Degree equatives: The same as comparatives?

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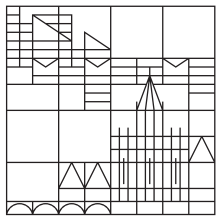

Workshop *Equative Constructions*

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Equatives in degree semantics

- Degree semantic accounts treat equatives in passing (von Stechow, 1984; Rullmann, 1995; Beck, 2011)
- Standard assumptions:
  - The semantic composition (LF) of degree equatives is the same as for comparatives.
  - The semantics (TC) of degree equatives differs only minimally from that of comparatives.

(1) a. John is older than Mary. COMPARATIVE
b. [$_{DegP}$ -er [than 1 Mary ~~is t_1-old~~]] 2 John is t_2-old] LF
c. John's age $>$ Mary's age TC

(2) a. John is as old as Mary. EQUATIVE
b. [$_{DegP}$ as [as 1 Mary ~~is t_1-old~~]] 2 John is t_2-old] LF
c. John's age $\geq$ Mary's age TC

Plot of this talk

- The standard semantic analysis makes certain predictions that are adequate for degree equatives in English, but not for equatives in German (and many other European languages).
- This necessitates a different semantic analysis of equatives (at least) in German.

$\Rightarrow$ Two different strategies cross-linguistically to express degree equatives

Overview

Terminology

- I adopt the following terminology from Haspelmath and Buchholz (1998):

(3)

Mary	is	as	old	as	Peter.
comparee		parameter marker		standard marker	standard

Ingredients of the standard analysis

Semantics of gradable adjectives

- Gradable adjectives denote relations between individuals and degrees:

  (4) $[\![\textbf{old}]\!] = \lambda x_e.\lambda d_e.\ \text{AGE}(x) \geq d$

- This semantics makes gradable adjectives downward scalar predicates, i.e. they allow inferences from larger degrees to smaller ones.

  (5) Peter is 20 years old.
  $\Rightarrow$ Peter is 19 years old, Peter is 18 years old ...

Ingredients of the standard analysis

Syntax and LF of equatives

- The standard (+ standard marker) is analysed as elliptical clause with the standard marker being semantically vacuous.

  (6) Mary is as old [as$_1$ Peter ~~is t_1 old~~]

- The parameter marker is an operator that takes the standard clause as its first argument.

  (7) [**as** [**as**$_1$ **Peter is** t_1 **old**]]$_2$ [**Mary is** t_2 **old**] LF

Ingredients of the standard analysis

Semantics and pragmatics of equatives

- Semantically, the parameter marker is an operator (generalized quantifier over degrees) relating two sets of degrees.

(8) $[\![\textbf{as}]\!] = \lambda D_{1<d,t>}.\lambda D_{2<d,t>}.\max(D_2) \geq \max(D_1)$

(9) a. Mary is as old as Peter.
b. [**as** [**as**$_1$ **Peter is** t_1 **old**]]$_2$ [**Mary is** t_2 **old**] LF
c. max{d: Mary is d-old} $\geq$ max{d: Peter is d-old} TC
$\Leftrightarrow$ Mary's age $\geq$ Peter's age

- This *at least*-interpretation can be pragmatically strengthened to an *exactly*-reading by usual scalar implicatures (Horn, 1972).

Prediction 1 of the standard analysis

Licensing of NPIs

- This semantics makes the standard of equatives a downward entailing context (just as the standard of comparatives).

(10) $D' \subseteq D$

$$\frac{[\![\textbf{as}]\!](D)(P) = 1 \text{ (i.e. } \max(P) \geq \max(D))}{[\![\textbf{as}]\!](D')(P) = 1 \text{ (i.e. } \max(P) \geq \max(D'))}$$

- Thus NPIs are predicted to be licensed in the standard of equatives (just as in comparatives).
- This prediction is borne out for equatives in English:

(11) a. Paris is as quiet as **ever**. (from Seuren, 1984, 114)
b. Two glasses was as much as I **cared to** drink.
c. That was as much as he was willing to **lift a finger** to do.
d. Jim is as competent as **anybody** here could possibly be.

Prediction 1 of the standard analysis

Licensing of NPIs

- But in German, NPIs in are not licensed in the standard of equatives:

(12) *Der Jemen ist so schön, wie ich **jemals** gedacht habe.
the Yemen is so beautiful how I ever thought have
(from Krifka, 1991, 155)

(13) *Der Palast ist so gross wie sich **irgendjemand** vorstellen
the palace is so big how REFL anybody imagine
kann.
can

Prediction 1 of the standard analysis

Licensing of NPIs

- This contrasts with comparatives, in which NPIs are licensed in German:

(14) Der Jemen ist schöner, als ich **jemals** gedacht habe.
'The Yemen is more beautiful than I have ever thought.'

(15) Der Palast ist grösser als sich **irgendjemand** vorstellen kann.
'The palace is bigger than anybody can imagine.'

Prediction 2 of the standard analysis

Negation in the standard

- Negation and negative expressions create upward scalar predicates, such that they allow inferences from smaller degrees to larger ones.

  (16) Nobody is 20 years old.
  $\not\Rightarrow$ Nobody is 19 years old, nobody is 18 years old ...
  $\Rightarrow$ Nobody is 21 years old, nobody is 22 years old ...

- Upward scalar predicates do not have a maximum.

  E.g.: max{*d*: nobody is *d*-old} is undefined

- The semantics of the equative operator thus predicts that negative expressions cannot occur in the standard (just as in the standard of comparatives).

Prediction 2 of the standard analysis

Negation in the standard

- This prediction is borne out for equatives in English:

(17) a. *John is as happy as **never** before.
b. *Mary is as beautiful as **no** other girl I know.

- In German equatives, however, negative expressions can occur in the standard:

(18) Helena ist so schön wie **keine** andere (Frau).
Helena is so beautiful how no other (woman)
'Helena is more beautiful than any other woman.'

- This contrasts again with comparatives:

(19) *Helena ist schöner als **keine** andere (Frau).
Helena is more-beautiful than no other (woman)

Prediction 2 of the standard analysis

Negation in the standard

- Under the standard analysis it is not possible to derive the correct interpretation of equatives with negative expressions in the standard.

(20) Peter ist so alt wie **kein** anderer (in seiner Klasse).
Peter is so old how no other (in his class)
'Peter is older than anyone else (in his class).'

(21) a. [**as** [**as**$_1$ **nobody is** t_1 **old**]]$_2$ [**Peter is** t_2 **old**] LF1
b. max{d: nobody is d-old} is undefined!

(22) a. **nobody**$_3$ [**as** [**as**$_1$ t_3 **is** t_1 **old**]]$_2$ [**Peter is** t_2 **old**] LF2
b. $\neg\exists x[\max\{d : \text{Peter is } d\text{-old}\} \geq \max\{d : x \text{ is } d\text{-old}\}]$
$\Leftrightarrow \neg\exists x[\text{AGE}(\text{Peter}) \geq \text{AGE}(x)]$
'Peter is the youngest.'

Cross-linguistic picture

- The operator analysis of degree equatives makes adequate predictions for English regarding the licensing of NPIs and the non-occurrence of negative expressions in the standard.
- These predictions are, however, not adequate for German, where negative expressions can occur in the standard and NPIs are not licensed.
- German equatives are by no means exceptional in exhibiting these properties.
- Many other European languages pattern with German in allowing negative expressions in the standard of equatives and disallowing NPIs (Krasikova and Penka, 2012).

Cross-linguistic picture

- These languages use a degree demonstrative as parameter marker and a degree interrogative pronoun as standard marker.

(23) Mary ist **so** gross **wie** Peter. EQUATIVE
Mary is so tall how Peter

(24) Peter ist **so** gross. DEGREE DEMONSTRATIVE
Peter is that tall.

(25) **Wie** gross ist Peter? DEGREE INTERROGATIVE
How tall is Peter?

(26) Gianni è alto **(così) tanto** **quanto** Maria. Italian
Gianni is tall so so-much how-much Maria

(27) Helen jest **tak** wysoka **jak** Maria. Polish
Helen is so tall how Maria

Equatives as correlative constructions

"In these constructions, the parameter marker is an adverbial demonstrative pronoun and the standard marker is an adverbial relative pronoun that is generally based on an interrogative pronoun. [. . .] Such correlative equative constructions are clearly based on correlative free relative clauses."

(Haspelmath and Buchholz, 1998, 288)

Equatives as correlative constructions

Idea: Take this parallel between equatives and correlatives at face value and analyse correlative equative constructions in analogy to other correlative constructions (Dayal, 1995; Brasoveanu, 2012).

- The correlative clause corresponds to a free relative clause and is interpreted as a definite description.
- This definite description is cataphorically picked up by the demonstrative pronoun in argument position.

Semantics of free relative clauses

- Free relative clauses are interpreted as definite descriptions (Rullmann, 1995; Dayal, 1995; Jacobson, 1995).
- Definites are interpreted as denoting the maximally informative object that falls under the relevant predicate (von Fintel et al., 2014).
- The maximally informative object is the one that creates the most informative true proposition. The most informative proposition is defined as the proposition that entails all other relevant propositions.
- With downward scalar predicates, the maximally informative degree corresponds to the maximal degree of which the predicate holds.

(28) MAX_{inf} (λd. Peter is d-old) = AGE(Peter)

Semantics of correlative equatives

- German *so* is a degree demonstrative that refers to a contextually given degree (Beck, 2012).

(29) Paul ist 20 Jahre alt. Peter ist auch **so** alt.
Paul is 20 years old. Peter is also that old.

- In correlative equative constructions, *so* picks up the referent of the definite description denoted by the free relative clause. This serves as the degree argument of the adjective.

(30) Peter ist so^2 alt [MAX$_{inf}$ [wie$_1$ Paul t_1 alt ist]]^2
[λd. Paul is d-old]
AGE(Paul)

⟦ **old** ⟧(Peter)(AGE(Paul))
AGE(Peter) $\geq$ AGE(Paul)

Explaining the non-licensing of NPIs

- NPIs are not licensed in free relatives (Jacobson, 1995).

  (31) *I can read whatever Bill **ever** read.

- Thus, if the standards of an equative is a free relative clause, we do not expect NPIs to be licensed there.

Explaining the occurrence of negative expressions

Restrictions on negative expressions in the standard

- In itself, the correlative analysis does not explain the occurrence of negative expressions in the standard.
- In particular, we cannot assume that MAX_{inf} applied to an upward scalar predicate yields the minimal degree of which the predicate holds.
- Not all kinds of negative expressions can occur in the standard.

(32) *Peter ist so alt wie Paul **nicht**.
Peter is so old how Paul not

(33) Peter ist so gross wie Paul **klein** ist.
Peter is so tall how Paul short is
*‘Peter is taller than Paul.’
‘Peter is as tall as Paul is short.’ (deviation from standard)

Explaining the occurrence of negative expressions

Restrictions on negative expressions in the standard

- The presence (or implicit understanding) of certain modifiers is crucial for the acceptability of negative expressions in the standard.

(34) *Diesen Winter gab es so viel Schnee wie letztes Jahr **nicht**.
this winter gave it so much snow how last year not.

(35) Diesen Winter gab es so viel Schnee wie seit 20 Jahren
this winter gave it so much snow how since 20 years
nicht mehr.
not anymore.
'The amount of snow this winter equals the amount of snow we last had 20 years ago.'

Explaining the occurrence of negative expressions

Restrictions on negative expressions in the standard

(36) ??Peter ist so alt wie **keiner**.
Peter is so old how none

(37) Peter ist so alt wie **kein** anderer (in seiner Klasse).
Peter is so old how no other (in his class)
'Peter is older than anyone else (in his class).'

Explaining the occurrence of negative expressions

Contribution of *mehr* 'anymore'

- The aspectual particle *mehr* 'anymore' adds the presupposition that the predicate was true at a previous time.

(38) a. Chiara wohnt nicht mehr in Köln.
'Chiara doesn't live in Cologne anymore.'
b. Wohnt Chiara nicht mehr in Köln?
'Does Chiara not live in Cologne anymore?'
c. Es ist möglich, dass Chiara nicht mehr in Köln wohnt.
'It is possible that Chiara doesn't live in Cologne anymore.'

(39) Pressupposition:
There is a time preceding the speech time at which Chiara lived in Cologne.

Explaining the occurrence of negative expressions

Contribution of *mehr* 'anymore'

(40) ⟦ **wie**$_1$ **es seit 20 Jahren nicht mehr** t_1 **viel Schnee gab** ⟧=
the set of degrees *d* such that:
(i) there is a time preceding the speech time by 20 years at which there was *d*-much snow; PRESUPPOSITION
(ii) there is no time preceding the speech time by less than 20 years at which there was *d*-much snow TC

- MAX_{inf}⟦ **wie**$_1$ **es seit 20 Jahren nicht mehr** t_1 **viel Schnee gab** ⟧ is only defined if there is a degree fulfilling conditions (40-i) and (40-ii).
- If defined,
MAX_{inf}⟦ **wie**$_1$ **es seit 20 Jahren nicht mehr** t_1 **viel Schnee gab** ⟧ yields the amount of snow 20 years ago.

Explaining the occurrence of negative expressions

Contribution of *mehr* 'anymore'

(41) Diesen Winter gab es so viel Schnee wie seit 20 Jahren
this winter gave it so much snow how since 20 years
nicht mehr.
not anymore.
'The amount of snow this winter equals the amount of snow we last had 20 years ago.'

- Sentence (41) is true if
  - The amount of snow during the last 19 years does not meet or exceed the amount 20 years ago. PRESUPPOSITION
  - The amount of snow this year is greater or equal to the amount of snow 20 years ago. TC

Explaining the occurrence of negative expressions

Contribution of the exceptive phrase

- Exceptive phrases such as *except for x, but x, other than x* trigger the implicature that *x* is the only exception (von Fintel, 1993; Gajewski, 2008).

(42) No student other than Fred attended the talk.
$\rightarrow$ Fred is the only student who attended the talk.
$\rightarrow$ Fred attended the talk.

(43) $[\![$ **wie**$_1$ **kein anderer als Peter** t_1 **alt ist** $]\!]$=
the set of degrees *d* such that:
(i) nobody different from Peter is *d*-old; TC
(ii) Peter is *d*-old IMPLICATURE

Explaining the occurrence of negative expressions

Contribution of the exceptive phrase

(44) Peter ist so alt wie **kein** anderer (in seiner Klasse).
Peter is so old how no other (in his class)
'Peter is older than anyone else (in his class).'

- MAX_{inf} [[**wie**$_1$ **kein anderer als Peter** t_1 **alt ist**]] is only defined if there is a degree such that
  (i) nobody different from Peter is *d*-old; TC
  (ii) Peter is *d*-old IMPLICATURE
- If defined, MAX_{inf} [[**wie**$_1$ **kein anderer als Peter** t_1 **alt ist**]] yields Peter's age.
- Sentence (44) is true if
  - Nobody meets or exceeds Peter in terms of age. PRESUP.
  - Peter's age is greater or equal to Peter's age. TC

Explaining the occurrence of negative expressions

Difference between correlative and operator analysis

- In general, the modifier phrases have the effect of making the degree predicate doubly bound, i.e. the corresponding set of degrees has a minimum as well as a maximum.
- This raises the question why the presence of *mehr* 'anymore' and exceptive phrases rescues negative expressions under the correlative analysis, but not under the operator analysis.
- Tentative answer:
  MAX_{inf} takes into account non-truth conditional restrictions (presuppositions, implicatures), while the max-operator does not.

Conclusion

- Cross-linguistically, there seem to be two different strategies to form degree equatives.
- The first strategy, represented by English, employs an equative operator parallel to the comparative operator.
- According to the second strategy, represented by German, equatives are correlative constructions. The standard clause denotes a definite degree, which is picked up by a degree demonstrative in the matrix clause.
- The strategy employed by a language has consequences for the possibility of NPIs and negative expressions in the standard.

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