

On the typology of scalar particles: morphological complexity and scope rigidity

Luka Crnić

Language, Logic and Cognition Center,
The Hebrew University of Jerusalem

May 1, 2012

Ben Gurion University of the Negev,
Be'er-Sheva, Israel

Scalar particles in the languages of Europe

Gast & van der Auwera (2011) provide a thorough description of the distributional patterns of so-called scalar additive particles across the languages of Europe. Roughly, scalar particles are focus particles that trigger an inference that their host sentence is highly noteworthy (or unlikely, unexpected) given a set of focus alternatives

- (1) John read **even** LSLT
⇒ that John read LSLT is the most noteworthy alternative in {that John read x: x is a relevant book}
- (2) If John read **even** ONE book, he'll get an A
⇒ that if John read one book he will get an A is the most noteworthy alternative in {that if John read n books he will get an A: $n > 0$ }

Scalar particles in the languages of Europe

Scalar particles (particle collocations) include ...

English: *even, so much as*

German: *sogar, auch nur, (nicht) einmal*

Greek: *akomi, oute, kan, esto*

Bosnian, Croatian, Serbian: *čak, makar, ni*

Slovenian: *celo, magari, niti*

etc. etc. etc.

A taste of their distinct distributional behaviors:

- (3) a. John read **even** LSLT
b. If John read **even** ONE book, he'll get an A
- (4) a. *John read **so much as** LSLT
b. If John read **so much as** ONE book, he'll get an A
- (5) a. Janez je prebral **celo** LSLT
b. *Če je Janez prebral **celo** ENO knjigo bo dobil petko

Scalar particles in the languages of Europe

The puzzle

There is a host of expressions in European languages that appear to be translations of *even*. However, many of these expressions differ systematically from *even* and from each other in their distribution

The goal

The goal of this talk is to explain the systematic differences in the distributions of scalar particles (that is, five types of scalar particles, which occur in three (or four) types of languages)

Scalar particles in the languages of Europe

Our proposal is based on three assumptions, the last two of which are independently motivated for the respective languages:

First. Scalar particles can be morphologically complex (Guerzoni, Lahiri)

- (6)
- a. Some scalar particles spell-out EVEN
 - b. Other particles are fusions of EVEN and its antonym \neg EVEN
 - c. Sometimes \neg EVEN bears a [uNeg] feature

Second. In negative concord languages, n-marked expressions compete for insertion with their non-n-marked alternatives

Third. Scalar particles (or their components) may move at LF (e.g. Karttunen & Peters 1979, Lahiri 1998) and this movement is subject to certain economy constraints (see e.g. Bobaljik & Wurmbrand 2011)

Scalar particles in the languages of Europe

Our proposal is based on three assumptions, the last two of which are independently motivated for the respective languages:

First. Scalar particles can be morphologically complex (Guerzoni, Lahiri)

- (6)
- a. Some scalar particles spell-out *EVEN*
 - b. Other particles are fusions of *EVEN* and its antonym \neg *EVEN*
 - c. Sometimes \neg *EVEN* bears a [uNeg] feature

Second. In negative concord languages, n-marked expressions compete for insertion with their non-n-marked alternatives

Third. Scalar particles (or their components) may move at LF (e.g. Karttunen & Peters 1979, Lahiri 1998) and this movement is subject to certain economy constraints (see e.g. Bobaljik & Wurmbrand 2011)

(So-called) weak scalar particles

Weak scalar particles

Weak scalar particles are those scalar particles that may only associate with a weak element in their immediate surface scope. An example of a weak element is *one*, an example of a strong element is *LSLT*

- (7) a. I doubt that John read **so much as** ONE book for the class
b. *John (didn't) read so much as LSLT
- (8) a. Wenn Hans **auch nur** EIN Buch gelesen hat kriegt er eine Eins
'If Hans read so much as one book, he'll get an A'
b. Hans hat nicht **einmal** EIN Buch gelesen
'Hans didn't read so much as one book'
- (9) *Wenn Hans auch nur LSLT gelesen hat kriegt er eine Eins/Fünf
'*If Hans read so much as LSLT, he'll get an A/F'

Further particles that fall into this category include *ni*, *makar* (Bosnian, Croatian, Serbian), *ook maar*, *eens* (Dutch), *oute*, *kan* (Greek) etc.

Weak scalar particles

Weak scalar particles have a restricted distribution. As we have seen they may occur in downward-entailing (DE) environments but they may not occur in upward-entailing (UE) environments

- (10) Ich bezweifle, dass Hans auch nur EIN Buch gelesen hat
'I doubt that Hans read so much as one book'
- (11) *Hans hat auch nur EIN Buch gelesen
'*Hans read so much as one book'

This lead some authors to propose that weak scalar particles are (i) negative polarity items (NPIs) that (ii) trigger the opposite scalar presupposition than regular scalar particles (e.g. Rooth 1985, von Stechow 1990). Scalar particles have a vacuous assertive meaning

- (12) $\llbracket \text{so much as} \rrbracket^c(C,p)$ is defined only if p is least noteworthy in C

Weak scalar particles

These two postulates derive, first, the infelicity of weak scalar particles in UE contexts and, second, their need to associate with a weak element in their immediate surface scope

Unacceptability in UE contexts, acceptability in DE contexts

(13) *John read so much as ONE book / any book
(* NPIs not licensed in UE contexts)

(14) John didn't read so much as ONE book

(15) a. [neg [[so much as C] John read one_F book]]
(✓ NPIs licensed in DE contexts)

b. [[(15-a)]]^c is defined only if that John read one book is least noteworthy in {that John read n books: $n \in \mathbb{N}_{>0}$ },
only if that John read one book is less noteworthy than that John read two books etc. (✓ correct presupposition)

Weak scalar particles

These two postulates derive, first, the infelicity of weak scalar particles in UE contexts and, second, their need to associate with a weak element in their immediate surface scope

Unacceptability in UE contexts, acceptability in DE contexts

- (13) *John read so much as ONE book / any book
(* NPIs not licensed in UE contexts)
- (14) John didn't read so much as ONE book
- (15) a. [neg [[so much as C] John read one_F book]]
(✓ NPIs licensed in DE contexts)
- b. [[(15-a)]]^c is defined only if that John read one book is least noteworthy in {that John read n books: $n \in \mathbb{N}_{>0}$ },
only if that John read one book is less noteworthy than that John read two books etc. (✓ correct presupposition)

Weak scalar particles

Weak associate in immediate surface scope

(16) *John didn't read so much as LSLT

(17) a. [neg [[so much as C] John read LSLT_F]]

b. [[(17-a)]]^c is defined only if that John read LSLT is least noteworthy in {that John read x: x is a relevant book}, only if that John read LSLT is less noteworthy than that John read Syntactic Structures, that John read Mother Goose etc. (* incorrect presupposition)

However, the proposal faces some issues ...

Some issues for the NPI theory

Explanatoriness

Context-sensitivity (Heim 1984, Schwarz 2000)

- (18) a. If John read so much as ONE book, he'll get an A
b. ?If John read so much as ONE book, he'll get an F
c. If John read any book, he'll get an A/F

Occurrence in non-monotone contexts (Crnič 2011)

- (19) Exactly {four/?forty} people in the whole world so much as OPENED my dissertation

Fortunately, an alternative has been proposed ...

Guerzoni's approach

To account for the restriction of weak scalar particles to DE contexts, Guerzoni (2003, 2007) proposes that *auch nur* is made up of an additive particle (*auch*) and an anti-additive particle (*nur*):

(20) $\llbracket \text{auch} \rrbracket^c(C, p, w)$ is defined only if $\exists q \in C \setminus \{p\} [q(w) = 1]$

(21) $\llbracket \text{nur} \rrbracket^c(C, p, w)$ is defined only if (i) $\forall q \in C \setminus \{p\} [q(w) = 0]$
and (ii) p is least noteworthy in C

Clearly, the particles trigger presuppositions that contradict each other!

Guerzoni's approach

Unacceptability in UE contexts

- (22) a. *Hans hat auch nur EIN Buch gelesen
b. [auch D] [nur C] [John read one_F book]


(23) Anti-additive presupposition of *nur*:
John didn't read two books

(24) Additive presupposition of *auch*:
John read at least two books

(23) and (24) cannot both be true and so the meaning of the sentence is undefined in all contexts and the sentence infelicitous

Guerzoni's approach

Acceptability in DE contexts

- (25) a. Ich bezweifle, dass Hans auch nur EIN Buch gelesen hat
b. [auch D] [I doubt [~~auch-D~~] [nur C] [John read one_F book]]
- 

- (26) Anti-additive presupposition of *nur*:
I believe that John didn't read two books
(see Heim 1992 for projection under attitude predicates)

- (27) Additive presupposition of *auch*:
I doubt that John read two books

(26) and (27) may both be true at the same time and so the meaning of the sentence may be defined and the sentence felicitous

Guerzoni's approach

Weak associate in immediate surface scope

(28) a. *Ich bezweifle, dass Hans auch nur LSLT gelesen hat

b. [auch D][I doubt [~~auch-D~~] [nur C] [John read LSLT_F]]

(29) Scalar presupposition of *nur*:

that John read LSLT is least noteworthy in {that John read x: x is a relevant book}

The scalar presupposition in (29) is false in the actual context, explaining the infelicity of (28-a)

However, the proposal faces some issues ...

Some issues for Guerzoni's proposal

Anti-additive presupposition

- (30) a. If John read so much as/auch nur ONE book, he got an A
b. [auch D] [if [{~~auch-D~~} [nur C] John read one_F book]] ...
- (31) Fact about (30-a): the sentence can be used in a context in which John may have read two or more books
- (32) Anti-additive presupposition of *nur*:
John didn't read two books

Thus, Guerzoni predicts a wrong presupposition for (30-a)

A potential response: what if the presupposition is cancelled?

Some issues for Guerzoni's proposal

Anti-additive presupposition

Potential rescue strategy with presupposition cancellation (that is, local accommodation) is untenable

(33) I regret that I wasted so much as/auch nur ONE second with this

(34) Fact about (33): the sentence can be used in a context in which (I believe that) I wasted a lot of time with this

(35) Local accommodation of the anti-additive presupposition:

I regret [that I wasted one second with this and I didn't waste two seconds with this]

⇒ (I believe that) I wasted exactly one second with this

Thus, Guerzoni predicts (with or without local accommodation) an incorrect presupposition for the sentence in (33):

that (I believe that) I wasted exactly one second with this

Some issues for Guerzoni's proposal

Additive presupposition

- (36) a. I regret that I read so much as/auch nur ONE book of his
b. [auch D] [I regret [[nur C] I read one_F book of his]]
- (37) Fact about (36-a): the sentence can be used in a context in which (I believe that) I have read exactly one book
- (38) Additive presupposition of *nur*:
I regret that I read two books of his (\Rightarrow (I believe that) I read at least two books of his)

Thus, Guerzoni predicts a wrong presupposition for (36-a). And since *auch* has matrix scope, we do not even have to look at local accommodation ...

Some issues for Guerzoni's proposal

Actually, weak scalar particles in factive DE environments present an even more acute problem for Guerzoni than suggested above

(39) a. I regret that I read so much as/auch nur ONE book of his

b. [auch D] [I regret [nur C] I read one_F book of his]]

(40) Additive presupposition of *auch*: I regret that I read two books of his (\Rightarrow I read two books of his and I believe that I did)

(41) Anti-additive presupposition of *nur*:
I didn't read two books of his and I believe that I didn't

(42) Anti-additive presupposition of *nur* locally accommodated:
I didn't read two books of his and I believe that I didn't

(due to factivity of *regret*)

Thus, Guerzoni falsely predicts that weak scalar particles should not occur in factive DE environments – (40) is incompatible with (41)/(42)

Intermediate summary and roadmap

- ▶ Both the NPI and Guerzoni's approach to weak scalar particles face several issues
- ▶ What we do next is modify Guerzoni's proposal to make it immune to the objections mentioned above (not much can be done for the NPI proposal)
- ▶ This will allow us to account for **two types** of distributions of scalar particles (out of five) and **one type** of languages (out of three/four)
- ▶ Subsequently, we derive the remaining types of distributions of scalar particles from independent properties of the respective languages

A modification of Guerzoni's proposal

Instead of assuming that weak scalar particles consist of an additive and an anti-additive particle, we propose that they spell-out two antonymous scalar particles (cf. Lahiri 2010 on *aunque sea*):

- (43) a. $[[\text{EVEN}]^c(C,p)]$ is defined only if p is most noteworthy in C
b. $[[\neg\text{EVEN}]^c(C,p)]$ is defined only if p is least noteworthy in C

(44) ... $[\text{IP}$ $[\text{EVEN } D]$ $[\text{IP}$ $[\neg\text{EVEN } C]$ $[\text{IP} \dots$



so much as (English), *kan* (Greek), *auch nur* (German) etc.

A modification of Guerzoni's proposal

Unacceptability in UE contexts

- (45) a. *John read so much as ONE book
b. [EVEN D] [¬EVEN C] [John read one_F book]
- (46) Presupposition of ¬EVEN: that John read one book is least noteworthy in {that John read n books: n>0}
- (47) Presupposition of EVEN: that John read one book is most noteworthy in {that John read n books: n>0}

Acceptability in non-UE contexts

- (48) a. I doubt that John read so much as ONE book
b. [EVEN D] [I doubt [{EVEN-D} [¬EVEN C] [J read one_F book]]]
- (49) Presupposition of ¬EVEN: that John read one book is least noteworthy in {that John read n books: n>0}
- (50) Presupposition of EVEN: that I doubt that John read one book is most noteworthy in {that I doubt that John read n books: n>0}

A modification of Guerzoni's proposal

Unacceptability in UE contexts

- (45) a. *John read so much as ONE book
b. [EVEN D] [¬EVEN C] [John read one_F book]
- (46) Presupposition of ¬EVEN: that John read one book is least noteworthy in {that John read n books: n>0}
- (47) Presupposition of EVEN: that John read one book is most noteworthy in {that John read n books: n>0}

Acceptability in non-UE contexts

- (48) a. I doubt that John read so much as ONE book
b. [EVEN D] [I doubt [~~[EVEN D]~~ [¬EVEN C] [J read one_F book]]]
- (49) Presupposition of ¬EVEN: that John read one book is least noteworthy in {that John read n books: n>0}
- (50) Presupposition of EVEN: that I doubt that John read one book is most noteworthy in {that I doubt that John read n books: n>0}

A modification of Guerzoni's proposal

Weak associate in immediate surface scope

- (51) a. *I doubt that John read so much as LSLT
b. [EVEN D] [I doubt [[¬EVEN C] [John read LSLT_F]]]
- (52) Presupposition of ¬EVEN: that John read LSLT is least noteworthy in {that John read x: x is a relevant book}

The scalar presupposition in (52) is false in the actual context, explaining the infelicity of (51-a)

A modification of Guerzoni's proposal

Context-sensitivity

- (53) a. Exactly {four/?forty} people in the whole world so much as OPENED my dissertation
b. [EVEN D] [exactly 4/40 people]
[1 [¬EVEN C] [t₁ opened_F my dissertation]]
- (54) Presupposition of EVEN: that exactly 4 people opened my dissertation is most noteworthy in {that exactly 4 people y-ed my dissertation: y is open, read, understand}

The presupposition is satisfied in contexts in which, say, 50 people are expected to open my dissertation and, say, 10 are expected to read it. In such a context that exactly 4 people opened my dissertation has a much lower expectation than that exactly 4 people read it ... The reverse is true in the case of *forty*.

Intermediate summary and roadmap

Where are we now?

- ▶ We have argued for a modification of Guerzoni's proposal and explained the distribution of weak scalar particles
- ▶ At this point we understand weak scalar particles (*so much as*) and unselective scalar particles (*even, même*)

But the landscape of scalar particles is more complex ...

- ▶ There are three subvariants of weak scalar particles: those that may occur only in negative contexts (*einmal, niti*), only in non-negative non-UE contexts (*auch nur*), in any non-UE context (*so much as*)
- ▶ Some scalar particles may only associate with strong elements in their immediate surface scope (*sogar, celo, perfino*)

How can we get from two scalar particles to five?

- ▶ Two dimensions of variation (independent of scalar particles):
(i) negative marking (competition) and (ii) scope rigidity

Intermediate summary and roadmap

Where are we now?

- ▶ We have argued for a modification of Guerzoni's proposal and explained the distribution of weak scalar particles
- ▶ At this point we understand weak scalar particles (*so much as*) and unselective scalar particles (*even, même*)

But the landscape of scalar particles is more complex ...

- ▶ There are three subvariants of weak scalar particles: those that may occur only in negative contexts (*einmal, niti*), only in non-negative non-UE contexts (*auch nur*), in any non-UE context (*so much as*)
- ▶ Some scalar particles may only associate with strong elements in their immediate surface scope (*sogar, celo, perfino*)

How can we get from two scalar particles to five?

- ▶ Two dimensions of variation (independent of scalar particles):
(i) negative marking (competition) and (ii) scope rigidity

Intermediate summary and roadmap

Where are we now?

- ▶ We have argued for a modification of Guerzoni's proposal and explained the distribution of weak scalar particles
- ▶ At this point we understand weak scalar particles (*so much as*) and unselective scalar particles (*even, même*)

But the landscape of scalar particles is more complex ...

- ▶ There are three subvariants of weak scalar particles: those that may occur only in negative contexts (*einmal, niti*), only in non-negative non-UE contexts (*auch nur*), in any non-UE context (*so much as*)
- ▶ Some scalar particles may only associate with strong elements in their immediate surface scope (*sogar, celo, perfino*)

How can we get from two scalar particles to five?

- ▶ Two dimensions of variation (independent of scalar particles):
(i) negative marking (competition) and (ii) scope rigidity

(Non-)negative weak scalar particles

Negative weak scalar particles

Some weak scalar particles (*oute, niti, (nicht) einmal*) occur only in the immediate scope of negation (negative particles); some others cannot occur there (non-negative particles)

- (55) a. *Ich bezweifle, dass Hans **einmal** EIN Buch gelesen hat
b. Hans hat nicht einmal EIN Buch gelesen

- (56) a. Ich bezweifle, dass Hans **auch nur** EIN Buch gelesen hat
b. *Hans hat nicht auch nur EIN Buch gelesen

Two implicational generalizations obtain across the languages of Europe:

- (57) A language has a negative weak scalar particle
⇒ The language lacks an unrestricted weak scalar particle

- (58) A language has a negative weak scalar particle
⇒ The language has a non-negative weak scalar particle

Negative weak scalar particles

Negative weak scalar particles are weak scalar particles. That is, they consist of two components: [EVEN] and [\neg EVEN]

But their [\neg EVEN] component has a negative feature and can only occur in the scope of negation (cf. Penka 2011 on NC)

- (59) a. Hans hat nicht einmal EIN Buch gelesen
b. [EVEN D] [OP_[iNeg] [\neg EVEN C]_[uNeg]] [Hans read one_F book]]
- (60) a. *Wenn Hans einmal EIN Buch liest, kriegt er eine Eins
b. *[EVEN D][if [\neg EVEN C]_[uNeg]] [Hans read one_F book] ...

Negative weak scalar particles: competition

In negative concord languages, the following generalization holds about the **competition between n-marked and non-n-marked expressions**

- (61) Use an n-marked expression whenever this is possible and compatible with the intended meaning

Since [uNeg] feature on weak scalar particles is semantically vacuous, they can and must be used in the immediate scope of negation

- (62) Hans hat nicht {*auch nur/einmal} EIN Buch gelesen
'Hans didn't read so much as one book'

This accounts for why languages with negative weak scalar particles lack unrestricted weak scalar particles

Negative weak scalar particles: competition

A prediction of this approach is that the distribution of negative and non-negative weak scalar particles parallels that of negative and non-negative indefinites. This is correct, though it should be explored further

- (63)
- a. Niemand hat {je, *nie} etwas gegessen
 - b. Niemand hat {auch nur, (*nicht) *einmal} EIN Buch gelesen
 - c. Ich habe nicht einmal dem PETER auch nur EIN Euro gegeben
 - d. *Ich habe nicht einmal dem PETER (nicht) einmal EIN Euro geg.
- (64)
- a. Oute ti Maria (dhen) proskalese o pritanis
 - b. Niti Marije *(ni) povabil dekan
'The dean didn't invite even Maria'

We've accounted for 3 types of weak scalars in 2 types of languages

1. English, French
 - i. *so much as, ne fût-ce que* occur in all non-UE contexts
2. German, Greek, Slovenian etc.
 - ii. *oute, einmal, niti* occur in negative contexts
 - iii. *kan, auch nur* occur in non-negative non-UE contexts

Negative weak scalar particles: competition

A prediction of this approach is that the distribution of negative and non-negative weak scalar particles parallels that of negative and non-negative indefinites. This is correct, though it should be explored further

- (63)
- Niemand hat {je, *nie} etwas gegessen
 - Niemand hat {auch nur, (*nicht) *einmal} EIN Buch gelesen
 - Ich habe nicht einmal dem PETER auch nur EIN Euro gegeben
 - *Ich habe nicht einmal dem PETER (nicht) einmal EIN Euro geg.
- (64)
- Oute ti Maria (dhen) proskalese o pritanis
 - Niti Marije *(ni) povabil dekan
'The dean didn't invite even Maria'

We've accounted for 3 types of weak scalars in 2 types of languages

- English, French
 - so much as, ne fût-ce que* occur in all non-UE contexts
- German, Greek, Slovenian etc.
 - oute, einmal, niti* occur in negative contexts
 - kan, auch nur* occur in non-negative non-UE contexts

Intermediate summary

By assuming variation in morphological complexity and competition between n-marked and non-n-marked scalar particles we derived ...

- ▶ Unselective scalar particles:
even, même \leftrightarrow [EVEN]
- ▶ Weak scalar particles that may occur in any non-UE environments:
so much as, ne fût-ce que \leftrightarrow [EVEN][\neg EVEN] (with no competition)
- ▶ Weak scalar particles that may not occur under negation:
auch nur, kan \leftrightarrow [EVEN][\neg EVEN] (with competition)
- ▶ Weak scalar particles that may occur only under negation:
einmal, oute \leftrightarrow [EVEN][\neg EVEN]_[uNeg]

What about scalar particles that may only associate with a strong element in their immediate surface scope?

(So-called) strong scalar particles

Strong scalar particles

Some scalar particles may only associate with a strong element in their immediate surface scope. These include *sogar* (German), *celo* (Slo), *čak* (Bosnian etc.), *akomi* (Greek), *perfino* (Italian) etc.

- (65) a. Hans hat **sogar** LSLT gelesen
'Hans read even LSLT'
b. *Ich bezweifle, dass Hans sogar EIN Buch gelesen hat
'I doubt that Hans read even one book'

This behavior is the opposite of that of weak scalar particles but also different from the behavior of unselective scalar particles *even*, *même*

- (66) a. John read even LSLT
b. I doubt that John read even ONE book

Strong scalar particles

Two implicational generalizations obtain across European languages:

- (67) A language has a strong scalar particle
⇒ The language lacks an unselective scalar particle

- (68) A language has a strong scalar particle
⇒ The language has a weak scalar particle

Our strategy to deal with strong scalar particles

If we assume the strong scalar particles spell-out [EVEN], then their distribution is unexpected – namely [EVEN] can move:

- (69) a. I doubt that Hans read kan/auch nur/so much as ONE book
b. [EVEN C] [I doubt [[-EVEN C] John read one_F book]]

So if *akomi*, *sogar*, *celo* etc. would move above a DE operator at LF, they should have licit meanings and their host sentences should be acceptable

- (70) a. *I doubt that Hans read *akomi/sogar/celo* ONE book
b. [EVEN C] [I doubt [~~[EVEN C]~~ John read one_F book]]

We resolve this paradox by recourse to an independent property of languages with strong scalar particles – their **scope rigidity**

Scope rigidity follows from a constraint requiring spell-out of displaced elements – unless that is impossible, as we will argue for (69)

Our strategy to deal with strong scalar particles

If we assume the strong scalar particles spell-out [EVEN], then their distribution is unexpected – namely [EVEN] can move:

- (69) a. I doubt that Hans read kan/auch nur/so much as ONE book
b. [EVEN C] [I doubt [[-EVEN C] John read one_F book]]

So if *akomi*, *sogar*, *celo* etc. would move above a DE operator at LF, they should have licit meanings and their host sentences should be acceptable

- (70) a. *I doubt that Hans read akomi/sogar/celo ONE book
b. [EVEN C] [I doubt [~~[EVEN C]~~ John read one_F book]]

We resolve this paradox by recourse to an independent property of languages with strong scalar particles – their **scope rigidity**

Scope rigidity follows from a constraint requiring spell-out of displaced elements – unless that is impossible, as we will argue for (69)

A suggestive generalization

Languages that have a strong scalar particle (German, Hungarian, Slovenian etc.) are scope rigid languages

(71) Jeder Pianist hat eine Beethoven-Sonate in seinem Repertoire
'Every pianist has a Beethoven sonata in his repertoire'

$\forall > \exists, * \exists > \forall$

(72) Ogni studente ammira un professore
'Every student admires a professor'

$\forall > \exists, * \exists > \forall$

(73) Minden tanár több kérdés-t is meg válaszolt
'Every teacher answered several questions'

$\forall > \exists, * \exists > \forall$

Languages that lack a strong scalar particle, English and tentatively French, are not scope rigid (cf. Pafel 2005)

(74) Every student admires some professor

$\forall > \exists, \exists > \forall$

English, French: no strong scalar particle

English and French have a weak scalar particle that may occur in all non-UE environments (*so much as*, *ne fût-ce que*) and an unselective scalar particle (*even*, *même*) but not a strong scalar particle.

Even, *même* spell out [EVEN], while *so much as* and *ne fût-ce que* are the fusion of [EVEN][¬EVEN]. Since the two languages are not scope rigid, [EVEN] may move covertly in both configurations.

- (75) a. John read even LSLT
[EVEN C][John read LSLT_F]
- b. John didn't read even ONE book
[EVEN C] [neg [~~EVEN C~~][John read one_F book]]
- (76) a. *John read so much as ONE book
[EVEN D][¬EVEN C][John read one_F book]
- b. John didn't read so much as ONE book
[EVEN D] [neg [~~EVEN D~~] [¬EVEN C] [John read one_F book]]

Greek, German, Slovenian etc: strong scalar particle

Akomi, sogar etc. spell out [EVEN], while *kan, auch nur* etc. spell out [EVEN][¬EVEN]. Covert movement of [EVEN] is subject to Scope Transparency, a violable constraint (e.g. Bobaljik & Wurmbrand 2011)

(77) Scope Transparency (ScoT)

If $A > B$ at LF, then $A > B$ at PF

If [EVEN] of *akomi, sogar, celo* etc. moves at LF, it will violate ScoT

- (78) a. *I doubt that John read *akomi/sogar/celo* ONE book
b. [EVEN C] [I doubt that ~~[EVEN C]~~ [John read one_F book]]
(violates ScoT: low copy is pronounced)

If [EVEN] of *kan, auch nur* etc. moves and [¬EVEN] stays in situ, [EVEN] could be pronounced – but then [¬EVEN] would be unpronounced

- (79) a. I doubt that John read *kan/auch nur/magari* ONE book
b. [EVEN C] [I doubt ~~[¬EVEN C]~~ [John read one_F book]]
(violates ScoT but otherwise no pronunciation of [¬EVEN])

Greek, German, Slovenian etc: strong scalar particle

Akomi, sogar etc. spell out [EVEN], while *kan, auch nur* etc. spell out [EVEN][¬EVEN]. Covert movement of [EVEN] is subject to Scope Transparency, a violable constraint (e.g. Bobaljik & Wurmbrand 2011)

(77) Scope Transparency (ScoT)

If $A > B$ at LF, then $A > B$ at PF

If [EVEN] of *akomi, sogar, celo* etc. moves at LF, it will violate ScoT

- (78) a. *I doubt that John read *akomi/sogar/celo* ONE book
b. [EVEN C] [I doubt that ~~[EVEN C]~~ [John read one_F book]]
(violates ScoT: low copy is pronounced)

If [EVEN] of *kan, auch nur* etc. moves and [¬EVEN] stays in situ, [EVEN] could be pronounced – but then [¬EVEN] would be unpronounced

- (79) a. I doubt that John read *kan/auch nur/magari* ONE book
b. [EVEN C] [I doubt ~~[¬EVEN C]~~ [John read one_F book]]
(violates ScoT but otherwise no pronunciation of [¬EVEN])

Greek, German, Slovenian etc: strong scalar particle

Akomi, sogar etc. spell out [EVEN], while *kan, auch nur* etc. spell out [EVEN][¬EVEN]. Covert movement of [EVEN] is subject to Scope Transparency, a violable constraint (e.g. Bobaljik & Wurmbrand 2011)

(77) Scope Transparency (ScoT)

If $A > B$ at LF, then $A > B$ at PF

If [EVEN] of *akomi, sogar, celo* etc. moves at LF, it will violate ScoT

- (78) a. *I doubt that John read *akomi/sogar/celo* ONE book
b. [EVEN C] [I doubt that ~~[EVEN C]~~ [John read one_F book]]
(violates ScoT: low copy is pronounced)

If [EVEN] of *kan, auch nur* etc. moves and [¬EVEN] stays in situ, [EVEN] could be pronounced – but then [¬EVEN] would be unpronounced

- (79) a. I doubt that John read *kan/auch nur/magari* ONE book
b. [EVEN C] [I doubt [¬EVEN C] [John read one_F book]]
(violates ScoT but otherwise no pronunciation of [¬EVEN])

Aside: But what about *nur* in *auch nur*?

An objection might be that *auch nur* is not a single word but a spell-out of [EVEN] and [¬EVEN], respectively (though see *einmal*, *kan*, *magari* etc)

- (80) a. Auch wenn Hans nur EIN Buch liest kriegt er eine Eins
b. [EVEN] [if [¬EVEN] Hans reads one_F book][he'll get an A]

However, there appear to be semantic differences between *auch nur* and its discontinuous counterpart that suggest that this is not the case

- (81) Es ist überraschend, dass Hans auch nur EIN Buch gelesen hat
'It is surprising that John read so much as one book'
(82) ??Es ist auch überraschend, dass Hans nur EIN Buch gelesen hat
'??It is even surprising that John read only one book'

Nonetheless, the prediction is that in (scope rigid) languages in which both lexical items can be pronounced, the two components will be pronounced in different positions (Hungarian?)

Intermediate summary

- ▶ We have explained why some languages have strong scalar particles, while others do not: it all depends on to what extent LF:PF mismatch is allowed in the language
- ▶ Languages with strong scalar particles do not have unselective scalar particles, which are morphologically simple, because Scope Transparency dictates to pronounce the higher copy of [EVEN], all else being equal
- ▶ Languages with strong scalar particles may have weak scalar particles, which are morphologically complex, because if the higher copy of [EVEN] is pronounced, [¬EVEN] would lack pronunciation. This licenses deviation from Scope Transparency
- ▶ We have thus explained five types of scalar particles (out of five)
- ▶ We have described languages (i) w/o strong scalar particles and w/o negative particles, (ii) with strong scalar particles and with negative particles

Intermediate summary

- ▶ We have explained why some languages have strong scalar particles, while others do not: it all depends on to what extent LF:PF mismatch is allowed in the language
- ▶ Languages with strong scalar particles do not have unselective scalar particles, which are morphologically simple, because Scope Transparency dictates to pronounce the higher copy of [EVEN], all else being equal
- ▶ Languages with strong scalar particles may have weak scalar particles, which are morphologically complex, because if the higher copy of [EVEN] is pronounced, [¬EVEN] would lack pronunciation. This licenses deviation from Scope Transparency
- ▶ We have thus explained five types of scalar particles (out of five)
- ▶ We have described languages (i) w/o strong scalar particles and w/o negative particles, (ii) with strong scalar particles and with negative particles

Further types of languages? Finnish

Finnish is a scope rigid language and has a strong scalar particle, like German, Greek etc. However, it appears not to have a negative weak scalar particle, unlike German, Greek etc.

- (83) a. John read **jopa** LSLT
b. *I doubt that John read **jopa** ONE book
- (84) a. I doubt that John read **edes** ONE book
b. John didn't read **edes** ONE book

This gives us three types of languages with scalar particles:

- ▶ We have languages (i) w/o strong scalar particles and w/o negative particles, (ii) with strong scalar particles and with negative particles, (iii) with strong scalar particles and w/o negative particles

Further types of languages? Albanian, Bulgarian etc.

Some scope rigid languages appear to be w/o strong scalar particles but with an unselective scalar particle and a negative weak scalar particle (see Gast & van der Auwera 2011). Even though this does not contradict our generalization – *if a language has a strong scalar particle, then it is scope rigid* – it needs to be understood

We might tentatively suggest for these languages that the supposed unselective particle is ambiguous, which means the languages are (iv) w/o strong scalar particles and with negative particles...

(85) John read *daže* LSLT

[EVEN C] [John read LSLT_F]

(86) I doubt John read *daže* ONE book

[EVEN D] [I doubt [[¬EVEN C] [John read one_F book]]]

However, my fieldwork suggests that the above description might need a qualification: e.g. when *daže* associates with a weak element, it is always accompanied by another expression *i*. Further work is required ...

Conclusion

Typological generalizations

The data in Gast & van der Auwera (2011) allows us to distinguish five types of scalar particles in three (four) types of European languages:¹

Class 1 English, French and Irish

- a. ✓ weak scalar particle (negative/non-negative) type (i)
- b. χ strong scalar particle
- c. ✓ unselective scalar particle type (ii)

Class 2 German, Hungarian, Italian, Greek etc.

- a. ✓ weak scalar particle (negative, non-negative) types (iii,iv)
- b. ✓ strong scalar particle type (v)
- c. χ unselective scalar particle

Class 3 Finnish etc.

- a. ✓ weak scalar particle (negative/non-negative)
- b. ✓ strong scalar particle
- c. χ unselective scalar particle

¹Languages not subsumed by this classification: Spanish, Russian

Account of the typological generalizations

First. Scalar particles spell-out [EVEN] or [EVEN][¬EVEN]. This explains the distribution of weak scalar particles and class 1 languages

(i) *even, même*; (ii) *so much as, ne fût-ce que*

Second. [¬EVEN] may have a [uNeg] feature. Assuming a competition between n- and non-n-words, this explains the distributions of negative and non-negative weak scalar particles in class 2 and 3 languages

(iii) *oute, einmal, niti*; (iv) *kan, auch nur, magari*

Third. Some languages are scope rigid. This explains why covert movement of [EVEN] is not available in class 2 languages – unless overt movement yields a violation of some stronger constraint (perhaps PFI)

(v) *akomi, sogar, celo; kan, auch nur, magari, oute, einmal, niti*

Account of the typological generalizations

First. Scalar particles spell-out [EVEN] or [EVEN][¬EVEN]. This explains the distribution of weak scalar particles and class 1 languages

(i) even, même; (ii) so much as, ne fût-ce que

Second. [¬EVEN] may have a [uNeg] feature. Assuming a competition between n- and non-n-words, this explains the distributions of negative and non-negative weak scalar particles in class 2 and 3 languages

(iii) oute, einmal, niti; (iv) kan, auch nur, magari

Third. Some languages are scope rigid. This explains why covert movement of [EVEN] is not available in class 2 languages – unless overt movement yields a violation of some stronger constraint (perhaps PFI)

(v) akomi, sogar, celo; kan, auch nur, magari, oute, einmal, niti

References I

- Bobaljik, Jonathan & Susi Wurmbrand. 2011. Word order and scope: transparent interfaces and the 3/4 signature. Manuscript, University of Connecticut.
- Crnič, Luka. 2011. Getting even: MIT dissertation.
- Gast, Volker & Johan van der Auwera. 2011. Scalar additive operators in the languages of Europe. Language 87(1). 2–54.
- Guerzoni, Elena. 2003. Why even ask? On the pragmatics of questions and the semantics of answers: MIT dissertation.
- Guerzoni, Elena. 2007. On scalar, additive and exclusive components of some NPIs. Handout for a talk at LSA annual meeting, USC. URL: <http://www-bcf.usc.edu/guerzoni/downloads/LSA2007.pdf>.
- Heim, I. 1992. Presupposition projection and the semantics of attitude verbs. Journal of Semantics 9(3). 183.
- Heim, Irene. 1984. A note on negative polarity and downward entailingness. In Proceedings of NELS, vol. 14 1983, 98–107.

References II

- Karttunen, Lauri & Stanley Peters. 1979. Conventional implicature. In C.-K. Oh & D. A. Dinneen (eds.), Syntax and semantics, vol. 11, 1–56. Academic Press.
- Lahiri, Utpal. 1998. Focus and Negative Polarity in Hindi. Natural Language Semantics 6. 57–123.
- Lahiri, Utpal. 2010. Some *even*'s are *even if ... only*: the concessive *even* in Spanish. Manuscript, JNU, New Delhi.
- Pafel, Jürgen. 2005. Quantifier scope in german. John Benjamins Publishing Co.
- Penka, Doris. 2011. Negative indefinites. Oxford University Press.
- Rooth, Mats. 1985. Association with focus: University of Massachusetts, Amherst dissertation.
- Schwarz, Bernhard. 2000. Notes on *even*. Manuscript, University of Stuttgart.
- von Stechow, Arnim. 1990. Focusing and background operators. In W. Abraham (ed.), Discourse particles, John Benjamins, Amsterdam.