Scalar additive operators: Typology and historical development

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Introduction: Scalar additive operators

Luke 8, 25

(1) Who is this? He commands even the winds and the water, and they obey him.

(2) Quien es éste, que manda aun a los vientos y al agua, y le obedecen?

(3) Was ist das für ein Mensch, dass sogar die Winde und das Wasser ihm gehorchen?

(4) Voyez: il commande même aux vents et aux vagues, et il s’en fait obéir!
The additive inference of SAOs

- SAOs trigger an additive inference similar to that of (non-scalar) additive operators like *also*.

\[(5)\] He *even* danced with \([\text{MARY}]_F\).

\[(6)\] He *also* danced with \([\text{MARY}]_F\).

\[(7)\] Additive inference:
He danced with someone other than Mary (the focus).

The scalar inference of SAOs

- SAOs make reference to *scales*, i.e. ordered sets of alternatives.
- Alternative propositions stand in a paradigmatic relation to the proposition in question and differ from it only with respect to the focus.

\[(8) \text{ Even \{the winds\}_F obey him.}\]

\[(9) \{\text{The winds, His children, His dog}\} \text{ obey(s) him.} \quad \text{‘strength’}\]
Overview

1. Types of scalar additive operators (distributional restrictions)
2. A semantic map
3. Historical developments
Occurrence under negation

- Scalar additive operators are subject to different types of distributional restrictions.
- Occurrence under negation: E. *even* vs. G. *sogar/einmal*

(10) **Even** [the winds]$_F$ obey him.
(11) Not **even** [his dogs]$_F$ obey him.

(12) **Sogar/**einmal} die Winde gehorchen ihm.
      even        the winds     obey      him.

(13) Nicht **sogar/einmal} sein Hund gehorcht ihm.
      not even   his dog        obeys     him.
Occurrence in (non-)affirmative contexts

- Engl. *even* vs. Germ. *sogar/ auch nur* (‘also only’).

(14) If *even* [look at]$_F$ my wife], you’ll get into trouble.

(15) Wenn du sie {?sogar/ auch nur} [ansiehst]$_F$, if you her even look at, bekommt du Ärger! get you trouble ‘If you even look at her, you’ll get into trouble!’

(16) {Sogar/ *auch nur*} die Winde gehorchen ihm. even the winds obey him
**The scalar additive operators of Italian**

(17) **Perfino** i venti e le onde gli ubbidiscono.  
*even* the winds and the waves him obey.  
‘Even the winds and the waters obey him.’

(18) **Nemmeno** Salome fu vestito come uno di loro.  
*not even* Solomon was dressed like one of these  
‘Not even Solomon was dressed like one of these.’

(19) Se riesco **anche solo** toccare il suo vestito,  
if I manage **even/so much as** touch the his frock,  
sarò guarita.  
I will be healed.  
‘If I even touch his clothes, I will be healed.’
## Distributional restrictions: A preliminary survey

### Three types of contexts

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Use of *auch nur* and *anche solo* under negation

(20) Nie habe ich **auch nur** einen Augenblick daran gedacht. 
never have I even one instant of this thought 
‘I’ve never thought of this for even a second.’

(21) Non ho mai pensato **anche solo** un instante a quello. 
not I’ve never thought even an instant of this 
‘I’ve never thought of this for even a second.’
Scalar and non-scalar uses of additive particles

Some additive particles are used with both scalar and non-scalar readings, e.g. Latin *et* and Ancient Greek *kai*.

(22) Fas est *et* ab hoste doceri.
right is also/even from enemy learn
‘It is rightful to learn even from an enemy.’

(23) Potapos estin houtos hoti *kai* hoi anemoi kai he who is this that also/even the winds and the thalassa auto: hypakouousin.
sea him they obey.
‘Who is this? Even the winds and the waters obey him.’
A semantic map

- non-scalar
- scalar affirmative
- scalar non-affirmative negative
- scalar non-affirmative non-negative

John also danced with Mary.

If you even look at her, you'll get into trouble.

Even the winds obey him.

Not even his dogs fare him.
A semantic map

*John also danced with [Mary]_F*

- non-scalar
- scalar affirmative
- scalar non-affirmative negative
- scalar non-affirmative non-negative
John also danced with [Mary]_F

Even [the winds] obey him.
A semantic map

*John also danced with* [Mary]_{F}

*Not even* [his dogs]_{F} *obey him.*

*Even* [the winds] *obey him.*
A semantic map

John also danced with [Mary]_F

Not even [his dogs]_F obey him.

Even [the winds] obey him.

If you even [look at]_F her, you’ll get into trouble.
A semantic map

Things to do:

1. Show that each node constitutes a category in its own right;
2. illustrate ‘contiguity requirement’: nodes covered by a given operator are contiguous;
3. consider the division of labour in particular systems of additive operators;
4. determine the parameters structuring the semantic map.
Specialized scalar additive operators

Additive operators that are specialized to one type of context

non-scalar
scalar affirmative
scalar non-affirmative negative
scalar non-affirmative non-negative
Specialized scalar additive operators

Additive operators that are specialized to one type of context

- non-scalar
- scalar
  - affirmative
  - non-affirmative
  - negative
  - non-negative

Engl. *also*
Specialized scalar additive operators

Additive operators that are specialized to one type of context

Engl. *also*  
It. *perfino*

- non-scalar
- scalar affirmative
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Specialized scalar additive operators

Additive operators that are specialized to one type of context

- Engl. *also*
- Lt. *perfino*
- Germ. *einmal*

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Specialized scalar additive operators

Additive operators that are specialized to one type of context

- Engl. *also*
- Lt. *perfino*
- Germ. *einmal*
- Gr. *esto*
Greek *esto*

*Esto* may not be used in affirmative or negative (non-affirmative) clauses (cf. Giannakidou 2007).

(24) *I* Maria efaje *esto* to pagoto.
    DET Maria ate even DET ice cream
    int.: ‘Maria ate even the ice cream.’

(25) *I* Maria dhen efaje *esto* to pagoto.
    DET Maria not ate even DET ice cream
    int.: ‘Maria did not even eat the ice cream.’
Greek *esto*

- *Esto* is only used in (non-affirmative) non-negative clauses.

(26) [An diavasis *esto* ke mia selida ap’ afto to vivlio]
if you read even also one page of DEM DET book]
kati tha mathis.
something FUT you learn
‘If you read even a single page of that book, you will learn something.’
Operators covering nodes 1 and 2

Germ. *auch*

- non-scalar
- scalar affirmative
- scalar non-affirmative negative
- scalar non-affirmative non-negative
Germ. *auch*

- Scalar and non-scalar readings of *auch*

(27) **Auch** Karl kann das verstehen.
also/even Charles can that understand
‘Charles can understand that, too.’

(28) **Auch** der Dümmste kann das verstehen.
also the most stupid can that understand
‘Even the most stupid person can understand that.’
Operators covering nodes 2 and 3

Czech *dokonce*

- non-scalar
- scalar affirmative
- scalar non-affirmative negative
- scalar non-affirmative non-negative

*dokonce*
Under specific circumstances, Czech *dokonce* may occur in the scope of negation (cf. also BCS čak, Rom. nici).

(29) **Dokonce** [tady není ani voda k napítí].
    even there is not not even water PREP drink]
    ‘There is not even water to drink.’

(30) Není tady **[dokonce ani voda k napítí]**.
    is not there even not even water PREP drink]
    ‘There is not even water to drink.’
Operators covering nodes 1 to 3

Japanese -mo

- non-scalar
- scalar affirmative
- scalar non-affirmative negative
- scalar non-affirmative non-negative
Japanese -mo

Japanese -mo is used in three types of contexts (cf. Nakanishi 2006, 2008):

(31) Zidane-mo reddo caado-o morat-ta.
Zidane-also/even red card-ACC get-PST
‘Zidane also got a red card/Even Zidane got a red card.’

(32) John-wa Hon A-mo yom-ana-katta.
John-TOP Book A-even read-NEG-PST
‘John did not even read Book A.’
Operators covering nodes 2-4

Engl. even

- non-scalar
- scalar affirmative
- scalar non-affirmative negative
- scalar non-affirmative non-negative
Operators covering nodes 3-4

It. *anche solo*

- non-scalar
- scalar affirmative
- scalar non-affirmative negative
- scalar non-affirmative non-negative

*anche solo*
Operators covering nodes 1-4

**Basque**, *ere*

- **non-scalar**
- **scalar affirmative**
- **scalar non-affirmative negative**
- **scalar non-affirmative non-negative**
The distribution of Basque *ere*

(33) Gure ikasleak *ere*, joan dira.
    our students also/even go AUX
    ‘Our students, too, they went.’/‘Even our students went.’

(34) Ez da matrikulatu *ere* (egin).
    not AUX register even do
    ‘He didn’t even register.’

(35) Hitz bat *ere* egiten badu, akabatuko dut.
    word one even do.IMPF if.AUX kill.FUT AUX
    ‘If he says even one word, I’ll kill him.’
Systems of scalar additive operators

Czech

non-scalar

scalar affirmative

scalar non-affirmative negative

scalar non-affirmative non-negative
Systems of scalar additive operators

Czech

- také
- dokonce
- ani
- i jen
Systems of scalar additive operators

Tetelcingo Nahuatl

- **nuyihki**
- **asta**
- **mecs sa**

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Systems of scalar additive operators

Japanese

- \textit{-mo}

- \textit{-demo}

non-scalar

scalar affirmative

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- \textit{-dake-demo}
Principles underlying the semantic map

- Question: Why does the semantic map look the way it does?
- Observation: Negative assertive contexts are closer to affirmative contexts than non-assertive ones.

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Scalar additive operators
Principles underlying the semantic map

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Context features

- The strength of a proposition is a function of
  1. the **focus value**, and
  2. the (external) **context**.

- A ‘canonical’ context:

  (36)  
  a. Did Bill Clinton talk to your wife? 
  b. He even [kissed] \( F \) her!

  (37)  
  He \( (\text{even}) \left\{ \text{kissed} \right\} \text{talked to} \) my wife. \( \uparrow \)
Scale reversal

- Under specific circumstances, a **weaker** focus value (e.g. *talk to*) yields a **stronger** proposition.
- **Scale reversal** (cf. Fauconnier 1985, König 1991, Haspelmath 1997, etc.); e.g. under negation, in conditionals.

(38) a. May I kiss you wife?
   b. You may not even [talk to]$_F$ her!

(39) You may not
     \[
     \begin{cases}
     \text{even} & \text{talk to} \\
     \#\text{even} & \text{kiss}
     \end{cases}
     \]
     my wife.

(40) If you
     \[
     \begin{cases}
     \text{even} & \text{talk to} \\
     \#\text{even} & \text{kiss}
     \end{cases}
     \]
     my wife, I’ll kill you.
Three levels of ‘strength’

- Strength of the **co-constituent**.
- Strength of the **minimal clause** containing the SAO.
- Strength of the entire **sentence**.

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Example sentences:
- He even kissed her
- You may not even talk to her
- If you even talk to her, I’ll kill you
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<td>non-aff.</td>
<td>[</td>
<td>If</td>
<td>you <strong>EVEN</strong></td>
</tr>
<tr>
<td>non-neg.</td>
<td>[</td>
<td>]</td>
<td>]</td>
</tr>
</tbody>
</table>
Context features

- Strength of co-constituent, minimal clause, sentence

<table>
<thead>
<tr>
<th></th>
<th>sentence</th>
<th>clause</th>
<th>co-constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>affirmative</td>
<td>strong</td>
<td>strong</td>
<td>strong</td>
</tr>
<tr>
<td>non-affirmative/negative</td>
<td>strong</td>
<td>strong</td>
<td>weak</td>
</tr>
<tr>
<td>non-affirmative/non-negative</td>
<td>strong</td>
<td>weak</td>
<td>weak</td>
</tr>
</tbody>
</table>
Context features

affirmative

\[\begin{array}{c}
\text{SENTENCE} & S \\
\text{CLAUSE} & S \\
\text{CO-CONST.} & S \\
\end{array}\]

non-affirmative

\[\begin{array}{c}
\text{SENTENCE} & S \\
\text{CLAUSE} & S \\
\text{CO-CONST.} & W \\
\end{array}\]

non-affirmative

\[\begin{array}{c}
\text{SENTENCE} & S \\
\text{CLAUSE} & W \\
\text{CO-CONST.} & W \\
\end{array}\]
Context features

- Sentence (S)
- Clause (S)
- CO-CONST. (S)
- Sentence (S)
- Clause (S)
- CO-CONST. (W)
- Sentence (S)
- Clause (S)
- CO-CONST. (W)
Historical developments

- Ultimately, the answer to the question of why the semantic map looks the way it does is a diachronic one.
- “[T]he best semantic map is a diachronic one” (van der Auwera 2008: 43).
- Semantic maps reflect possible and impossible (or likely and unlikely) pathways of historical change.
Historical developments

Scalar additive operators
Historical developments

'Sentence' 'Identity'

`even_1`
Historical developments

- ‘endpoint’
- ‘identity’

- SENTENCE  S
- CLAUSE  S
- CO-CONST.  S

- SENTENCE  S
- CLAUSE  S
- CO-CONST.  W

- SENTENCE  S
- CLAUSE  W
- CO-CONST.  W

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Scalar additive operators
Historical developments

'Sentence'

'S Clause'

'S Co-const.'

Even 1

Even 2

Even 3

'Sentence'

'S Clause'

'S Co-const.'

'Sentence'

'S Clause'

'W Co-const.'

'Sentence'

'S Clause'

'W Co-const.'

'Stabilized. Distributional restrictions

A semantic map

Context parameters

Literature
Historical developments

'Sentence' 'Clause' 'Co-const.' 'endpoint'
'Sentence' 'Clause' 'Co-const.' 'identity'
'Sentence' 'Clause' 'Co-const.' 'scope extension'

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Scalar additive operators
Historical developments

- ‘endpoint’
- ‘minimal quantity’
- ‘identity’
- emphatic negation

\begin{align*}
\text{SENTENCE} & \quad S \\
\text{CLAUSE} & \quad S \\
\text{CO-CONST.} & \quad S \\
\text{even}_1 & \\
\text{SENTENCE} & \quad S \\
\text{CLAUSE} & \quad S \\
\text{CO-CONST.} & \quad W \\
\text{einmal} & \\
\text{SENTENCE} & \quad S \\
\text{CLAUSE} & \quad W \\
\text{CO-CONST.} & \quad W
\end{align*}

\textbf{Scalar additive operators}
Historical developments

- ‘endpoint’
- ‘identity’
- ‘minimal quantity’
- ‘co-const.’

- ‘scope extension’
- ‘restrictive operator’
- ‘expression of comparison’
- ‘emphatic negation’
- ‘concessive conditional’

*even*$_1$, *S*  
*even*$_2$, *S*  
*even*$_3$, *S*  
*einmal*, *S*  
*kan*$_1$, *W*
Historical developments

- 'endpoint'
- 'identity'
- 'minimal quantity'

- 'semantic generalization'
- 'minimal quantity'
- 'restrictive operator'
- 'expression of comparison'
- 'concessive conditional'

- even\(_1\)
- even\(_2\)
- even\(_3\)
- scope extension
- kan\(_1\)
- kan\(_2\)
Historical developments

- 'endpoint'
- 'identity'
- 'minimal quantity'
- emphatic negation
- restrictive operator
- expression of comparison
- concessive conditional
- semantic generalization
- scope extension

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Scalar additive operators
Literature