1. INTRODUCTION

It is assumed that gradable adjectives denote relations between individuals and degrees:

(1) Gradable adjectives are downward monotonic; that is, if Maribel is 156cm tall, then
\(\text{tall}(m,156\text{cm})\) is true, \(\text{tall}(m,155\text{cm})\) is true, \(\text{tall}(m,154\text{cm})\) is true, etc.

(1) Maribel is 156 centimeters tall.

The comparative morpheme -er and the superlative morpheme -est operate on the degree argument of gradable predicates:

(2) John is taller than Bill \(\iff\) John is tall to a degree to which Bill is not
\(\exists d \ [\text{tall}(j,d) \land \neg \text{tall}(b,d)]\) \quad (Seuren 1973)

(3) \(\llbracket\text{-er}\rrbracket = \lambda Q_{d \leq} \lambda P_{d \leq} \exists d \ [P(d) \land \neg(Q(d))]\)
(Heim 2006)

(4) John is the tallest (in group C) \(\iff\) John is tall to a degree to which nobody else in group C is tall
\(\exists d \ [\text{tall}(j,d) \land \forall z \in C \ [z \neq j \implies \neg \text{tall}(z,d)]]\) \quad (Heim 1999)

(5) \(\llbracket\text{-est}\rrbracket = \lambda Q_{d \leq} \lambda P_{d \leq} \exists d \ [P(d) \land \forall Q \in Q \ [Q \neq P \implies \neg(Q(d))]]\)
(Heim 1999)

Superlatives with modal modifiers like possible (Corver 1997, Larson 2000, Schwarz 2005): Prenominal possible with superlatives gives rise to two readings: (7a), (9a).

(6) John is a possible liar.

(7) John is the smartest possible liar.
   a. Regular modifier reading: "John is possibly a liar and he is smarter than any other
      (relevant) individual that is possibly a liar."
   b. Modal superlative reading: "John is as smart a liar as possible for him/one to be."

(8) John talked to some possible guests.

(9) John talked to the fewest possible guests.
   a. "John talked to fewer individuals that possibly were guests than anybody else
      (relevant) did."
   b. "John talked to as few guests as it was possible for him/one to talk to."
   
   (a) Regular Noun modifier possible
   (b) Modal superlative reading: "as X as possible"

Some interesting syntactic restrictions have been observed: \(\mathcal{D}, \mathcal{O}, \mathcal{D}.\)

- \textbf{Restriction} \(\mathcal{D}:\) While possible and certain adjectives ending in -able (e.g.
  imaginable, conceivable, etc.) allow for the modal superlative reading, other
  semantically similar adjectives do not, like potential and probably (Larson 2000).

(10) John is the smartest possible / imaginable / conceivable liar.

(11) John is the smartest potential / probable liar.

- \textbf{Restriction} \(\mathcal{O}:\) When the modal adjective appears postnominally, the modal
  superlative reading is the only one available (Larson 2000).

(12) John is the smartest liar possible.
   b. \(\checkmark\) Modal superlative reading.

(13) John talked to the fewest guests possible.
   b. \(\checkmark\) Modal superlative reading.

- \textbf{Restriction} \(\mathcal{O}:\) The prenominal modal adjective requires syntactic locality with the
  superlative morpheme -est in order for the modal superlative reading to arise (Schwarz
  2005):

(14) Ich habe das größte / mögliche Geschenk gekauft.
   I have the largest / possible present bought
   'Out of the possible presents, I bought the largest one.' 
   Regular modifier

(15) Ich habe das größt\(\checkmark\) mögliche Geschenk gekauft.
   I have the largest possible present bought
   'I bought as large a present as it was possible for me/one to buy.' 
   Modal superlative

(16) I bought the largest affordable possible present.
   a. "Out of objects that were affordable possible presents, I bought the largest one."
   b. * "I bought as large an affordable present as it was possible for me/one to buy."

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2. Background: LF analyses of degree constructions

2.1. Superlatives and the absolute / relative ambiguity.

- Ambiguity found in superlatives with covert argument C (Szabolcsi 1986, Heim 1999):
  (20) John climbed the highest mountain.
    a. Absolute reading: "John climbed a/the mountain higher than any other mountain."
    b. Relative reading: "John climbed a higher mountain than anybody else climbed."

- Previous analyses of the modal superlative reading:
  - Larson (2000) on $\ominus$ and $\ominus$: possible + $\Delta_{\text{ACD,nonfinite}}$ generated postnominally; promotion to prenominal position.
  - Schwarz (2005) on $\ominus$: non-decomposable degree operator $\lceil$-est possible$\rceil$, since:
    - comparison of worlds rather than among several degree properties
    - different quantificational force: "at least as high" rather than "highest"

- The exact content of the relative reading depends on the focal structure of the sentence:
  (22) a. John wrote the longest letter to Mary.
     b. JOHN wrote the longest letter to Mary.

- Heim's (1999) analysis:
  - est can undergo LF movement out of its host DP.
  - The definite article the is semantically vacuous. Instead, THE or A.

- Thesis: The LF position of -est determines whether we get the absolute or the relative reading. The focus structure of the complement of -est shapes the reading further via C.

- Goal of this talk: To present an analysis of the modal superlative reading (building on Romero 2010) that:
  - (i) compositionally derives the appropriate truth conditions while maintaining standard separate lexical entries for -est and possible (contra Schwarz 2005);
  - (ii) allows us to reconcile the empirical restrictions $\ominus + \ominus$ with $\ominus$: $\lceil$-est possible$\rceil$ (plus some elliptical material) will be treated as a syntactic unit (with Schwarz 2005, contra Larson 2000).
  - The modal superlative reading arises from an LF structure with an ACD clause (with Larson 2000, contra Schwarz 2005).
  - (iii) derives further correct predictions concerning the shape and size of the recovered ellipsis site.

- Plot of the rest of this talk:
  - §2. Background: LF analyses of degree constructions.
  - §3. Proposal: A compositional analysis of the modal superlative reading.
  - §4. Reconciling the three empirical restrictions.
  - §5. Testing further predictions of the proposal.

2. Background: LF analyses of degree constructions

2.1. Superlatives and the absolute / relative ambiguity.
ABSOLUTE reading: [MR's version]

(27) Extra assumption: Traces and other empty categories can be focus-marked.1

(28) a. I met the person that John wrote the longest letter to t₁.
    b. I met the person that t₁ wrote the longest letter to Mary.

(29) How does one impress Mary?
    By PROO writing the longest letter to her.

(30) John climbed the highest mountain.

(31) a. LF: John climbed THE 2 \([-est \{1[t₁,F t₁-high mountain]\} \] \[2 John is t₂-tall \]
    b. \(\exists d [\text{jump-high}(a,d) & \neg (d \leq 2,5m)]\)

2.2. Comparatives: the than-complement and type conversion

The comparative morpheme 

\[-er\] combines with the than-clause or phrase to form a Degree Phrase (DegP). Just like with 

\[-est\], the DegP headed by 

\[-er\] can undergo LF movement to gain sentential scope (von Stechow 1984, Rullmann 1995, Heim 2000).

(32) \(\lambda Q<,d,t>,\lambda P<,d,t>\). \(\exists d [P(d) & \neg(Q(d))]\)  
(Heim 2006)

1 Instead of making 

\[-est\] associate with focus and allowing F-marking on phonologically null elements, we could let 

\[-est\] associate with a contextually salient set of situations, as Beaver and Clark (2003) explicitly argue for 

always.

(33) John is taller than Mary is.
    a. LF: \([-er \{\text{than} 1 Mary is }<t₁-tall>\} \] \[2 John is t₂-tall \]
    b. \(\exists d [\text{jump-high}(a,d) & \neg (d \leq 2,5m)]\)

2 For another potential avenue to circumvent the mismatch in modal superlatives, see Howard’s (2011) analysis of sentences like (i): 

(i) John read the most books that anyone has ever read.
3. Proposal: A Compositional Analysis of the Modal Superlative Reading

- Recall that we want to derive the modal superlative reading of e.g. (39) compositionally, using the standard lexical entries in (40)-(41).

(39) John climbed the highest possible mountain.

Modal superlative reading: "He climbed as high a mountain as it was possible for him (one) to climb".

(40) [\textit{-est}] = \lambda Q_{.\Delta w}. \lambda P_{.\Delta w}. \exists d [ P(d) \& \forall Q \in Q [ Q \# P \rightarrow \neg Q(d) ]]

(41) [\textit{possible IP}]'' = 1 \iff \exists w' \in \text{Acc}_P. [\textit{IP}]'' = 1 \quad \text{[Abbreviated as } \hat{\phi} \text{]}

Two key ingredients of the proposal:

- Larson’s (2000) constituent [1 possible $\Delta_{ACD}$] is interpreted as an amount relative clause, i.e., a relative clause ranging over degrees (Carlson 1977, Heim 1987, Grosu and Landman 1998).

(42) [\textit{John (one) to climb a }t_1\text{-high mountain}] =

- The constituent [1 possible $\Delta_{ACD}$] overtly expresses the comparison class argument of $\textit{-est}$.

(43) a. John is taller.
b. John is taller [than Mary is].

(44) [\textit{DegP -est [1 possible $\Delta_{ACD}$]} ]

Sample derivation:

(45) John climbed the highest possible mountain.

4. Reconciling the three empirical restrictions

- By combining Larson’s (2000) and Schwarz’ s (2005) structures into the new parse in (49), the proposed compositional account inherits the benefits of the two previous syntactic approaches and allows us to derive the three empirical restrictions observed.

(49) [\textit{-est [1 possible $\Delta_{nonlinear}$]} ]

- Restriction $\otimes$: Locality requirement between $\textit{-est}$ and the modal adjective.

[\textit{1} possible $\Delta_v$] is not a modifier of the head noun, but the comparison class argument of $\textit{-est}$, as in (49).

- As long as [\textit{possible $\Delta_v$}] remains in based-generated position, no adjective can intervene between it and [\textit{-est}] (50)-(52).

- Assuming that all and only noun modifiers agree with the head noun in German, the pattern is derived: (53)-(55).

(50) a. \textit{a. [\textit{Det Adj} + [\textit{Det Adj} \textit{-est Adj} [1 possible $\Delta_{ACD}$] N ]}
b. \textit{\checkmark [\textit{Det Adj} + [\textit{Det Adj} \textit{-est Adj} [1 possible $\Delta_{ACD}$] Adj N ]}

(51) I bought the largest affordable possible present.

(52) I bought the largest possible inexpensive present.
5. TESTING FURTHER PREDICTIONS OF THE PROPOSAL

5.1. Shape of the recovered ellipsis site

- Paraphrase "as X as possible for him / one to …":
  (61) John climbed the highest possible mountain.
  "He climbed as high a mountain as it was possible for him / one to climb".

- a. [possible for him / to buy]  ⇒  "as X as possible for him to …"
  b. [possible for PROarb to buy]  ⇒  "as X as possible for one to …"

- Prediction: The paraphrase "as X as possible for him to …" corresponds to a genuine reading of the sentence. Borne out!: (64)-(65).

- [possible for John (him) to climb A t1-high mountain]]  [2 John, climbed A t2-high mountain]

- Scenario: the host must talk to at least 20 guests and the speaker must talk to at least 5 guests.

- I talked to the fewest guests possible, and so did the host.
  "Sloppy reading: "I talked to as few guests as it was possible for me to talk to (namely, 5), and the host talked to as few guests as it was possible for the host to talk to (namely, 20)."

- Open issue: Does the paraphrase "as X as possible for one to …" correspond to a genuine reading of the sentence?
  In all examples so far, the generic paraphrase could be constructed as a sub-case of the truth-conditions resulting from (62a) (e.g. the allowed limit is the same for all climbers).
  To make this paraphrase a separate, genuine reading of the sentence, we would need to allow for vehicle change between a name and PROarb. Is this permitted? Cf. (66).

- John kissed Mary, but I wonder who Harry did kiss t.
  (Fiengo and May 1994:219, attributed to Wyngaerd-Zwart)

5.2. Ellipsis size: Relative and absolute modal superlative readings

- Relative and absolute readings in simple superlative sentences:
  (67) John climbed the highest mountain.
  a. Relative reading:
     LF: [ [possible for John / him] to climb A t1-high mountain ]  = C ]
     'John climbed a higher mountain that anybody else climbed.'
  b. Absolute reading:
     LF: John climbed THE 2 [ [possible for PROarb to buy] ]  = C ]
     'John climbed the mountain that is higher than any other mountain.'
PREDICTION: As long as the ellipsis site can be properly recovered, we predict modal superlative readings parallel to the relative and absolute readings to be available, as sketched in (68). Borne out: (69)-(72).

(68) John climbed the highest mountain possible.
   a. Modal superlative reading parallel to the relative reading:
      LF: [\[\text{[\text{est} -est 1 possible \text{for John/PRO}] to climb A t_1-high mountain]\] \text{John climbed as high a mountain as it was possible for him/one to climb.}]
   b. Modal superlative reading parallel to the absolute reading:
      LF: John climbed the 3 [\[\text{est} -est 1 possible \text{t_1-pro to climb t_1-high mountain}\] \text{John climbed the mountain that is as high as it is possible for it/a mountain to be.}]

(69) Pina knows how to organize the little time she has. She solved in five minutes the hardest problem possible, left the harder problems untouched and then ran for the bus.

(70) Pina is a genius!!! She solved in (just) five minutes the hardest (math) problem possible.

(71) The most beautiful poem possible is Neruda's Canción Desesperada.
   a. */\‘A poem that is as beautiful as it is possible for that beautiful a poem to equal Neruda’s CD equals Neruda’s CD."
   b. \‘The poem that is as beautiful as it is possible for it / a poem to be equals Neruda's CD."

(72) War and Peace and the most boring novel possible are of equal length.
   a. */\‘War and Peace and a novel that is as boring as it is possible for War and Peace and that boring a novel to be of equal length are of equal length."
   b. \‘War and Peace and the novel that is as boring as it is possible for it /a novel to be are of equal length."

OPEN ISSUE. Two main approaches to relative and absolute readings of simple superlative sentences: the est-scoping approach in §2.1 (Heim 1999) and the pragmatic approach in (73) (Sharvit & Statkev 2002). The est-scoping account can also derive parallel readings in modal superlative sentences, as in (68a,b). Can the pragmatic approach do that too?

(73) Main ingredients of pragmatic approach:
Est always stays within its host DP, though the host DP can scope out at LF. The pragmatic resolution of C determines the relative vs. absolute reading.

(74) a. [\text{the [IDENT-W* \[\text{[est high mountain]\]}]}]
   b. \text{The unique property P which is a member of C and which in every world in W* has the same value as the property of being the highest mountain.}"

(75) John talked to the most guests possible ▲ / he could ▲.
   [\text{the [possible ▲] [that he could ▲] IDENT-W* \[\text{[est many guests]]}\] 3 [John talked to T_{X=\text{est}}]}]

* Funny syntax: syntactic material (adj, RC) as contextual restrictor of the determiner.

6. Conclusions

An analysis of the modal superlative reading has been presented that:

(i) compositionally derives the truth conditions "as X as possible" while maintaining standard lexical entries for \text{est} and possible;

(ii) reconciles the empirical restrictions observed for this reading, namely:
   • RESTRICTION ▲: Locality requirement between \text{est} and the modal adjective.
   • RESTRICTION ▲: Postnominal possible.
   • RESTRICTION ▲: Lexical restriction.

(iii) and makes further correct predictions with respect to:
   • the shape of the recovered ellipsis site: "as X as possible for him to"; and
   • the size of the ellipsis: relative and absolute modal superlative readings.

Truth-conditions with "at least" vs. "exactly".
The proposed semantics derives the "at least" reading in (77a). The stronger, "exactly" reading could be derived as an implicature, as standardly assumed for "as...as" comparatives, as in (78) (von Stechow 1984). Note that some implicatures are hard or impossible to defeat, as in (79) (cf. Ippolito 2003, Magri 2009).

(76) John talked to the students that Mary refused to.
   a. LF: [\text{[that M refused to talk to T]} IDENT-W* [\text{students}] 3 [John talked to T_{X=\text{est}}] [\text{be students}]]
   b. \text{[\text{[that M refuses to talk to T]} IDENT-W* [\text{students}]] =_e \text{be students}]
   c. \text{[\text{[that M refused to talk to T]} IDENT-W* [\text{students}] =_e \text{be students}]}
   d. \text{"John talked to students, whom Mary refused to talk to."}

* Not an actual reading of the sentence.

John climbed the highest mountain possible.

a. "John climbed at least as high a mountain as it was possible/allowed for him to climb."
   b. "John climbed as high a mountain as it was possible/allowed for him to climb and no higher."

(77) John climbed the highest possible mountain.
   a. John is as tall as Mary.
   b. \text{(Of course) John is as tall as Mary. In fact, he is taller.}

(78) a. John is as tall as Mary.
   b. \text{(Of course) John is as tall as Mary. In fact, he is taller.}

(79) a. (Of course) John climbed the most mountains possible. #? In fact, he climbed more than the maximum allowed.
   b. (Of course) John climbed as many mountains as possible (he was allowed to). #? In fact, he climbed more than the maximum allowed.
Appendix

Sample derivation with *most* (= many + est)

\[ \lambda \alpha \lambda \beta \lambda \gamma \lambda \delta \lambda e \lambda P \lambda Q \lambda R \lambda S \lambda T \lambda U \lambda V \lambda W \lambda X \lambda Y \lambda Z \: \exists x \[ |x| \text{ad} \land P(x) \land Q(x) \] \]

[Slightly modified from Hackl (2000:83)]

References


N. Ruwet, 528

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