Cross-linguistic differences in superlative movement out of nominal phrases

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| Empirical observations: Superlatives inside nominal phrases (the most/best books) allow a reading in Slavic that is absent in English. The same variation is found within Slavic too. The relevant reading is constrained by the presence of the definite article. | Proposal: English –est is interpreted inside nominal phrases, while its Slavic counterpart naj- may QR out of indefinite nominal phrases. DP-internal –est cannot associate with DP-internal focus. | Consequences: Superlative –est/naj- are degree quantifiers, and they are focus sensitive (both issues are currently debated). Definite nominal phrases are islands for degree movement. |

1. Background

1.1 Ambiguities

The superlative in (1) is 3-way ambiguous: (H’85, Sz’86, G’95, F&K’00, S&St’02, a.o.)

In the absolute reading (1a), the comparison class for the superlative is determined just on the basis of the DP the largest cake, i.e., cakes in absolute terms (in a given context) without consideration of who has bought or received them.

In the relative readings (1b-c), other constituents in the sentence (John or Mary) determine the comparison class.

(1) John bought the largest cake for Mary.
   a. ‘John bought Mary the cake that is larger than any other cake.’
   b. ‘JOHN bought a larger cake for Mary than anyone else did.’
   c. ‘John bought a larger cake for MARY than he did for anyone else.’

(2) Scenarios:
   a. John bought cake E for Mary. (1a) is true
   b. John bought cake B for Mary and cake E for Martin; Bill bought cake A for Mary, and Ann bought cake C for Mary. (1b) is true; (1a) & (1c) are false
   c. John bought cake B for Mary, cake A for Tom, and cake D for Martin, and Bill bought cake E for Mary. (1c) is true; (1a) & (1b) are false

![Figure 1: The cake display at Sweet Lady Jane (images from their website)](image)

The same ambiguities obtain in the case of Slavic superlatives with naj-. (2’06, B&G’09)

(3) Iwan dał Marii naj-mlejsze albumy U2. Pol
Ivan gave Maria.dat naj-better.acc albums.acc U2
   a. ‘Ivan gave Maria the albums by U2 that are better than any other album.’
   b. ‘IVAN gave Maria better albums by U2 than anyone else did.’
   c. ‘Ivan gave MARIA better albums by U2 than he did to anyone else.’

The absolute/relative ambiguity and the ambiguity among relative readings arise as the result of differences in the comparison class.

1.2 How is the comparison class determined?

Two factors have been suggested to have an effect on how the comparison class is determined, and thus on how the ambiguities arise — the LF syntax of –est and focus.

Both factors remain subject to debate.

1.2.1 The role of QR of –est

There have been two main approaches to the LF syntax of –est:

Scope Theory: –est moves out of the DP in relative readings. (H’85, Sz’86, H’99)

Pragmatic Theory: –est stays inside the DP in relative readings. (F&K’00, S&St’02)

Both theories maintain that –est stays inside the DP in absolute readings.

Both theories can work with a meaning for –est as in (4)1. The degree quantifier –est has a covert restrictor C, the comparison class.

(4) a 3-argument semantics for –est:

\[ [\text{–est}] = \lambda C \lambda D \lambda x \exists d [D(d)(x) \land \forall y [y \in C \land y \neq x \rightarrow \neg D(y)]] \]

Presuppositions: (i) \( x \in C \); (ii) \( \forall y [y \in C \rightarrow \exists d [D(d)(y)]] \)

i.e., –est has 3 arguments: a set of individuals C, a gradable predicate D, and an individual x.

–est(C)(D)(x) is true iff there is a degree d s.t. x has that degree of D and no other individual in C has that degree of D

Presuppositions: (i) x is a member of C;
   (ii) C consists of individuals which are arguments of D.

1 This meaning, and the LFs that go with it, are chosen primarily for ease of presentation. An alternative, 2-argument semantics, as in (i), with corresponding LFs, will also work (see H’99 for discussion).

(i) \[ [\text{–est}] = \lambda C \lambda D \lambda x \exists d [D(d)(x) \land \forall P [P \in C \land P \neq D \rightarrow \neg P]] \]

Presuppositions: (i) \( D \in C \); (ii) \( \exists P [P \in C \land P \neq D] \)
1.2.1.1 The Pragmatic Theory

- est never moves out of DPs.

- The comparison class C is partly determined from the scope of [−est C], and partly from context. Given the presupposition of −est that C consists of individuals which are arguments of the D [see (4−iii)], the LF syntax of [−est C] first determines the elements of C; C is then further specified pragmatically, based on contextual relevance (see (5) for an LF and meanings).

5 a.

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[1 d1-large cake] = λd2 λx[x is a cake ∧ x is d-large]
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b. [1 d1-large cake] = λd2 λx[x is a cake ∧ x is d-large]

i.e., D is a relation between degrees of size and individuals that are cakes of a certain size

c. i. [[C]] = λx λz λd [x is a d-large cake]

i.e., C is a set of cakes of a certain size

ii. [[C]] = λx λz λd [x is a d-large cake ∧ y [y is person ∧ y bought x for Mary]]

i.e., C is a set of cakes of a certain size that someone bought for Mary

iii. [[C]] = λx λz λd [x is a d-large cake ∧ y [y is person ∧ John bought x for y]]

i.e., C is a set of cakes of a certain size that John bought for someone

d. i. [[DP]] = ι[x ∈ d-large cake ∧ ∀y [y is a d'-large cake ∧ y ≡ x → y is a d-large cake]]

i.e., DP is the unique cake of a certain size such that no other cake in the comparison class of cakes reaches that size

ii. [[DP]] = ι[x ∈ d-large cake ∧ ∀y [y is a d'-large cake ∧ y ≡ x → y is a d-large cake]]

i.e., DP is the unique cake of a certain size such that no other cake in the comparison class of cakes that someone bought for Mary reaches that size

iii. [[DP]] = ι[x ∈ d-large cake ∧ ∀y [y is a d'-large cake ∧ y ≡ x → y is a d-large cake]]

i.e., DP is the unique cake of a certain size such that no other cake in the comparison class of cakes that John bought for someone reaches that size

1.2.1.2 The Scope Theory

- est scopes inside the DP in absolute readings, resulting in the same LF as in (5a), and interpretation as in (5b, c-i, d-i)

- The superlative DP is definite in absolute readings and indefinite in relative readings.

- The relative readings obtain when −est scopes outside of the DP.

- Given the 3-argument semantics for −est in (4), when different DPs (John or Mary) QR, and become the third argument of −est. [−est C] tucks in. (See (6), (7) for LFs and meanings).

6 a.

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\[ TP1 \rightarrow D \]
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<table>
<thead>
<tr>
<th>RELATIVE</th>
</tr>
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b. [[TP1]] = λd2 λx[x bought a d-large cake for Mary]

i.e., D is a relation between degrees of size and individuals who bought a cake of a certain size for Mary

c. [[C]] = λx λz λd [x bought a d-large cake for Mary]

i.e., C is a set of individuals who bought a cake of a certain size for Mary

d. [[TP1]] = λd2 λx[x bought a d-large cake for Mary ∧ y ≡ x → y bought a d-large cake for Mary]

i.e., TP1 is the proposition that there is a degree of size such that John bought Mary a cake of that size and no other individual in the comparison class of people, who bought Mary a cake, bought her a cake reaching that size.
a. $[TP_3] = \lambda d_x \exists x_y [\text{John bought a } d\text{-large cake for } x]$  
  i.e., $D$ is a relation between degrees of size and individuals who John bought a cake of a certain size for

b. $[TP_3] = \lambda x_y \exists d_x [\text{John bought a } d\text{-large cake for } x]$  
  i.e., $C$ is a set of individuals who John bought a cake of a certain size for

c. $[TP_1] = \exists d [\text{John bought a } d\text{-large cake for } y]$  
  i.e., $TP_1$ is the proposition that there is a degree of size such that John bought Mary a cake of that size and he bought no one else in the comparison class of people, who he bought a cake for, a cake reaching that size.

1.2.2 The role of focus

- Focus clearly facilitates disambiguation in favor of relative readings.

- On the version of the Scope Theory presented above, focus association for –est must mean that the focused DP QRs and becomes the individual argument of –est. But such QR of a DP could be available in the absence of focus.

- On the Pragmatic Theory too, focus can be accommodated but is not obligatory to receive a relative reading

- It is thus still an unresolved question whether focus is necessary in order to obtain a relative reading.

Summary:

The Scope Theory
- The absolute/relative ambiguity is the result of DP-internal or DP-external scope of –est
- The ambiguity among relative readings is the result of the scope of other DPs, immediately below which the DP-external –est tucks in.
- The comparison class C is determined based on the scope of [–est C]
- The superlative DP is definite in the absolute reading and indefinite in relative readings

The Pragmatic Theory
- –est always has DP-internal scope
- The comparison class C is determined based on the scope of [–est C]
- The ambiguities are pragmatically determined

2. New empirical observations about relative readings

2.1 DP-internal focus: English

- In English, the relevant relative readings are absent when the focus is inside the superlative DP.

(9) John has [the best [albums of/by U2]].
   a. \( \text{JOHN has better albums of/by U2 than anyone else does.} \)
   b. \( \text{JOHN has better albums of/by U2 than he has of/by any other band.} \)

(10) John has [the most [albums of/by U2]].
   a. \( \text{JOHN has more albums of/by U2 than anyone else does.} \)
   b. \( \text{JOHN has more albums of/by U2 than he has of/by any other band.} \)

(11) John met [the youngest [students from London]].
   a. \( \text{JOHN met younger students from London than anyone else did.} \)
   b. \( \text{JOHN met younger students from LONDON than he did from another city.} \)

(12) John met [the most [students from London]].
   a. \( \text{JOHN met more students from London than anyone else did.} \)
   b. \( \text{JOHN met more students from LONDON than he did from another city.} \)

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2 F&K’00 suggest that a sentence such as (i) does not have a relative reading with John the focus. We have found that not to be the case; (i) is fine in contexts where what it is relevant is who visited a larger city in Europe than anyone else did and no one visited London.

(i) John visited the largest city in Europe.
When the focus is outside the superlative DP, as when the PP modifies the VP, the relevant relative reading is available

13) John [met the youngest students] in London.
   a. JOHN met younger students in London than anyone else did.
   b. John met younger students in LONDON than he did in another city.

14) John [met the most students] in London.
   a. JOHN met more students in London than anyone else did.
   b. John met more students in LONDON than he did in another city.

2.2 DP-internal focus: Slavic

The missing DP-internal relative reading in English is available in Slavic (in addition to Bulgarian and Polish, the facts also hold for Czech and Serbian/Croatian).

15) a. Ivan ima naj-hubavi albumi na/ot U2. (Bulgarian)
   Ivan has naj-good albums of/ by U2
   b. Ivan ma naj-lepsze albumy U2. (Polish)
   Ivan has naj-better\textsubscript{Acc} albums\textsubscript{Acc} U2
   \[ 'IVAN has more albums by U2 than anyone else does.'
   \[ 'Ivan has more albums by U2 than by any other band.'

16) a. Ivan ima naj-mnogo albumi na/ot U2. (Bulgarian)
   Ivan has naj-many albums of/ by U2
   b. Ivan ma naj-więcej albumów U2. (Polish)
   Ivan has naj-more\textsubscript{Acc} albumów\textsubscript{Acc} U2
   \[ 'IVAN has more albums by U2 than anyone else does.'
   \[ 'Ivan has more albums by U2 than by any other band.'

17) a. Ivan se zapozna s naj-mladi studenti ot London. (Bulgarian)
   Ivan refl met with naj-young students from London
   b. Ivan pozna naj-młodszych studentów z Londynu. (Polish)
   Ivan met naj-younger\textsubscript{Gen} students\textsubscript{Gen} from London
   \[ 'IVAN met younger students from London than anyone else did.'
   \[ 'Ivan met younger students from LONDON than from any other city.'

18) a. Ivan se zapozna s naj-mnogo studenti ot London. (Bulgarian)
   Ivan refl met with naj-many students from London
   b. Ivan pozna naj-więcej studentów z Londynu. (Polish)
   Ivan met naj-more\textsubscript{Acc} studentów\textsubscript{Acc} from London
   \[ 'IVAN met more students from London than anyone else did.'
   \[ 'Ivan met more students from LONDON than from any other city.'

2.3 The definite article: Bulgarian vs. the rest of Slavic

Bulgarian, unlike the other Slavic languages (except for Macedonian), has a definite article. When the definite article is added to (15a)-(18a), as in (19)-(22), the DP-internal focus R-reading is no longer available, similarly to English (9)-(12). (The same also holds for Macedonian.)

19) Ivan ima naj-hubavi-te albumi na/ot U2. (Bulgarian)
   Ivan has naj-good-the albums of/ by U2
   \[ 'IVAN has better albums by U2 than anyone else does.'
   \[ * 'Ivan has better albums by U2 than by any other band.'

20) Ivan ima naj-mnogo-to albumi na/ot U2. (Bulgarian)
   Ivan has naj-many-the albums of/ by U2
   \[ 'IVAN has more albums by U2 than anyone else does.'
   \[ * 'Ivan has more albums by U2 than by any other band.'

21) Ivan se zapozna s naj-mladi-te studenti ot London. (Bulgarian)
   Ivan refl met with naj-young-the students from London
   a. \[ 'JOHN met younger students from London than anyone else did.'
   b. * 'John met younger students from LONDON than he did from another city.'

22) Ivan se zapozna s naj-mnogo-to studenti ot London. (Bulgarian)
   Ivan refl met with naj-many-the students from London
   a. \[ 'JOHN met more students from London than anyone else did.'
   b. * 'John met more students from LONDON than he did from another city.'

Summary of the empirical observations:

- In English, when the focus is inside the superlative DP, the corresponding relative reading is blocked.
- In Polish, and in other languages without a definite article, this constraint doesn’t hold.
- Bulgarian is like English when the definite article is present in superlative DPs, but like Polish, when it isn’t.

3. Analysis

3.1 Degree QR is constrained by the presence of the definite article

The definite article blocks –est/naj- movement. This partially follows S’B6, for whom QR of –est is allowed only out of indefinite DPs (i.e., the is interpreted as a on the relative reading).

- English –est doesn’t move out of DPs, as in the Pragmatic Theory (F&K’00, S&S’02); Bulgarian naj- doesn’t either, when the definite article is present.
- Slavic naj- moves out of DPs in the absence of a definite article.
- In relative readings, est-/naj- are focus sensitive.
3.2 DP-internal focus relative readings in the absence of the definite article

- For the DP-internal focus relative reading in Slavic (15) (and analogously in (16)-(18)), we suggest the LF in (23).

- For ease of presentation, we diverge from the more standard approach of interpreting focus in-situ (see H’99), so we can keep the 3-argument semantics for –est in (4).

- The role of the focused element in in-situ theories of focus, is to introduce alternatives. Here, the variable left by QR of U2, has a similar role (see e.g., E’12 on focus association with traces).³

(23)

\[
\text{U2} \rightarrow \text{TP} \rightarrow \text{TP} \rightarrow \text{TP} \rightarrow \text{TP} \rightarrow \text{TP} \rightarrow \text{TP} \\
\text{John has d-good albums by } \text{U2}_2
\]

- The focus operator ~ introduces an anaphor, S, which is presupposed to be a subset of the focus-value of the constituent to which [~ S] attaches, assumed to be the clause, as usual (e.g., R’92).

(24) \[\llbracket \text{TP}_1 \rrbracket = \{P: \exists d (P = \lambda x (\text{John has d-good albums by } x))\}^4\]

i.e., the focus value of TP₁ is the set of set of individuals such that John has albums of a certain quality by them

(25) S ⊆ the set of set of individuals such that John has albums of a certain quality by them

- naj- is focus sensitive. It associates with focus by having its restrictor C dependent on S as in (26) (e.g., R’92, H’09).

(26) C = \cup S

i.e., C is a set of contextually relevant individuals such that John has albums of a certain quality by them

- C in (26) meets the presuppositions of –est:

(27) a. the individual argument of –est, U2, is an element of C
b. all elements of C are arguments of the second argument of –est

3.3 DP-internal focus in the presence of the definite article

- When the definite article is present, the LF in (23) where –est/naj- has sentential scope cannot be obtained. est/naj- have to stay DP-internal.

- English (9) and the Bulgarian (19) can in principle have either the LFs in (28)-(31) or (34). None are well-formed in that –est fails to associate with focus.

3.3.1 In-situ superlative DP, in-situ focus

(28)

\[
\text{John has d-good albums by } \text{U2}_2
\]
3.3.2 In-situ superlative DP, QR of focus

Moving the focus U2 in (28) will not help matters. In (31) ‐est/naj‐ cannot associate with the focus U2 either, as the condition C = \cup S cannot be fulfilled:

\[
\text{P}_{\text{ij}} = \{p : \exists x \left[p = \text{John has the best albums by } x\right]\}
\]

i.e., the focus value of TP is the set of propositions of the form “John has the best albums by x” where x is an element of the set of individuals.

(30) a. \(\mathcal{S} \subseteq\) the set of propositions of the form “John has the best albums by x” where x is an individual.
   b. C is a set of albums by U2 of a certain quality (presupposition of ‐est, see (4)‐ii)
   c. C \not\subseteq S \ i.e., ‐est cannot associate with focus.

3.3.3 QR of superlative DP

Finally, given that ‐est/naj‐ cannot QR out of the DP, we may try to resolve the problem by moving the entire superlative DP. However, in (34), where the superlative DP QRs, the focused element is outside the scope of the focus operator “” (and neither is a trace of it in the scope of “”, unlike the case in (23)), and this LF is thus precluded.

Interpreting (34) as if the F‐feature were somehow passed to the trace of the superlative DP, \(x_2\) results in the wrong meaning:

\[
\text{TP}_i = \{p : p = \lambda x \left[\text{John has the best albums by } x\right]\}
\]

i.e., the focus value of TP is the set of sets of individuals such that John has the best albums by them.

(33) a. \(\mathcal{S} \subseteq\) the set of sets of individuals such that John has the best albums by them.
   b. C is a set of albums of a certain quality (presupposition of ‐est, see (4)‐ii)
   c. C \not\subseteq S \ i.e., ‐est cannot associate with focus.

(32) \[\left[\text{TP}_i\right] = \{p : p = \lambda x \left[\text{John has the best albums by } x\right]\}\]

\[
\text{TP}_i = \{p : p = \lambda x \left[\text{John has the best albums by } x\right]\}
\]

i.e., the focus value of TP is the set of sets of individuals such that John has the best albums by them.

(33) a. \(\mathcal{S} \subseteq\) the set of sets of individuals such that John has the best albums by them.
   b. C is a set of albums of a certain quality (presupposition of ‐est, see (4)‐ii)
   c. C \not\subseteq S \ i.e., ‐est cannot associate with focus.

(36d) cannot derive the relative reading ‘John has better albums by U2 than he does by any other band’ as the comparison class C only contains albums by U2.
3.4 Relative readings with DP-external focus in the presence of the definite article

- For English, and for Bulgarian in the presence of the definite article, the Pragmatic Theory must be correct, even when the focus is not DP-internal.

(37) **JOHN** has the best albums by U2.

(38) **IVAN** ima naj-hubavi-te albumi na U2. (Bulgarian)

- Relative readings obtain through association with focus, provided the focus is DP-external

(39)

3.5 Why some obvious alternatives do not work

3.5.1 Extractability of focused elements

- One could plausibly suppose that the cross-linguistic and within language differences stem from differences in the extractability of focused elements out of superlative DPs. I.e., an LF as in (23) would be available for indefinite superlative DPs, but not for definite ones.

- Yet this cannot be the reason for the observed differences, since the DP-movement needed for (23) is allowed overtly in both English and in Bulgarian, from definite-marked superlatives, see (42)-(43) (S&S’02).

(42) Which band does John have [the best [albums of/by ____]]?

(43) Na/ot koji sastav ima Ivan [naj-hubavi-te [albumi ____]]? (Bulgarian)

- One would suppose cross- and within-language differences stem from differences in extractability of focused elements.

3.5.2 Association with DP-internal focus

- One could argue that DP-internal focus itself is restricted in the relevant examples. Yet this too cannot plausibly be the explanation, since U2 can be the focus associate of *only* in (44) and (45).

(44) John only bought [the best [albums of/by U2,]]

(45) Ivan samo kupi [naj-hubavi-te [albumi na/ot U2]]

- Yet this cannot be the reason for the observed differences, since DP-movement needed for (23) is allowed overtly in both English and in Bulgarian, from definite-marked superlatives, see (42)-(43) (S&S’02).

(46) The also blocks QR of -er out of DPs. -er cannot QR out of definite DPs and merge with the than-clause.

(47) a. John gave Mary the larger cake than Susan.

b. *John gave Mary the larger cake than Susan. (e.g., G’05)

- Focus-related relative readings obtain also with definite comparatives. If relative readings are necessarily derived through sentential scope, as on the Scope Theory, there will be no explanation for (46b).

a. John gave Mary the larger cake of the two.

b. Of the two boys, JOHN gave Mary the larger cake.

c. Of the two girls, John gave MARY the larger cake.
Summary of the analysis:
- In the absence of a definite article in superlative DPs, naj- QRs and has sentential scope in relative readings, as posited by the Scope Theory.
- The definite article precludes QR of –est/naj. In such cases they stay DP-internal, and relative readings are derived as in the Pragmatic Theory.
- In relative readings, est-/naj- must be focus sensitive and associate with focus.

4. Conclusions
- A new empirical generalization concerning relative readings of superlatives.
- Both the Scope Theory and the Pragmatic Theory are needed. The unified theory posits QR of -est/naj- when syntactically available; QR is blocked in islands. The meaning of superlative quantifiers is the same in English and Slavic.
- Focus is involved in relative readings.
- -est-/naj- are degree quantifiers, with consequences for the treatment of degree words more generally.
- Definite DPs are islands for degree movement.
- Clearly, further work is needed to find out why the creates a degree island

Selected References
B’08: Bošković, Ž. 2008. “What will you have, DP or NP?” NELS 37.