & Hartmann 2001)

(2) a. *Even/Only* JOHN$_F$ gave his daughter a new bicycle.

    b. John gave *even/only* [his DAUGHTER]$_F$ a new bicycle.

    c. * JOHN$_F$ gave *even/only* his daughter a new bicycle.

    See Jackendoff (1972), Rooth (1985: 94ff.) and §2.2 below, for some qualifications.

- König (1991:15, emphasis and numbering MZ): "On the basis of the syntactic criteria discussed so far and on the basis of semantic criteria to be discussed in the next chapter we can assign the following elements of English to the class of focus particles:

[3] **also**, alone, as well, at least, **even**, especially, either, exactly, in addition, in particular, just, merely, **only**, let alone, likewise, so much as, solely, still/much less, purely, **too**."

- Beaver & Clark (2008: 68ff.): Unlike many other focus-sensitive elements, exclusive, additive and scalar-additive focus particles all ***conventionally associate with focus***:

⇒ Semantic dependency on focus is registered in the lexical semantics of focus particles:

(4) *Structured Meanings* (modeled after Krifka 1991: 19, 28):

    a. $[\![\,only\,]\!](<\alpha,\boldsymbol{\beta}>) = 1$ gdw. $\alpha(\beta)$ & $\forall x\ [x \approx \boldsymbol{\beta}$ & $\alpha(x) \to x = \boldsymbol{\beta}]$;
        where x is a variable of the type of β, $\alpha = [\![\,BG\,]\!]$, $\beta = [\![\,FOC\,]\!]$

b. $[\![$ even $]\!](<\alpha,\boldsymbol{\beta}>) = 1$ gdw. $\alpha(\beta)$; defined iff $\exists x [x\approx\boldsymbol{\beta} \ \& \ \alpha(\boldsymbol{\beta}) <_p \alpha(x)]$;

where x is a variable of the type of β, $\alpha = [\![$ BG $]\!]$, $\beta = [\![$ FOC $]\!]$
and $<_p$ a probability relation

(5) *Alternative Semantics* (modeled after Rooth 1985:120; 1992)

a. $[\![$ only $]\!](a)(w) = \underline{\forall p \ [\mathbf{C}(p) \ \& \ p(w) \rightarrow p = a]}$ & $\underline{a(w)}$
   ASS   PRES

a. $[\![$ even $]\!](a)(w) = \underline{\exists p \ [\mathbf{C}(p) \ \& \ p(w) \ \& \ p \neq a \ \& \ \text{unlikely}(p)]}$ & $\underline{a(w)}$;
    PRES   ASS

where C is a (contextual) restriction containing focus alternatives to a.

$\Rightarrow$ Grammatically, the focus associate of focus particles must be properly focus-marked by accenting: No association with phonologically weak leaners (Beaver & Clark 2008: 158f., ex. (6.44)):

(6) You can see Bush, but do you see Cheney?

a. I can ONLY #see'im / see HIM.

b. I can EVEN #see'im / see HIM.

c. I can ALSO #see'im / see HIM

d. I ALways see'im / see HIM.   (Q-Adverbial)

e. No, I can't see'im / see HIM.   (Negation)

1.2 *Only* and *even* as antonyms

Only and *even* are commonly taken to operate on scales in opposite but similar ways (Jacobs 1983, König 1991, Beaver & Clark 2008)

- König (1991: 59, emphasis MZ): „Particles like *only* and *even* in English, or *nur* and *sogar* in German, *are linked by a relation of oppositeness*. If both particles are used in a scalar sense, they pick out extreme values on opposite ends of the same scale"

(7) a. Only an EXCELLENT performance will please the boss
     b. Even a MEDIOCRE performance will please the boss.

- Jacobs (1983: 45): *Sogar/even* and *nur/only* map the proposition expressed above or below a contextually given threshold value on a contextually given scale.

- Horn (1969: 99, 105): *Even* (additive meaning component) presupposes the negated assertion and asserts the presupposition of *only*:

(8) a. Only (x=a, Fx)   b. Even (x=a, Fx)
     PRES: Fx   **PRES: ($\exists$y) (y$\neq$x & Fy)**
     ASS: $\neg$($\exists$y) (y$\neq$x & Fy)   ASS: Fx

1.3 *Only* and *even* as discourse operators on the QUD/Current Question

More recently, *only* and *even* have been analyzed as pragmatic antonyms with a use conditional meaning (Beaver & Clark 2008, Zeevat 2009, Grubic 2012):

They operate on discourse representations (e.g. D-trees, Büring 2003) by commenting directly on the addressee's expectation regarding the Current Question/QUD.

⇒ *Only/even* mark prejacent as weak/strong with respect to the considered alternatives.

"If the function of exclusives is to comment on an overly strong expectation regarding the answer to the Current Question, ***the function of a scalar additive is to comment on an overly weak expectation***. Thus whereas exclusives are inherently downward oriented in the sense that they declare a strong answer to be false in favor of something weaker, ***scalar additives are upward oriented, suggesting something stronger than what has been assumed or stated***." [B&C 2008: 71]

"*Only*, *just*, and *merely* are not like *cheese*, *pickles* and *beer* [nor is *even*; MZ]"
[B&C 2008: 248]

⇒ *Only* and *even* are more like discourse particles in commenting explicitly on knowledge states and (background) assumptions of the discourse participants.

⇒ Direct reference to the Currect Question/QUD accounts for why *even* and *only* conventionally associate with focus: Focus indicates what the Current Question/ QUD is (Beaver & Clark 2008).

(9) *Meaning of exclusives* (B&C 2008: 251):

i.	Discourse Function:	To make a comment on the Current Question/QUD that weakens a salient or natural expectation: prejacent weaker than expected answer.
ii.	Presupposition:	The strongest true alternatives in the CQ/QUD are **at least as strong** as the prejacent (= high expectation)
iii.	Descriptive Content:	The strongest true alternatives in the CQ/QUD are **at most as strong** as the prejacent (= choice of weakest element from CQ/QUD: lower bound)

(10) CQ/QUD: Who likes Bill?
Only [JOHN and PETER]$_F$ like Bill.

Presupposition: *John and Peter like Bill* is the weakest considered alternative.
Assertion: *John and Peter like Bill* is the strongest true alternative

⇒ *Stronger expected alternatives are excluded by descriptive meaning.*

(11) *Meaning of scalar-additives* (adapted from Grubic 2012):

i.	Discourse Function:	To make a comment on the QUD that strengthens a salient or natural expectation: prejacent stronger than expected answer.
ii.	Presupposition:	The prejacent (in some cases conjoined with preceding partial answers to the QUD) is the strongest true alternative in the QUD (= low expectation)
iii.	Descriptive Content:	The prejacent is true (⇒ choice of strongest element from CQ/QUD: higher bound)

⇒ (11.ii) and (11.iii) together make the prejacent the strongest true alternative.

(12) QUD: What can John understand?

John can **even** understand SYNTACTIC STRUCTURES$_F$.

(contextually given scale: increasingly difficult books)

Presupposition:	*John can understand Syntactic Structures* is the strongest alternative in CQ/QUD.	
Assertion:	*John can understand Syntactic Structures* is true.	

⇒ *Stronger alternatives are excluded by presupposition. No exclusion of weaker (expected) alternatives: **additive flavor***

(13) QUD: What did Mary eat?

[Mary ate popcorn and crisps and chocolate] and (she ate) *even a hotdog*.

(scale: quantity of things, information provided by partial true anwers to CQ)

Presupposition:	*Mary ate popcorn, crisps, chocolate and a hotdog* is the strongest considered alternative in the QUD.
Assertion:	Mary ate a hotdog is true (as are the other asserted alternatives)

Q: **Should *even*-sentences also express the descriptive content that the prejacent is the strongest true alternative or at least as strong as other alternatives (= *only*)?**

⇒ **§ 3.2**

1.4 Empirical Evidence

There is some cross-linguistic evidence that suggests a close semantic relation between exclusive and scalar-additive particles:

i. Some additive-scalar and exclusive elements share the same root, e.g. Serbo-Croatian: *samo* 'only' vs *sam* 'even' (König 1989: 324; cited in Grubic 2011)

ii. In the West Chadic languages Bole and Ngizim, the same lexical element *kapa* is used as an exclusive or scalar particle, respectively (Grubic 2012).

(14) Bamoi undu   Ibbi   sa,   **kapa Mammadi**   [Bole]
Bamoi call.PFV   Ibbi   NEG   only   Mammadi
'Bamoi didn't call Ibbi, (he called) only Mammadi.'

(15) Ndiwa tawanke   deyau,   **kapa Mammadi**   [Ngizim]
Person every   come.PFV   even   Mammadi
'Everybody came, even Mammadi (came).'

1.5 Goals and objectives

i. Elaborate on the analysis of exclusive and scalar particles as operating on discourse representation in terms of Questions under Discussion (QUDs).

ii. Point out differences in the syntactic distribution and semantic association behavior of exclusive and scalar particles that cast doubt on treating scalar particles as focus particles in the strict sense, i.e. as commenting on the immediate question under discussion: *SECTION 2*

iii. Account for more flexible distribution of scalar particles (in many languages) by proposing that they, unlike exclusive particles, can also operate on higher QUDs induced by contrastive topic structures (Büring 1997, 2003): *SECTION 3*

iv. Add some comments on additive particles and cross-linguistic variation: *SECTION 4*

> - *Central claims:*
>
> - Scalar *even* can operate on the more-dimensional answer space induced by contrastive topic (CT) constructions (Kay 1990): Association with CT (Krifka 1999)
>
> - Instances of strict association of *even* with focus (comment on immediate QUD) are just special (one-dimensional) instances of the more general pattern.
>
> - Exclusives are blocked from commenting on partial answers to topic-induced super-questions because their lexical meaning blocks them from occurring in partial answers.

2. Differences between exclusive and (scalar-) additive particles

Contrary to what is expected on a unified analysis of *all* focus particles as commenting on the focus-induced immediate QUD, exclusive particles and (scalar-)additive particles show significant differences in their syntactic distribution and their association behavior in many languages.

Section 2.1: *Case studies of exclusives and (scalar-) additives in non-Indoeuropean languages:*

⇒ (Scalar-) additives appear to exhibit free association with focus in Bura (Central Chadic), Ngamo (West Chadic), and Nɬeʔkepmxcin (Salish): they do not require/allow for their focus associate to be focus-marked.

⇒ Exclusive particles exhibit conventional association with focus and require their associate to be structurally marked for focus in all languages.

Section 2.2: *Differences between exclusives and (scalar-) additives in English/ German:*

⇒ Scalar-additive particles are more flexible in their distribution and association behavior than exclusives in English and German, too!

2.1 Distribution and association differences in non-Indoeuropean languages

- **Case Study I:** *Bura (Central Chadic)* (Hartmann & Zimmermann 2008)

  SVO, preverbal subject = default topic

  Focused subjects obligatorily marked by focus marker *an* (cf. Hartmann & Zimmermann (accepted) for discussion)

i. The subject associate of exclusive *daci* **must** be focus marked by *an*.

(16) a. *Mtaku* **daci** *(an) liha Biu. b. *Mtaku* *(an) liha Biu **daci**.
     M.   only FOC go B.   M.   FOCgo B.   only
     'Only MTAKU went to Biu.'   'Only MTAKU went to Biu.'

⇒ Exclusive *daci* conventionally associates with focus

ii. The subject associate of (scalar-) additive *(wala) ma* **must not** be focus marked by *an*.

(17) a. *Ladi* **ma** (*an) thlika whada ni. b. *Ladi*$_{FOC}$ (#an) thlika whada **ma**.
     L.   too   plant peanut DEF   L.   PRT plant peanut too
     'LADI, too, grew peanuts.'   'LADI, too, grew peanuts.'

(18)   **Wala** *Kubili* **ma** tsa si.
       even   K.   too 3SG come
       'Even KUBILI appeared.'

⇒ Additive *ma/tsuwa* and scalar-additive *wala…ma* do **not** conventionally associate with focus. Their 'associate subjects' often function as contrastive topics (cf. Krifka 1999):

(19) QUD: Who grew what?
      Context: [Magira grew peanuts, and Kubili grew peanuts, …]

      ka   *Ladi*   **ma**   thlika   whada   ni.
      and   L.   too   plant   peanut   DEF
      'and LADI, too, grew peanuts.'

- **Case Study II:** *Ngamo (West Chadic)* (Grubic & Zimmermann 2011, Grubic in prep.)

  SVO, preverbal subject = default topic

  focused subjects obligatorily marked by inversion to postverbal position plus preceding background marker –i/-ye ;

  focus-sensitive particles can occur sentence-initially, preverbally, or in post-VP position: (PRT) S (PRT) V O (PRT)

i.   The subject associate of exclusive *yàk('i)* **must** be focus-marked by inversion

(20) a. Sàlko   bànò-ì   **yak** *Kulè*   b. # (**Yak**) *Shuwa* (**yak**) sàlko   bànò (**yàk'i**).
      build-PFV   house-BM   only Kule   Only Shuwa   only   build-PFV house only
      'Only KULE built a house.'   intended: 'Only SHUWA built a house.'

⇒ Exclusive *yàk('i)* conventionally associates with focus

ii. The subject associate of scalar-additive *har* and plain additive *kè* **must not** be focus-inverted (21a). *Kè / har* associate with subjects in canonical preverbal position (21b).

(21) a. # Sàlko   bànò-i   **kè / har**   *Kulè*.
          build-PFV   house BM   also even   Kule
          intended: 'KULE also built a house.' / 'Even Kule built a house.'

      b. (**Kè/Har**) *Kulè* (**kè/har**)   sàlko   bànò (**kè'ê/hàr'î**).
          also/even Kule also/even   build-PFV   house also/even
          'Kule built a house, too.' / 'Even Kule built a house.'

⇒ Additive *kè* and scalar-additive *har* do **not** conventionally associate with focus. Again, their 'associate subjects' frequently function as contrastive topics.

- **Case Study III:** Nɬeʔkepmxcin (Salish) (Koch & Zimmermann 2009)

  As in Bura and Ngamo, additive particles in Nɬeʔkepmxcin differ from exclusive particles in distribution and association behavior.

i.   The exclusive element ƛ̓uʔ must be realized as a second position clitic and can only associate with syntactically marked (clefted) DP-arguments.

(22) cúkʷ=ƛ̓uʔ=weʔ   *e=kéyx*   e=wík-t-Ø-ne.
      CLEFT_only= ƛuʔ=DEM   DET=hand   COMP=see-TRANS-3OBJ-1SG.SUBJ
      'I only see [a hand]_FOC there.' (literally 'It's only [a hand]_FOC that I see.')
      (NOT: * 'Only [I]_FOC see a hand there.' / * 'I only [see]_FOC a hand there.')

⇒ Exclusive ƛ̓uʔ conventionally associates with focus

ii. The additive element *ʔetƛ̓uʔ* (which has a scalar reading depending on context) need not be realized as a 2CL, but can also occur in sentence-final adverbial position (40). It does not require its associate to be focus marked by clefting (41).

(23) ʔeł [nés=ekʷu=xeʔ míl't-m-Ø-s e=snukʷnúkʷeʔ-s]_FOC **ʔeƛ̓uʔ.**
and go=EVID=DEM visit-TR-3O-3S DET=friend[RED]-3POSS ʔeƛ̓uʔ
'and she [visited her friends]_FOC too.'

(24) wík-t-Ø-s=ekʷu=**ʔeƛ̓uʔ=**xeʔe *e=Tóm* e=səxʷsúxʷ.
see-TR-3O-3TS=EVID=ʔeƛ̓uʔ=DEM DET=Tom DET=grizzly.bear
(Bill saw the grizzly and ...) 'TOM also saw the grizzly bear.'

⇒ Additive *ʔeƛ̓uʔ* does **not** conventionally associate with focus. Again, its associate subjects frequently function as contrastive topics.

- **A better-known case:** Hungarian (Finno-Ugric) (Horváth 2005, 2007)

  In Hungarian, too, (scalar-)additives have a different distribution from exclusive particles. Crucially, they **must not** be located in the preverbal focus position, but occur in a higher structural (topic?) position (25ab), and they do not tolerate the focus-specific word order V > PRT (26ab):

(25) a. Péter **még** *Marit* **is** [csak egyszer]_FOC hívta meg.
Peter even Mary-acc too only once invited prt
'Peter invited even MARY only once.' (it is out of the question that he would have invited anyone else more than once)

  b. Péter *Marit* **is** [csak egyszer]_FOC hívta meg.
Peter Mary-acc too only once invited prt
'Peter invited MARY too only once.' (he also invited JOHN only once)

(26) a. Péter (**még**) *Marit* **is** meghívta.
Peter even Mary-acc too prt-invited

  b. * Péter (**még**) *Marit* **is** hívta meg.
Peter even Mary-acc too invited prt

  'Peter even invited MARY. / Peter invited MARY, too.'

- **Intermediate Summary:**

- Unlike exclusive particles, scalar-additive elements do not conventionally associate with focus in a range of Non-Indoeuropean languages

- In some languages (e.g. Nłeʔkepmxcin), they can occur in the same position as adverbs.

- For this reason, they have been analyzed as freely associating elements that quantifiy over situations and are restricted by a contextually bound variable C, on par with Q-adverbials on the analysis in Beaver & Clark (2003, 2008); see e.g. Grubic & Zimmermann (2011), Koch & Zimmermann (2009).

BUT: These analyses do not really account for the fact that scalar-additive elements behave like genuine focus particles in other environments even in the languages discussed,

  and they do not reflect the discourse-structuring function of these elements !

Q: **Is there an alternative analysis of scalar-additives on which they make direct reference to discourse representations in the form of QUDs?**

2.2. Syntactic and semantic differences in English and German

Scalar and exclusive particles differ in many respects even in German and English:

**i.** *[+/-] association with subjects from preverbal position:*
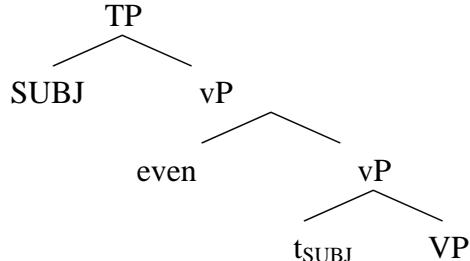
Unlike *only, even* can associate with the subject to its left when it occurs in preverbal position (possibly following *one* auxiliary, cf. (28)) (Jackendoff 1972, Rooth 1985):

(27) a.   JOHN **even** gave his daughter a new bicycle.
b.   ?JOHN **only** gave his daughter a new bicycle.

(28) a.   JOHN will **even** give his daughter a new bicycle.
b.   *?JOHN will **only** give his daughter a new bicycle.

⇒   Association with subjects blocked when *even* is embedded inside vP/VP.

(29) a.   *?JOHN will have **even** given his daughter a new bicycle.
b.   * JOHN will give even his daughter a new bicycle.

⇒   Jackendoff (1972), Rooth (1985): Unlike *only*, *even* can be generated as a sentential adverb and associate with elements in its c-command domain, including the subject:

(30) a.   S   b.   TP

SUBJ even VP   SUBJ   vP

even   vP

t_{SUBJ} VP

⇒   *even* can scope over the subject from a position from where it also takes scope over other elements of the clause: **Multiple association with subjects & non-subjects !**

⇒   Sentence-initial *even* and *only* adjoin to the focused subject NP and hence only take scope over this subject, pace Jacobs (1983), Büring & Hartmann (2001):

(31) a.   [DP only/even JOHN] gave his daughter a new bicycle.

b.   [DP JOHN only] gave his daughter a new bicycle.

ii. *Additivity requirement:*

Because of its additive meaning component, *even* is sometimes degraded in single answers to QUDs (32), or in evaluating responses to Yes/No-questions (33):

(32) QUD: How many books did John read?

A1:   He **only** read FIVE books.
≈ He read five books, which is less than expected.

A2:   #He **even** read FIVE books.
intended: He read five books, which is more than expected.

(33) QUD: Did Bill read five books?

A1:   Yes, he **only** read FIVE books.
A2:   # Yes, he **even** read FIVE books. (no non-entailed true alternatives: #additivity)
A3:   Yes, (he did read five books). He **even** read SIX books.
                                (implicit QUD: How many books did Bill read?)

⇒ With accomodatable non-entailed alternatives (34), or in scale-reversal contexts (35), *even* is licit, as there are non-entailed alternatives to satisfy additivítyt.

(34) QUD: Did Bill invite Mary?

A1: Yes, he **ONLY** invited Mary.
A2: Yes, he **even** invited MARY (among other people).
A3: Yes, he did. And he even invited SUE.
                      (implicit QUD: Whom did Bill invite?)

(35) a. QUD: How many eggs are sufficient?   b. QUD: Are TWO eggs sufficient?

   A: Even TWO eggs are sufficient.   A: Yes, TWO eggs are sufficient.

⇒ Due to its additive meaning component, *even* shows affinity to partial answer contexts.

⇒ ***Even* often occurs in partial answers to a QUD !**

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iii. ***Distribution: Only one* even *per clause (Kay 1990)?***

Unlike with *only*, multiple instances of *even* are mostly infelicitous:

(36) QUD: Who ate what?

A1: [Well, people were really too shy to take some food]

   Only *John* ate **only** *a little chicken*. [Nothing else was eaten by anybody].

A2: [Well, everybody was quite hungry, thus]

   ?# **Even** *John* ate **even** *the overcooked pasta*.

(37) a. **Only** *Honecker* admires **only** *himself*.   [König 1991: 14, ex. (14a)]

   b.   * **Even** *Jones* hates **even** *Millard Fillmore*.   [Anderson 1972, Kay 1990: 104]

                  vs

   c.   JONES/ **even** hates MILLARD FILLMORE\.

BUT: In appropriate contexts, there are also licit double occurrences of *even*

(38) A: How did your class do on the quiz?

   B: Fantastic, **even** my SLOWEST/ student **even** got the HARDEST\ problem.

• *A perhaps more appropriate generalization?*

Double occurrence of *even* is generally blocked by economy consideration: The intended interpretation can be achieved by placing a single instance of *even* in the preverbal position / auxiliary complex.

Double occurrence of *even* is only licit in more complex discourse contexts ⇒ **§3.3**

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iv. ***Even* interpreted in more-dimensional scalar models (Kay 1990)**

• Kay (1990: 69): "*Even* is a scalar operator in that it relates two propositions in the same scalar model. More specifically, it marks the proposition expressed by the clause or fragment in which it occurs as more informative than some other proposition. *Even*

is possessed of direct pragmatic interpretation in that it denotes (or evokes) a relation (superior informativeness) between the proposition expressed (tp) and one taken to be already in the context (cp)."

Informativeness: relation holding between two propositions relative to a scalar model SM, in which the more informative unilaterally entails the less informative in SM.

(40) $[\![$even (cp)$]\!]^g = \lambda p.\ p$; defined iff $p \rightarrow_{SM} g(cp)\ \&\ \neg(\ g(cp) \rightarrow_{SM} p)$

(41)   Georges a bu un peu de vin, un peu de cognac, un peu de rhum, un peu de calva et **même** un peu d'armagnac.

George drank a little wine, a little brandy, a little rum, a little calvados, and even a little armagnac.   (Fauconnier 1976: 261 –262; Kay 1990: 71–72)

tp: *George drank a little wine, a little brandy, a little rum, a little calvados, and even a little armagnac.*

cp: *George drank a little wine, a little brandy, a little rum, a little calvados.*

•   Interpretation in one or more dimensions: High Jump Setting (Kay 1990: 65ff.)
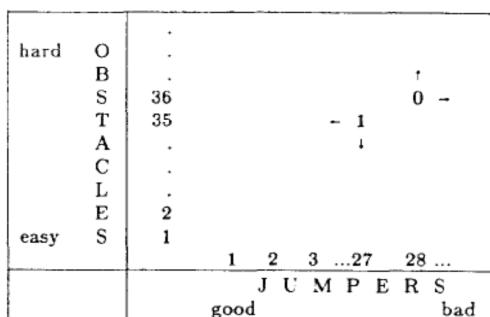
Fig. 1.

⇒   Propositions more to the right (increasingly bad athletes) and to the top (increasingly difficult obstacles) entail propositions to the left, or lower down, **or BOTH**.

(42)   QUD: Can John jump six feet?
         A: [Yes, and] he can (even) jump (even) seven feet.

[same athlete, higher obstacle, Fig. 3]

(43)   QUD: Can John jump six feet?
         A: [Yes,] (even) Paul (even) can (even) jump six feet.

[same obstacle, worse athlete]
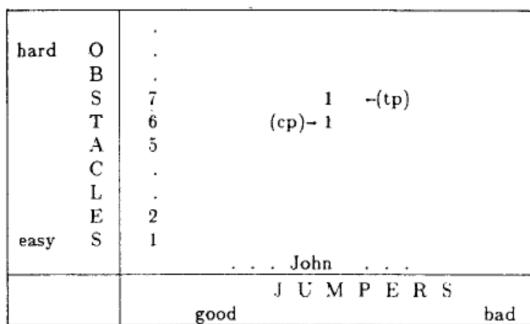
Fig. 3.

- Crucial example:

(44) Can Stretch jump six feet?
Sure, DUMPY/ can **even** jump SEVEN\ feet.   (Kay 1990: 68, ex. (22))

Fig. 5.

- *Crucial Observation:*

   The answer in (44) is not a direct answer to the Yes/No-question, nor to the immediate QUD *Which height can Stretch jump?*,

   But rather to a higher QUD *Who can jump which height?*, as typically invoked or presupposed by the contrastive topic accent pattern (Jackendoff 1972, Roberts 1996, Büring 2003).

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v.   Association behavior: *even* + contrastive topics

   Unlike *only*, *even* can associate with a contrastive topic (CT) plus one or more foci.

- When *even* occurs in a structurally high position preceding the verb, or following the first auxiliary, it can associate with a contrastive topic subject to its left:

(45) a.   Mrs. Katz slapped Mrs. Manx.   (Kay 1990: 95, exs. (94),(95))

   b.   *Even Mr. Katz slugged Mr. Manx.

   c.   *Mr. Katz slugged even Mr. Manx.

   d.   MIS/ter Katz **even** SLUGGED\ MIS\ter Manx.

   IQUD: What did Mister Katz do to whom?

   QUD: Who did what do whom?

(46) QUD: How many books did the boys read?

   A: BILL/ read FOUR\ books and JOHN/ even read FIVE\ books.

           'That JOHN has read FIVE book is stronger on mirativity scale.'

(47) QUD: Who ate what?

   A: PETER/ hat PIZZA\ gegessen,   MARIA/ hat STRUDEL\ gegessen,
           Peter ate pizza   Mary ate strudel

           und GÜNTHER/ hat **sogar** TRÜFFELN\ gegessen.
           Günther has even truffels eaten

           'Günther eating truffles is one way or other less expected than the alternatives.'

NB:	The even-proposition in the answer is felicitous even if Günther has eaten nothing but truffels
⇒	Additivity requirement ranges over CT-focus pairs, too (here: eaters and things eaten)

- Association with CT is also possible to the right as long as there is another focus following (cf. Büring 2003)

(48) QUD: To whom did John introduce the boys?

  A: John introduced BILL/ to SUE\, PETE/ to MA\ry, and he **even** introduced JA/son to Sophia LoREN\.

⇒ No linear restrictions

- *Only* cannot simultaneously associate with CT and focus!

(49) QUD: How many books did the boys read?

  A: JOHN/ only read FIVE\ books.

  'John read only five books, (and I'm not telling you about xy)'

  NOT: It is less than expected that John and nobody else read five books and not more.

2.3 A note on (scalar-) additives and accenting

As pointed out in Krifka, exclusive and scalar-additive particles differ from plain additives in that they cannot be accented, not even when the latter occur in CT-contexts:

(50) Which states voted for which candidate?

  A1: MassaCHU/setts voted for ROM\ney, South CaroLI/na voted for SanTO\rum, and CALIFORNIA **even** voted for Santorum.   (no accent on *even*)

  A2: MassaCHU/setts voted for ROM\ney, South CaroLI/na voted for SanTO\rum, and CaliFOR/nia voted for Santorum, **TOO**\.   (no accent on *even*)

Q: Why can't *even* be accented? See Krifka (1999) for discussion.

Q: Are apparent instances of association of *even* with a focused subject to the left (27a, 28a) reducible to instances of association with a contrastive topic subject plus de-accenting of the VP-material, or association with focus to the left and CT to the right?

2.4 Summary of Findings

i. *Exclusive* and *scalar-additive* particles differ in their association behavior: Whereas the associates of *only* are restricted to focused material (Beaver & Clark 2008), *even* can also associate with contrastive topics (in addition to one or more foci).

ii. The occurrence of scalar-additives in CT-constructions is facilitated – though not necessitated – by their additive meaning component: CT-constructions constitute partial answers to a higher question in the discourse. (Büring 2003).

iii. The possibility of simultaneous association with a contrastive topic and focus accounts for the more-dimensional semantics of *even*: relevant alternatives are constructed qua CT-alternatives and qua focus alternatives.

3. Analysis: Scalar-additives as operators over discourse representations

This section puts forward an informal analysis of scalar-additive operators as operators over discourse representations:

- *Core ideas:*

- Discourse representations as D-trees of (super)questions and answers (Büring 2003)

- **Scalar-additive particles are not restricted to operate on the immediate QUD (IQUD), but they can also range over higher questions that are presupposed by the CT-configuration; cf. §3.2**

- Scalar-additive particles are parasitic on CT-configurations, same as exclusives rely on focus marking to indicate the immediate QUD.

- **The focus dimension (= set of focus alternatives) still plays a prominent role in the interpretation of scalar-additives**

- Exclusive particles are special because their exclusive lexical meaning. They are not licit in partial answers and hence not in typical CT-environments:

  Exclusive particles are restricted to operate on the IQUD; cf. §3.4

3.1 Some background: focus, contrastive topics and discourse-trees

- *Focus* (Roberts 1996, Büring 2003, Beaver & Clark 2008): *Focus* marking in a sentence indicates the immediate question(s) under discussion that could be answered by this sentence.
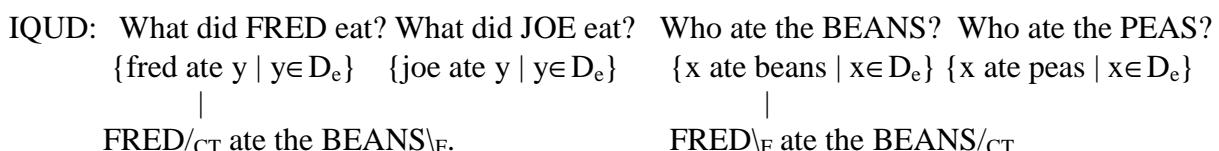
(51) Ede is drinking COF\fee$_F$. $\Rightarrow$ **QUD1:**   **What's happening?**

                 QUD2:   **What's Ede doing?**

                 QUD3:   **What's Ede drinking**?

                # QUD4:   Who's drinking coffee?

(52) E\de$_F$ is drinking coffee. $\Rightarrow$ # QUD1:   What's happening?

                    # QUD2:   What's Ede doing?

                    # QUD3:   What's Ede drinking?

                    QUD4:   **Who's drinking coffee?**

- *Contrastive topics* (Jackendoff 1972, Roberts 1996, Büring 2003):

  Contrastive topics introduce a second layer of alternatives. *Contrastive topic marking presupposes the existence of a higher question to which the CT-marked sentence gives a partial answer. CT-marking indicates which discourse-strategy* (a chain of relevant questions and sub-questions in the discourse tree) *is chosen.* (Büring 2003)

(53) higher QUD: Who ate what? $\{x$ ate $y \mid x,y \in D_e\}$

IQUD: What did FRED eat? What did JOE eat?   Who ate the BEANS?   Who ate the PEAS?
       $\{$fred ate $y \mid y \in D_e\}$ $\{$joe ate $y \mid y \in D_e\}$ $\{x$ ate beans $\mid x \in D_e\}$ $\{x$ ate peas $\mid x \in D_e\}$

                |
                                          |

     FRED/$_{CT}$ ate the BEANS\$_F$.   FRED\$_F$ ate the BEANS/$_{CT}$

(54)   *Strategy I: Sorting by person*   *Strategy II: Sorting by foods*

       Who ate what?   Who ate what?
            What did Fred eat?,   Who ate the BEANS?
            What did Joe eat?, …   Who ate the PEAS?, …

       FRED/ ate the BEANS\.   FRED\ ate the BEANS/.

- *The empirical question:*

  What discourse representations/ QUDs do different focus particles operate on?

  IQUD: genuine focus particles   (exclusive particles universally)

  Higher QUDs: alternative-sensitive particles (scalar-additives in English, German,
                                     Bura, Ngamo,…)
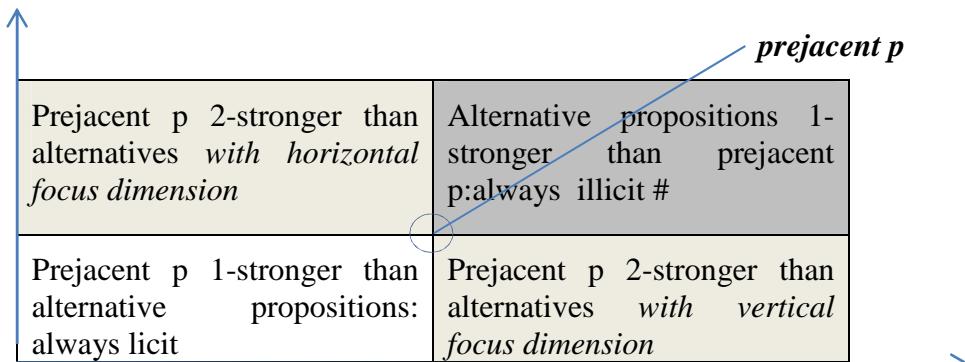
3.2   Analysis of *even* as a generalized alternative-sensitive particle

- *Proposal:* Scalar-additive particles like *even*, *sogar* are unrestricted in their association behavior and can operate on IQUDs and more complex higher QUDs alike:

- When operating on IQUDs they associate with plain foci and behave like bona fide focus particles. One-dimensional association with plain focus is just a particular instance of the more general semantic scheme in which alternatives can be compared in more than one dimension.

- The higher QUD-construal is contingent on the presence of such a higher QUD, typically provided by CT-configurations, and a sufficiently high structural position of the particle: particle must c-command both the CT and the focus constituent.

- The alternatives on the higher QUD-construal are gained by taking the cross-product of the topic and focus alternatives: $\{ALT_{TOP}\}$ x $\{ALT_F\}$ = meaning of higher QUD.

- Informally, the presence of the scalar-additive particle indicates that the partial answer to the higher QUD that it occurs in is less expected, more informative, higher on a scale than any of the other alternatives in at least one dimension.

- Being multi-dimensional (Kay 1990), the interpretation of scalar-additive particles requires two notions of strength:

  > *Strength 1:* A proposition p is 1-stronger than a proposition q if p entails q in any semantic dimension n≥1 induced by the topic-focus-structure.
  >
  > *Strength 2:* A proposition p is 2-stronger than a proposition q if p entails q in the semantic domain induced by the focus-structure of the clause.

⇒   1- and 2-strength induce a 4-partition on a 2-dimensional semantic space:

Prejacent p 2-stronger than alternatives *with horizontal focus dimension*	Alternative propositions 1-stronger than prejacent p: always illicit #
Prejacent p 1-stronger than alternative propositions: always licit	Prejacent p 2-stronger than alternatives *with vertical focus dimension*

(55) *Meaning of scalar-additives* (REVISED):
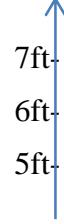
i.	Discourse Function:	To make a comment on a relevant QUD that strengthens a salient or natural expectation: prejacent is 1- AND 2-stronger than the expected answer.
ii.	Presupposition 1:	The prejacent is the *1-strongest true* alternative answer to the QUD: there are no salient true alternatives entailing the prejacent *in all semantic dimensions n* invoked by the focus or CT-structure; with $n \geq 1$
	Presupposition 2:	The prejacent is *at least as 2-strong as* any true alternative to the QUD: all salient alternatives *in the focus dimension* entailed by prejacent.
iii.	Descriptive Content:	The prejacent is true ($\Rightarrow$ choice of strongest element from CQ/QUD: higher bound)

> $\Rightarrow$ Scalar-additive particles themselves do not presuppose the existence of a higher QUD on their more-dimensional use: They are parasitic on a CT-configuration, which presupposes the existence of the higher QUD.

3.3 *Case studies:*

- **One-dimensional interpretation:** Association with plain focus structure

i. Association with focused object.

(56) IQUD: Which height can the best athlete jump?   7ft

A: The best athlete can (**even**) jump (**even**) [SEVEN\ feet]_F.   6ft

The best athlete can jump SEVEN feet entails   5ft
The best athlete can jump n feet; with $n \leq 7$ feet.
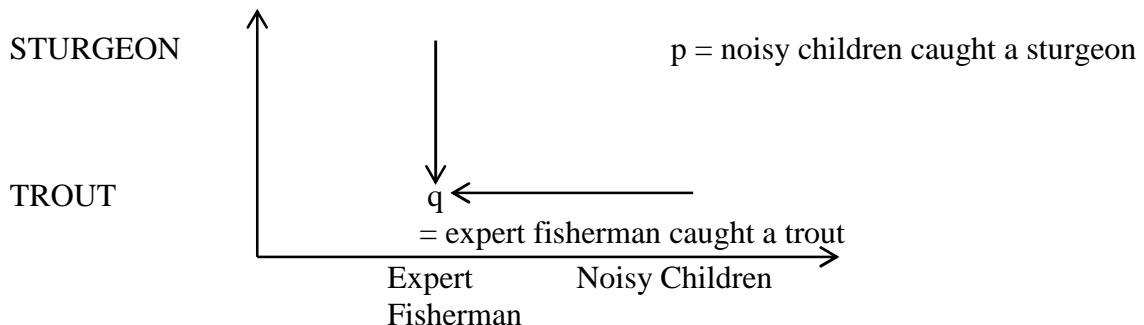
ii. Association with focused subject.

(57) IQUD: Who can jump four feet?

A: (**Even**) [the WORST\ athlete]_F can (**?even**) jump four feet.

The WORST athlete can jump four feet entails
Athlete x, y, z can jump four feet, where x, y, z are better athletes

BEST   AVERAGE   WORST

- **Two-dimensional interpretation:** Association with CT- and FOC-constituent
  Strength entailment along both semantic dimensions: 1-strongest alternative

(58) QUD: Who caught what kind of fish?

IQUDs: What did the expert fisherman fish?

What did the noisy children fish?

A: BILL/, the expert, caught a TROUT\
and the noisy CHIL/dren **even** caught a STURGEON\.

i. *Somebody catching a sturgeon* entails *somebody catching a trout* in terms of frequency of fishes, required skills, likelihood etc.

ii. *the noisy children catching something* entails *the expert fisherman catching something* in terms of likelihood

STURGEON   p = noisy children caught a sturgeon

TROUT   q ←
                = expert fisherman caught a trout
                Expert   Noisy Children
                Fisherman

- **Two-dimensional:** e.g. Association with CT- and FOC-constituent.
  Strength entailment in focus dimension: prejacent 1&2-stronger than alternatives

i.   Object focus:
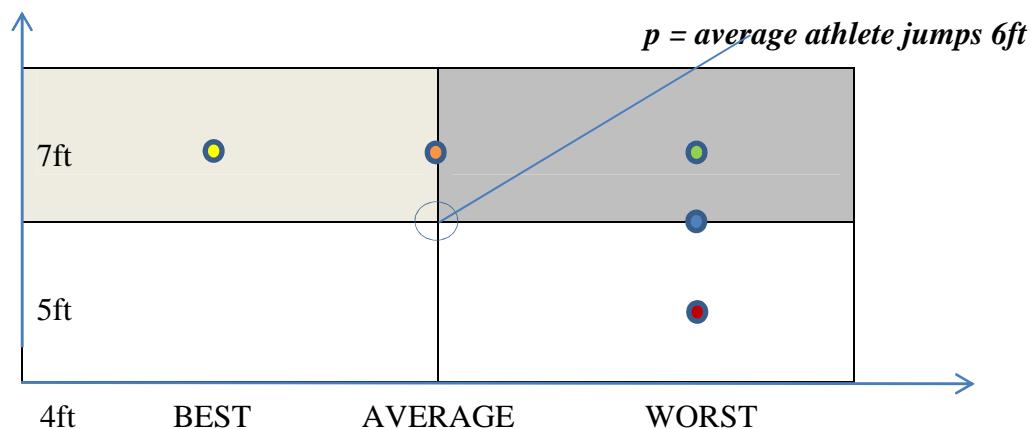
(59)   QUD: Who can jump which height?

       IQUDs: Which height can the best athlete jump?
                           Which height can an average athlete jump?
                           Which height can the worst athlete jump? etc.

       A: [An AVERAGE/ athlete]$_{CT}$ can **even** jump [SIX\]$_F$ feet.

                     An average athlete can jump SIX feet entails
                     An average athlete can jump n feet; with n ≤ 6 ft.

p = average athlete jumps 6ft

7ft

5ft

4ft   BEST   AVERAGE   WORST

Illicit alternatives:

-      1-stronger alternatives: entailing p in both dimensions

(60)   # [The WORST/ athlete]$_{CT}$ can jump [SEVEN\]$_F$ feet

       and [an AVERAGE/ athlete]$_{CT}$ can **even** jump [SIX\]$_F$ feet.

(61)   [An AVERAGE/ athlete]$_{CT}$ can **even** jump [SIX\ feet]$_F$,

       # and an average athlete can (also) jump [SEVEN\ feet]$_F$.

(62)   [An AVERAGE/ athlete]$_{CT}$ can **even** jump [SIX\ feet]$_F$,

       # and [the WORST/ athlete]$_{CT}$ can (also) jump [six feet]$_F$.

- 2-stronger alternatives (in the focus dimension HEIGHT):

(63) [The BEST/ athlete]$_{CT}$ can jump [SEVEN\]$_F$ feet.

and [an AVERAGE/ athlete]$_{CT}$ can **even** jump [SIX\]$_F$ feet. ⊙

Licit alternatives: Alternatives which are stronger than p in the non-focus dimension (ATHLETE QUALITY), but which are entailed by p in the focus dimension (HEIGHT):

(64) [The WORST/ athlete]$_{CT}$ can jump [FIVE\]$_F$ feet. ⊙

and [an AVERAGE/ athlete]$_{CT}$ can **even** jump [SIX\]$_F$ feet.

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(65) Another classic CT-example with object focus (Jacobs 1983: 130, ex. (4.13)):
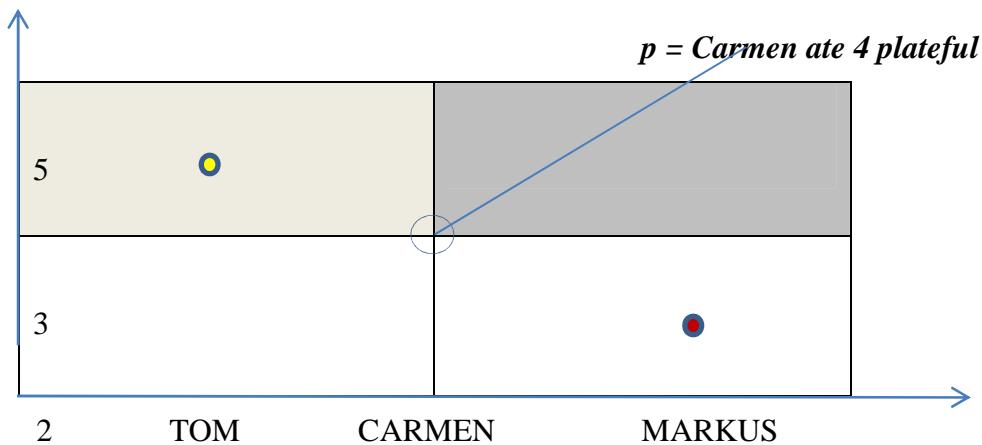
Daß diese Erbsensuppe großen Anklang fand, sieht man daran, wieviele Teller die Kinder davon aßen: Petra aß zwei Teller, Markus aß drei Teller, und Carmen, unser kleiner Vielfraß, schaffte sogar vier Teller.

'That people liked this pea soup can be seen from the fact how many plateful of it the children ate: PET/ra ate TWO\ plateful, MAR/kus ate THREE\ plateful ⊙, and CAR/men, our little glutton, **even** managed to eat FOUR\ plateful.'

⇒ IQUD: How many plateful did Carmen eat: A: Four (not surprising)

QUD: Who ate how many plateful?   A: CAR/men FOUR\

⇒ strength entailment in quantity dimension.
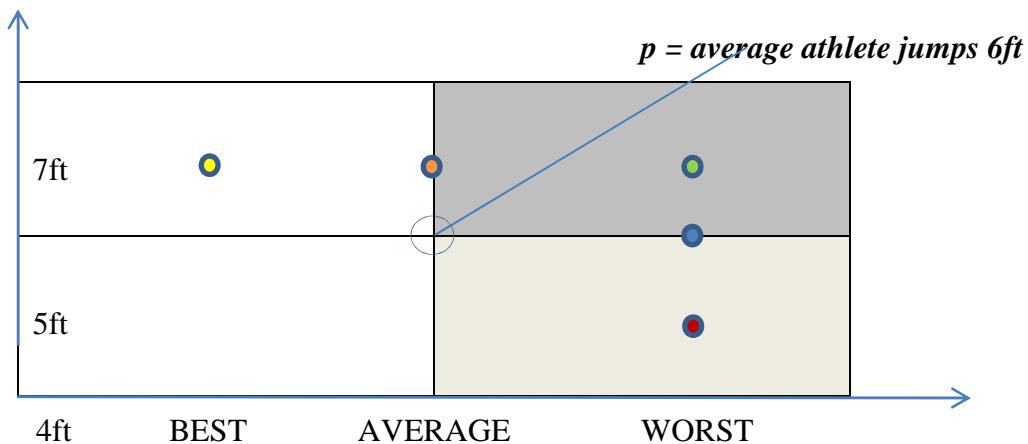
⇒ Salient alternatives that entail p in CT-person dimension, but which are entailed by p in focused quantity dimension are licit (Markus, 3 plateful)

⇒ 2-stronger salient alternatives, which are entailed by p in CT-person dimension, but which entail p in quantity dimension, are illicit:

(66) #TOM/, *who always eats most*, ate FIVE\ plateful. ⊙

and CAR/men, our little glutton, **even** managed to eat FOUR\ plateful.

ii.   *Subject focus:*

(67)   QUD: Who can jump which height?

IQUDs: Who can jump SEVEN/ feet?
Who can jump SIX/ feet?
Who can jump FIVE/ feet? etc.

A: [An AVERAGE\ athlete]$_F$ can **even** jump [SIX/ feet]$_{CT}$.

A$_{GERMAN}$:   [SECHS/ Fuß]$_{CT}$ springt sogar [ein DURCH\schnittlicher Athlet]$_F$.

An AVERAGE athlete can jump six feet entails
A d-quality athlete can jump six feet; with d-quality ≤ average

p = average athlete jumps 6ft

7ft	○	○	○	
5ft			○	
4ft	BEST	AVERAGE	WORST	

Illicit alternatives:

-        1-stronger alternatives: entailing p in both dimensions

(68)   # [The WORST\ athlete]$_F$ can jump [SEVEN/]$_{CT}$ feet   ●

and [an AVERAGE\ athlete]$_F$ can **even** jump [SIX/]$_{CT}$ feet.

(69)   [An AVERAGE\ athlete]$_F$ can **even** jump [SIX/ feet]$_{CT}$,

and an average athlete can (also) jump [SEVEN/ feet]$_{CT}$. ●

(70)   [An AVERAGE\ athlete]$_F$ can **even** jump [SIX/ feet]$_{CT}$,

and [the WORST\ athlete]$_F$ can (also) jump [six feet]$_{CT}$. ●

-        2-stronger alternatives (in the focus dimension ATHLETE QUALITY):

(71)   [The WORST\ athlete]$_F$ can jump [FIVE/]$_{CT}$ feet.   ●

#and [an AVERAGE\ athlete]$_F$ can **even** jump [SIX/]$_{CT}$ feet.

[German: #FÜNF/ Fuß kann der SCHLECHTESTE\ Athlet springen und SECHS/
Fuß kann sogar ein DURCH/schnittlicher Athlet springen]

Licit alternatives: Alternatives which are stronger than p in the non-focus dimension
(HEIGHT), but which are entailed by p in the focus dimension (ATHLETE QUALITY):

(72)   [An AVERAGE\ athlete]$_F$ can **even** jump [SIX/]$_{CT}$ feet
and [the BEST\ athlete]$_F$ can jump [SEVEN/]$_{CT}$ feet.   ●

[German: SECHS/ Fuß springt sogar ein DURCH\schnittlicher Athlet und
SIEBEN/ Fuß springt der BESTE\ Athlet.]

(73)   The soup example again: How many plateful did each child eat?

CARMEN\, our little glutton, ate FOUR/ plateful, and MARKUS\ even managed to eat THREE/ plateful.

[German: VIER/ Teller hat die verfressene CAR\men gegessen und/aber DREI/ Teller hat sogar MAR\kus geschafft.]

- *Further evidence: Prejacent must be the 1-strongest true alternative to the QUD*

In the absence of meaningful descriptive material, e.g., with individual-denoting proper names, the presence of *even* triggers an obligatory inference to strength relations between these individuals:

(74)   [QUD: Who caught what fish?]

a.   LU/cy caught a SAL\mon, and PE/ter **even** caught a SAL\mon.

Presuppositions: No rarer or more difficult fish than salmon was caught.

Not a more hopeless fisherman than Peter caught anything.

Inference along the CT-dimension: Peter is not as good at catching fish as Lucy.

But not: Peter and Lucy are as skilled at fishing.

⇒   b.   #LU/cy caught a SAL\mon, and PE/ter, *who's as good a fisherman*, **even** caught a SAL\mon.

c.   # LU/cy caught a SAL\mon, and the equally skilled PE/ter **even** caught a SAL\mon.

NB: This can be empirically checked by means of a questionnaire-study!

3.3   Accounting for the data:

The proposed analysis directly accounts for the flexible distribution and association behavior of scalar-additive particles in English, German, Bura, and Ngamo:

i.   The more-dimensional interpretation of the scalar-additive particles *even* and *sogar* as well as the possibility of association with CTs follows from the conventionalized discourse-semantic meaning of these particles:

Scalar-additive *even* and *sogar* can operate over higher QUDs with more than dimension of alternatives.

ii.   The discourse-semantic treatment of scalar-additive *even/sogar* as operating on more-dimensional answer spaces also accounts for the fact that sentences with more than scalar-additive particle are rare: Semantic effect can be achieved (from preverbal/auxiliary position) with one instance of *even* ⇒ economy blocking.

Cases with two licit occurrences of *even* point towards a more complex discourse-structure; cf. Kay (1990: 106, ex. (142)):

(75)   A: How did your class do on the quiz?
       B: Fantastic, **even₁** my slowest student **even₂** got the hardest problem.

"That is, a sentence like [64] *conveys two distinct scalar assertions*, one regarding the performance of a particular student on a particular test and another regarding the performance of the entire class on a particular occasion of testing." [Kay 1990: 106, numbering adjusted and emphasis added, MZ]

$\Rightarrow$ The two instances of *even* in (75) operate over different QUDs!

QUD1:	**How** did your class do on the quiz (on **which** occasion)?	$even_1$
QUD2:	Which student got which problem?	$even_2$
IQUD:	Which problem did your slowest student get?	

iii. The analysis of scalar-additives as operating on higher QUDs with more than one dimension of alternatives accounts for the apparent free association behavior of scalar-additives particles in Bura and Ngamo discussed §2.1:

Granted (i.) that alternative-inducing contrastive subject topics are – same as all other subject topics – realized in canonical preverbal position (SVO), and (ii.) that non-subject foci are typically realized in situ without special prosodic marking (Grubic & Zimmermann 2011, Grubic 2012), the apparent instances of free association can be reanalyzed in terms of

CONVENTIONAL ASSOCIATION WITH ALTERNATIVE-INDUCING EXPRESSIONS,

with both focus constituents and CTs inducing alternatives.

(76) Q: Who bought what?

A: *Kubili*$_{CT}$ masta *mhyi*$_F$,   *Mtaku*$_{CT}$ masta *kwara*$_F$,
Kubili   buy   sorghum,   Mtaku   buy   donkey

ka   *Magira*$_{CT}$ **tsuwa** masta   *mhyi*$_F$.
and   Magira   also   buy   sorghum

KUBILI/ bought SORG\hum, MTAKU/ bought a DON\key,
and MAGIRA/ ALSO\ bought sorghum.'

3.4 Restricted distribution of exclusive particles

The impossibility for exclusives to occur in CT-constructions, and hence to operate over higher QUDs by simultaneously associating with CT-constituents and foci, follows from their exclusive lexical meaning, cf. (49):

i. The simultaneous association of exclusive *only* with CT and focus would indicate that the strongest true alternatives are at most as strong as the prejacent.

ii. This clashes with the *requirement that the CT-sentence be only a partial informative answer* to the higher QUD.

$\Rightarrow$ No simultaneous association of *only* with CT and focus:

(77) QUD: Who invited whom?

JOHN/$_{CT}$ only invited MARY\$_F$.

NOT: 'Only *John* and *Mary* stand in the *invite*-relation, nobody else invited anybody else.'

• It is their special lexical semantics that makes exclusive particles like *only* bona fide focus particles.

Tentative universal: Exclusives do not associate with CTs in any language.

3.5 Open Questions

The informal account proposed above does not answer all questions yet:

i. Given that the multi-dimensional alternative structure is flattened out at the level of the higher QUD,

- How is the difference between CT (relevant for strength 1) and focus (relevant for strength 2) registered in the semantic representation of *even*?

- Can we find empirical justification for the predicted difference between *even/sogar* associating with a CT and a focus, on the one hand, and with a double focus, on the other? See (iii.)

(41) *CT+focus:*   QUD: To whom did John introduce *the boys*?

             A: John introduced BILL/ to SUE\, PETE/ to MA\ry,

                 and he **even** introduced **JA/son$_{CT}$** to **Sophia LoREN\$_F$.**

             '… und er hat sogar den JA/son$_{CT}$ der Sophia LoREN\$_F$ vorgestellt.

(78) *Double focus:* IQUD: Who was introduced by Peter, and to whom?

             A: Peter introduced everybody to each other.

                 He **even** introduced **JA\son$_F$** to **Sophia LoREN\$_F$.**

             '… und er hat sogar den JA\son$_F$ der Sophia LoREN\$_F$ vorgestellt.

⇒ *Prediction:* Only IO-alternatives should be relevant for the computation of strength 2 in (41), whereas both IO- and DO-alternatives should be relevant in (78).

ii. Is there an upper limit on the number of alternative domains, possibly due to computational limits?

⇒ cf. rating study in Paape (2011) for investigation of a 3-dimensional answer space.

(79) A: Ein 50-Jahriger ist bei 35° C im Schatten 50 Kilometer gelaufen!
        'A *50-year old* ran *50 kms* in *35 degrees* Celsius in the shade.'

       B: Offenbar ist [ein 80-Jahriger]$_{CT}$ **sogar** bei [40° C im Schatten]$_F$ [60 Kilometer]$_F$ gelaufen!
        'It seems that an *80-year old* even ran *60 kms* in *40 degrees*' heat.'

       B': #Offenbar ist [ein 20-Jahriger]$_{CT}$ bei [30° C im Schatten]$_F$ **sogar** [40 Kilometer]$_F$ gelaufen!
        'It seems that an *20-year old* even ran *40 kms* in *35 degrees*' heat.'

Q: Is double association with two contrastive topics to the left possible, or are the licit patterns always of the form 1xCT + nxFOC, with n ≥ 1?

Q: Are mixed entailment patterns in "ambivalent sentences" (Paape 2011) possible?
e.g. Dimension 1: stronger, Dimensions 2 & 3: weaker

⇒ *Prediction:* Violations possible only in the CT-dimension (80B):

(80) A: Ein **50**-Jähriger ist bei **35°** C im Schatten **50** Kilometer gelaufen!
        'A *50-year old* ran *50 kms* in *35 degrees* Celsius in the shade.'

B: Offenbar ist [ein **30**-Jähriger]$_{CT}$ sogar bei [**35° C** im Schatten]$_F$ [**55 Kilometer**]$_F$ gelaufen!

'It seems that a 30-*year old* even ran *55 kms* in *35 degrees*' heat.'

$\Rightarrow$ Observation: Ambivalent sentences with failing entailment in the *focus dimension* are marked by the lexical particle *immerhin* / *still*:

C: Offenbar ist [ein **80**-Jähriger]$_{CT}$ **??sogar/ immerhin** bei [**30° C** im Schatten]$_F$ [**40 Kilometer**]$_F$ gelaufen!

'It seems that an *80-year old* ??even / still ran *40 kms* in *30 degrees*' heat.'

iii. Empirical confirmation for the claim that English *even* can associate with a contrastive topic to its right and a focus to its left in the prosodic A>B-pattern of *FRED\$_F$ ate the BEANS/$_{CT}$*; see Jackendoff 1972, Wagner 2009

(81) QUD: Who ate what? [cf. (67)]

IQUDs: Who\$_F$ ate the PAS/ta$_{CT}$?

Who\$_F$ ate the BEANS/$_{CT}$? etc.

A: [LALE \]$_F$ **even** ate [the BEANS/]$_{CT}$.

A$_{GERM:}$ Die BOH/nen$_{CT}$ hat **sogar** LA\le$_F$ gegessen.

Lale$_F$ eating the beans entails
Other children x, y, z eating beans, where x, y, z are better eaters.

the beans need not be the most extreme food eaten by any of the kids

4. Some remarks on plain additives and cross-linguistic variation

4.1 Plain additives and association with CTs:

- The basic discourse-semantic function of plain additives (*also, too, auch*) is to indicate that there is an alternative true (partial) answer to the QUD, which neither entails nor is entailed by the prejacent of the ADD-sentence.

(82) QUD: What did Bill eat?

A. He ate CHICK\en and he **also** ate SAL\mon.

- Not surprisingly, plain additives are also licit in partial CT-answers to higher QUDs:

(83) QUD: Who ate what?
What did Fred eat? What did Bill eat? etc.

A: FRED/$_{CT}$ ate BEANS\$_F$, and BILL/$_{CT}$ (ALSO\) ate beans$_F$, (TOO\).

$\Rightarrow$ In CT-sentences, i.e. in partial answers to a higher QUD, additive particles preferably show up when the VP-material is given and deaccented, in which case the particles themselves carry the nuclear pitch accent (Krifka 1999, Féry & Krifka 2007).

Scalar-additives and plain additives differ in their accentability (Krifka 1999)

- A difference to scalar-additive particles?

At first sight, and contrary to expectations, plain additive particles appear to be dispreferred with new VP-material in the absence of a special context:

(84) QUD: Who ate what?
What did Fred eat? What did Bill eat? etc.

A: FRED/$_{CT}$ ate BEANS\$_F$, and BILL/$_{CT}$ **also** ate RICE\$_F$.

OK: Fred ate beans, and Bill ate beans and rice.
??: Fred ate beans, and Bill ate rice (and nothing else)

⇒ *A strange restriction:* Plain additives in English and German can operate on the IQUD (association with focus) or on a higher QUD (association with CT and focus),

but in the latter case they require/prefer the VP-material to be given.

⇒ **This is a tendency, but nor an absolute requirement:**

(85) Haben sich die Zwillinge wieder schlecht benommen? Did the twins misbehave again?

Ja, es war alles wie immer.   Yes, everything was as usual.

QUD: What did the twins do? / Who did what?
            What did Randy do? What did Sandy do? etc.

?RAN/dy$_{CT}$ hat gTRUN\ken$_F$, und SAN/dy$_{CT}$ hat auch geRAUCHT\$_F$.

'?Randy drank and Sandy also smoked.'

(86) A real-life example: QUD: Which Black had which property?

"Then there was *Bernie Black*, *who had a view of Gramercy Park*, but not a key to it, which he said was worse than looking at a brick wall. *Chelsea Black had a tan line around her ring finger*, because she got divorced right after she got back from her honeymoon, and *Don Black* was **also** an *animal-rights activist*, and *Eugene Black* **also** *had a coin collection*." [Jonathan Safran Foer, *Extremely Loud and Incredibly Close*]

• In these examples, plain additives behave like scalar-additives discussed above:

They operate on a higher QUD, without further restrictions, and simultaneously associate with a CT to their left and a focus to their right.

4.2   Cross-Linguistic Differences

The partial answer-requirement of plain additives and scalar-additives facilitates their use in CT-environments, but it does not necessitate such a use.

⇒ In principle, there could also be two classes of additives in the languages of the world:

i. Additives that are restricted to operate on IQUDs and act as bona fide focus particles (= exclusives),

ii. Additives that can operate on IQUD and higher QUDs alike and act as generalized alternative-sensitive particles (English, German, Bura, Ngamo)

⇒ There appears to be cross-linguistic variation along this dimension: Turkish *de* vs Ishkashim (Göksel & Özsoy 2003, Kamali & Karvovskaya 2012):

(87) Leyla$_{CT}$ sinema-ya$_F$ gidi-yor,   Meltem$_{CT}$ **de** konser-e$_F$ (gidi-yor).
Leyla cinema-DAT go-DUR,   Meltem   PRT concert-DAT go-DUR
'Leyla is going to the movies and Meltem is also going to a concert.'   [Turkish]

(88) *Farzona teatr   šəd, Zuhro-**məs**   kino_ šəd].   [Ishkashim]
Farzona theater went Zuhro-PRT   cinema went
intended: 'Farzona went to the theater and Zuhro went to the movies.'

- *Tentative cross-linguistic conclusions:*

i. Plain additives appear to differ in their association behavior across languages.

ii. In the same vein, it is expected that scalar-additives can show a different association behavior across languages:

- Generalized alternative-sensitive particles that can operate over IQUD and higher QUDs: German, English, Ngamo, Bura, Turkish)

- Strictly focus-sensitive particles that are restricted to operate on the IQUD only: Ishkashim, and possibly languages in which scalar-additives are morphologically related to exclusives: Bole, Ngizim, Serbo-Croatian (see § 1.4).

5. Conclusions

i. A discourse-based analysis of scalar-additive particles as operators on questions under discussions (Roberts 1996, Büring 2003, Beaver & Clark 2008).

ii. While the traditional classification of scalar-additive particles (and plain additive particles) is not strictly speaking false, it is not fully correct either. In many languages, scalar-additives can operate

- on the immediate QUD: strict association with focus; OR
- on a higher QUD: association with contrastive topic and focus

Better term: **alternative-sensitive particles** (Hartmann & Zimmermann 2008)

iii. Exclusive particles can only associate with focus because of their lexical meaning.

iv. Potential cross-linguistic variation in the association behavior of scalar-additives: Another factor to be controlled for in cross-linguistic and field research.

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