

Definiteness and degree morphology*

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Abstract The hallmark of gradable predicates is that they can appear in the comparative and the superlative constructions. It has been debated whether the semantic type of adjectives in these two constructions is the same or different, $\langle e,d \rangle$ or $\langle d, \langle e,t \rangle \rangle$. I show that the effect of definiteness on the cross-linguistic availability of a particular reading of superlatives, the *Relative-2* reading, indicates that gradable adjectives are of type $\langle d, \langle e,t \rangle \rangle$ in the superlative construction, which determines the functional syntax: the lexical head A, and not the functional head Deg, is the head of the whole adjectival projection.

1. The lexical properties of gradable adjectives and the functional domain

The properties of the lexical categories, N, A, V are projected on to the syntactic structure by combining with higher level functional categories, D, Deg, T, C which share their categorial features, e.g., [+N, -V]. A lexical property that is characteristic of the adjectival domain is that of gradability – adjectives typically express properties that hold to different degrees. Gradable adjectives can occur in the positive, comparative and superlative form (e.g., *young*, *younger*, *youngest*), and they can be modified by various degree expressions (*too*, *so*, *very*, *extremely*).¹ The property of gradability requires that the semantics of a gradable adjective provides both the specification of the property and the information that this property is measured. The way this information is taken to be encoded in the lexical entry determines the syntactic architecture of the AP. Depending on the semantics assumed for gradable predicates, the structural representation for the adjectival domain either involves the head Deg taking the lexical projection AP as its complement, (1) (Abney 1987; Corver 1990; Kennedy 1999), or the DegP being a specifier of A, (2a), just like adjectival modifiers, (2b) (Chomsky 1965; Selkirk 1970; Bresnan 1973; Heim 2000).

- (1) [DegP [Deg *so/too/as/-er/-est*] [AP (very) [A *young*]]]
(2) a. [AP [DegP *so/too/as/-er/-est*] [A *young*]]
b. [AP *very/extremely* [A *young*]]

In the first structure, (1), the adjective denotes a measure function (semantic type $\langle e,d \rangle$) and the functional morphology introduces the degree argument (Bartsch and Venneman 1972; Kennedy 1999, a.o.). In second configuration, (2a), the gradable predicate expresses a relation between individuals and degrees (type $\langle d, \langle e,t \rangle \rangle$) (Cresswell 1976; von Stechow 1984; Heim 1985, 2000,

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¹ Not all adjectives are gradable (e.g., *wooden*, *pregnant*, *American*, specifically the class of relational adjectives discussed by Cetnarowska (this volume)). Some nouns (e.g., *genius*) and verbs (e.g., *love*) appear to be gradable, however, as argued by Constantinescu (this volume), nouns and verbs "lack the kind of grammatical gradability we know from the adjectival domain."

a.o.).² On the latter approach, the presence of the degree argument entails that it can be quantified over, i.e., degree constructions are quantificational expressions and can undergo quantifier raising (QR).

The availability of the evidence for the QR of the comparative and superlative morphemes, *-er* and *-est*, has been debated. Kennedy (1999) argues that *-er* is non-quantificational because it does not participate in scopal ambiguities the way quantified noun phrases do. Heim (2000) and Stateva (2002) argue that the QR of *-er* is necessary to explain the scopal interactions with intensional verbs. Similarly on the basis of intensional contexts, Heim (1999) presents a quantificational analysis for *-est*. Stateva (2002), on the other hand, maintains that a quantificational approach to *-est* is not needed in contrast to *-er*. She proposes that adjectives are of different types in the two constructions, but there is a general type-shifting rule that raises the adjectival type when the adjective combines with a quantificational comparative degree word.

In this paper, I discuss a particular interpretation of the superlative construction which can only be accounted for by the presence of movement that is sensitive to the definiteness of the DP. The particular interpretation is available only in the absence of the definite determiner, which means that in its presence movement operations from within the superlative DP must be blocked. On the non-quantificational analysis, the definite determiner is predicted to interact with the sub-extraction of the nominal, ‘London’ in (3). On the quantificational analysis, both the QR of *-est* and of ‘London’ are needed, (4), so either of these movements may be sensitive to definiteness.

(3) [DP (the) [NP [DegP *-est* [AP young_{<e,d>}]] student from London]]



(4) [DP (the) [NP [AP [DegP *-est*] [A young_{<d,et>}]] student from London]]



The finding that the presence of the definite determiner prevents the movement of ‘London’ (and thus blocks the interpretation we are after) would be compatible with either the non-quantificational, (3), or the quantificational approach to *-est*, (4). If, however, we find that the availability of the movement of ‘London’ is not enough to account for the availability of the particular interpretation, we have evidence that (i) *-est* needs to QR and (ii) that this movement interacts with the definiteness of the DP. The evidence that *-est* is a quantifier can be taken to indicate that the lexical semantics of gradable adjectives involve mapping between individuals and degrees, as opposed to measure functions.

In the next section, I present the particular interpretation of a sentence containing the superlative expression and show how cross-linguistically its availability requires the absence of the definite determiner in the superlative DP. The presence of the definite determiner blocks the relevant interpretation, and the question is whether this is due to the blocking of the movement of the nominal element, or of the movement of *-est*.

² There are also degree-less approaches to gradable predicates on which they are defined as vague predicates, sensitive to the context providing an ordering on the domain (McConnell-Ginet 1973; Kamp 1975; Klein 1980, 1982, a.o.). Constantinescu (this volume), adopts the vagueness approach for her analysis of the contrasts in the gradability of adjectives and nouns. Since I show that the different readings of superlatives result from a scope ambiguity, we have evidence against the vagueness approach to superlatives.

2. Cross-linguistic variation in the range of superlative readings

The Polish sentence in (5) containing the superlative expression ‘youngest student’ can receive three interpretations. On one reading, (5a), relevant students from London are compared in terms of their age. On the second reading, (5b), Jan is compared to other people, relevant in the context, who met a student from London. On the third reading, (5c), the student from London that Jan met is compared to students from other cities that Jan met. Each of the readings of (5) involves comparison between different sets of individuals, and the long-standing debate in the analysis of superlatives is how those different comparison sets are derived (Ross 1964; Jackendoff 1972; Szabolcsi 1986; Gawron 1995; Heim 1985, 1999; Farkas and É. Kiss 2000; Stateva 2002; Sharvit and Stateva 2002). The reading (5a) is called ‘absolute’ because this reading compares students in absolute terms, i.e., without regard as to who met them. Readings (5b) and (5c) are called ‘relative’ readings, and crucial for our purposes is the observation in Pancheva and Tomaszewicz (2012) that the *Relative-2* reading in (5c) is not an available interpretation for the English counterpart of (5) in (6).

- (5) *Jan spotkał najmłodszego studenta z Londynu.* (Polish)
Jan met youngest student from London.
(a) ‘Jan met that student from London who was younger than *Absolute*
other (relevant) students from London.’
(b) ‘Jan met a younger student from London than any other *Relative-1*
(relevant) person did.’
(c) ‘Jan met a younger student from London than from any other *Relative-2*
(relevant) city.’
- (6) *Jan met the youngest student from London.*
→ Readings (5a), (5b), but not (5c) (Pancheva and Tomaszewicz 2012: 295)

Pancheva and Tomaszewicz (2012) propose that what cross-linguistically determines the availability of the *Relative-2* reading is the presence of the definite determiner in the superlative DP. The evidence comes from Bulgarian, a Slavic language that unlike Polish has definite determiners and allows for both definite and indefinite superlative DPs. In the Bulgarian sentence in (7), where the definite determiner is present, *Relative-2* does not obtain, just like in the English example in (6). Once the definite determiner is absent, (8), the *Relative-2* reading is possible just like in Polish.

- (7) *Jan se zapozna s naj-mlad-ija student ot London.* (Bulgarian)
Jan refl met with youngest-**the** student from London
→ Readings (5a), (5b), but not (5c)
- (8) *Jan se zapozna s naj-mlad student ot London.*
Jan refl met with youngest student from London
→ Readings (5b), (5c), but not (5a)

The quantificational and non-quantificational analysis of *-est* make different predictions for the role of syntax in the derivation of the comparison set that results in the *Relative-2* reading. The quantificational approach is more standard and, in fact, predicts the availability of *Relative-2* cross-linguistically irrespective of the definiteness of the DP. The challenge is then to propose the blocking mechanism. In Pancheva and Tomaszewicz (2012) we proposed that *the* blocks the QR of *-est*, but we did not review the second option: *the* may be blocking the movement of ‘London’ in

(6) and (7), whether or not *-est* can QR. The non-quantificational analysis of *-est* has so far not been discussed in relation to the availability of the *Relative-2* reading. Its implementation in Stateva (2002) (following Farkas and É. Kiss 2000), however, allows for the derivation of *Relative-2* if we assume that the movement of ‘London’ in (5) affects the setting of the comparison class. In section 2.1., I present the standard quantificational account of the different readings of superlatives and discuss its implications for the interaction between definiteness and the *Relative-2* reading. In section 2.2., I present Stateva’s (2002) non-quantificational account and extend it to the *Relative-2* reading.

2.1. Quantificational approach to *-est*

The three different interpretations of (5) can be straightforwardly derived assuming that the superlative morpheme *-est* (Polish *naj-*) is a degree quantifier and can take scope at different levels within the clause (Szabolcsi 1986; Heim 1999). The standard semantics of *-est* due to Heim (1999) is given in (9). The superlative is defined as a 3-place relation between a set of individuals C , a predicate of degrees and individuals P , and an individual x .³

$$(9) \quad \llbracket -est_Q \rrbracket = \lambda C_{\langle e, t \rangle} \lambda P_{\langle d, et \rangle} \lambda x_e [\exists d [P(d)(x) \wedge \forall y \in C [y \neq x \rightarrow \neg(P(d)(y))]]]$$

Presuppositions: $x \in C, \forall y [y \in C \rightarrow \exists d [P(d)(y)]]$

The variable C , the restrictor of *-est*, represents the comparison class, which, by presupposition, is the set of individuals whose members are compared along the dimension specified by the gradable predicate P , the second argument of *-est*. The comparison class is determined partly by the LF syntax, as shown in (10) (in conjunction with the context).

- (10) a. *Jan met* [_{DP} *the [-est_Q C]*] λd [*d*-young student from London]]
 $C \subseteq \{x: \exists d [x \text{ is a } d\text{-young student from London}]\}$ *Absolute*, (5a)
- b. *Jan* [-est_Q C] $\lambda d \lambda x$ [*x met* [_{DP} *a d*-young student from London]]
 $C \subseteq \{x: \exists d [x \text{ met a } d\text{-young student from London}]\}$ *Relative-1*, (5b)
- c. *London* [-est_Q C] $\lambda d \lambda x$ [*Jan met* [_{DP} *a d*-young student from x]]
 $C \subseteq \{x: \exists d [\text{Jan met a } d\text{-young student from } x]\}$ *Relative-2*, (5c)

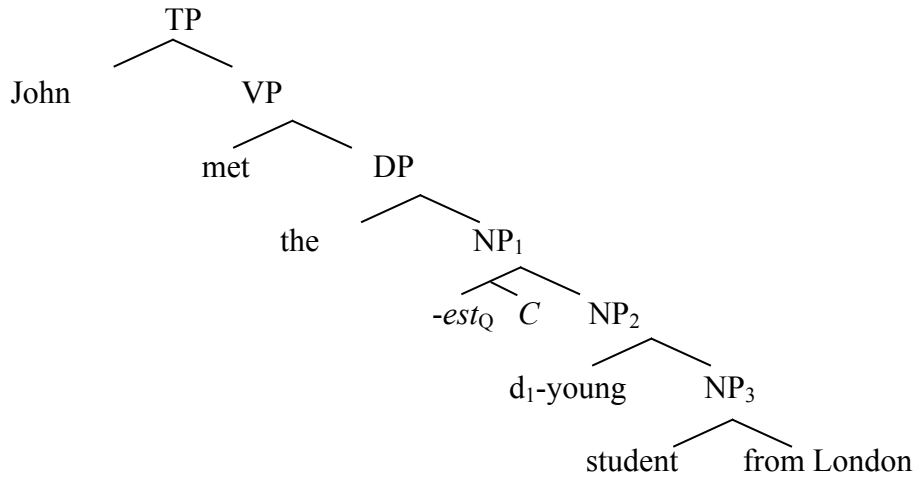
When *-est* remains inside the superlative DP, as in (10a), we get the absolute reading in (5a). The comparison set C in (10a) is determined just on the basis of the DP and contains students from London of a certain age. In (10b), where *-est* has sentential scope, the comparison class contains Jan and other people who met a student from London, yielding the *Relative-1* reading in (5b). In (10c) the comparison set contains cities, which derives the *Relative-2* reading.

³ The lexical entry in (9) requires the assumption that gradable predicates are *downward monotonic*, (i):

(i) A relation R between objects and degrees is downward monotonic iff:
 $\forall x \forall d \forall d' [R(x, d) = 1 \wedge d' < d \rightarrow R(x, d')]$

The semantic computation of the LF in (10a) is presented in (11). The morpheme *-est* is DP-internal, its individual argument is bound by the existential quantifier that is part of the meaning of the definite determiner *the*, (11e). The DP-internal scope of *-est* determines the comparison set as specified in (11f).

(11) a) LF for (10a):

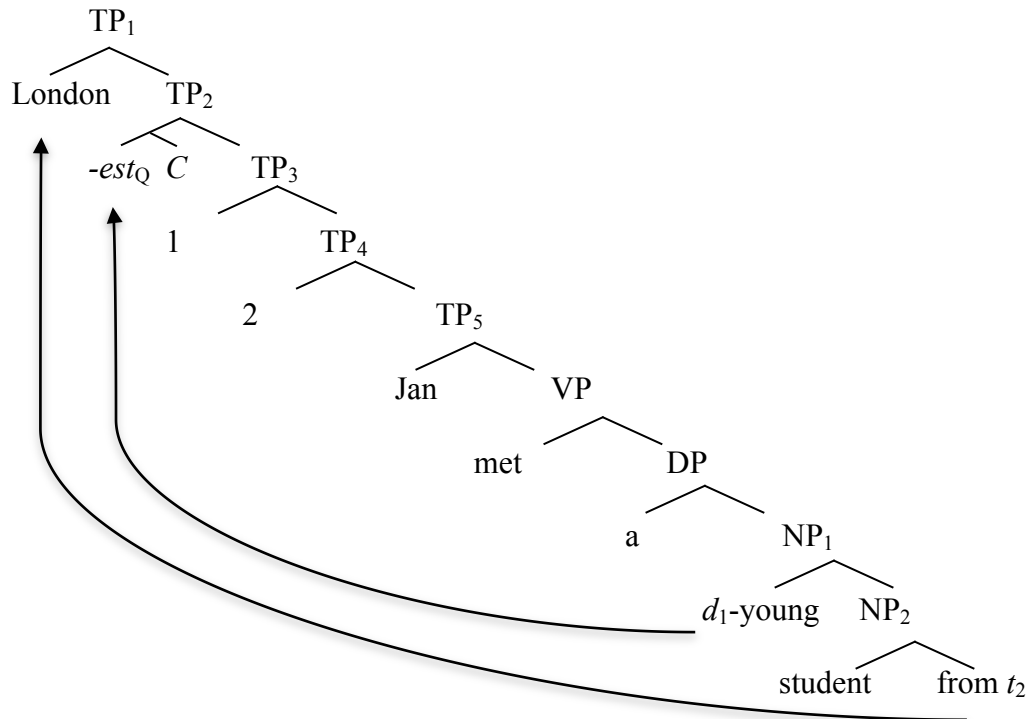


- b) $\llbracket \text{NP}_3 \rrbracket = \lambda x [x \text{ is a student from London}]$
- c) $\llbracket \text{young} \rrbracket = \lambda d \lambda x [x \text{ is } d\text{-young}]$
- d) $\llbracket \text{NP}_2 \rrbracket = \lambda d \lambda x [x \text{ is a } d\text{-young student from London}]$
- e) $\llbracket \text{DP} \rrbracket = \iota x \exists d [x \text{ is a } d\text{-young student from London} \wedge \forall y [y \in C \wedge y \neq x \rightarrow \neg y \text{ is a } d\text{-young student from London}]]$
- f) $C \subseteq \{x: \exists d [x \text{ is a } d\text{-young student from London}]\}$

When *-est* takes sentential scope, as in (10b) and (10c), the individual argument of *-est* has to be saturated by raising an individual denoting element (e.g., in (10b) and (10c) ‘Jan’ and ‘London’ are both of type *e*). The full derivation of the *Relative-2* reading in (10c) is shown in (12): ‘London’ QRs to the edge of the clause, *-est* QRs out of NP₁ and tucks in right below ‘London’, taking sentential scope.⁴

⁴ When *-est* takes sentential scope, it is required to tuck in because of its semantics. *-Est*’s sister node needs to be of type $\langle d, et \rangle$ to saturate its second argument, while the raised individual argument needs to saturate its third argument. The movement of the comparative morpheme *-er* on its 3-place semantics also requires tucking in (Bhatt and Takahashi 2007). On the syntax side, tucking in occurs when a head already has a specifier, but a new one needs to be created as a landing site for movement. This results in a ‘shorter move’ as opposed to landing in a higher specifier (Richards 1999).

(12) a) LF for (10c):



b) $\llbracket TP_3 \rrbracket = \lambda d \lambda x$ [John met a *d*-young student from *x*]

c) $\llbracket TP_1 \rrbracket = \exists d$ [John met a *d*-young student from London $\wedge \forall y$ [$y \in C \wedge y \neq \text{London} \rightarrow \neg$ John met a *d*-young student from *y*]]

d) $C \subseteq \{x: \exists d$ [Jan met a *d*-young student from *x*]]

Since the English sentence in (6) and the Bulgarian sentence in (7) cannot receive the *Relative-2* reading on which cities are compared, the question is what prevents the derivation (10c)/(12) in English?

The different configurations in (10) rest on the assumption that *-est* can freely take scope both inside, (10a), and outside the DP, (10b) and (10c), and that any constituent of the right semantic type can raise to saturate the third argument of *-est*. The unavailability of the *Relative-2* reading for the English sentence in (6) means that the possible LFs for that sentence do not include (10c)/(12), where *C* necessarily contains cities. The unavailability of the derivation in (10c)/(12) in English could be the result of either (i) restrictions on the movement of *-est* to take DP-external scope, or (ii) restrictions on the movement of the individual argument of *-est*, i.e., ‘London’; see (13).

(13) What makes the derivation of the *Relative-2* reading impossible in a language?

Hypothesis (i):

Restrictions on the movement of *-est* out of the superlative DP.

Hypothesis (ii):

Restrictions on the movement of *-est*’s individual argument out of the DP.

In Pancheva and Tomaszewicz (2012) we briefly discussed (ii), ultimately rejecting it, given that both overt and covert movement of ‘London’ are possible out of superlative nominal phrases. We argued for (i), proposing that what restricts the movement of *-est* as in (10b) and (10c)/(12) in English is the presence of the definite determiner. We thus proposed to tackle the question about the

status of *the* in superlative DPs (Szabolcsi 1986; Heim 1999; Gutiérrez-Rexach 2010; Szabolcsi 2012) by linking the two issues: what is the role of *the* in the different readings of superlatives? And: what is the source of the cross-linguistics restrictions on the *Relative-2* reading?

Assuming that *-est* can take DP-internal and DP-external scope as in (10a–c), the contribution of the definite determiner on the different interpretations cannot be the same. On the absolute reading, (10a)/(11a), *the* plays its usual role and quantifies over individuals contributing uniqueness, e.g., the DP in (11a) denotes the unique student from London who is younger than all the other students from London in the comparison class, (11b).

Now consider the LF in (10c)/(12a) and the resulting truth-conditions, (12c). In (12a) the second argument of *-est* is provided by TP_3 denoting a relation between individuals and degrees, (12b). If inside TP_3 the DP ‘*d*-young student from *x*’ contained a definite determiner with its standard interpretation, the comparison set *C* would contain cities from which Jan met the unique student of some age. For each city there can only be one student of that age, because due to monotonicity if Jan also meets a student younger than that age, uniqueness no longer holds.⁵ On the approaches in Szabolcsi (1986) and Heim (1999) the superlative DP is thus interpreted as indefinite when *-est* takes clausal scope on relative readings, i.e., the determiner *the* is semantically vacuous. For Heim (1999) *the* is interpreted as the indefinite *a*, while for Szabolcsi (1986) *the* is not a D head, but a part of the degree quantifier itself, and hence the whole DP is indefinite. The lack of *Relative-2* in English is a challenge for these approaches as the indefiniteness of the superlative DP should allow the derivation in (10c)/(12a) in English.

2.2. Non-quantificational approach to *-est*

The non-quantificational alternative is presented in Farkas and É. Kiss (2000) and in Stateva (2002, 2003), who introduces the lexical entry in (14). On the non-quantificational approach gradable adjectives denote measure functions, functions from individuals to degrees (e.g., *young* is a function that returns the age of an individual, (15c)), and the semantics of degree expressions involves a reference value, a standard value and a comparison relation. In (14) $G(x)$ provides the reference value, and $\max(\lambda d[\exists y \in C [y \neq x \wedge d = G(y)]])$ provides the standard value, i.e., the maximum degree of the set of degrees which correspond to the members of the comparison set *C* which are different from *x*. The relation ‘*greater than*’ holds between the reference value and the standard value.

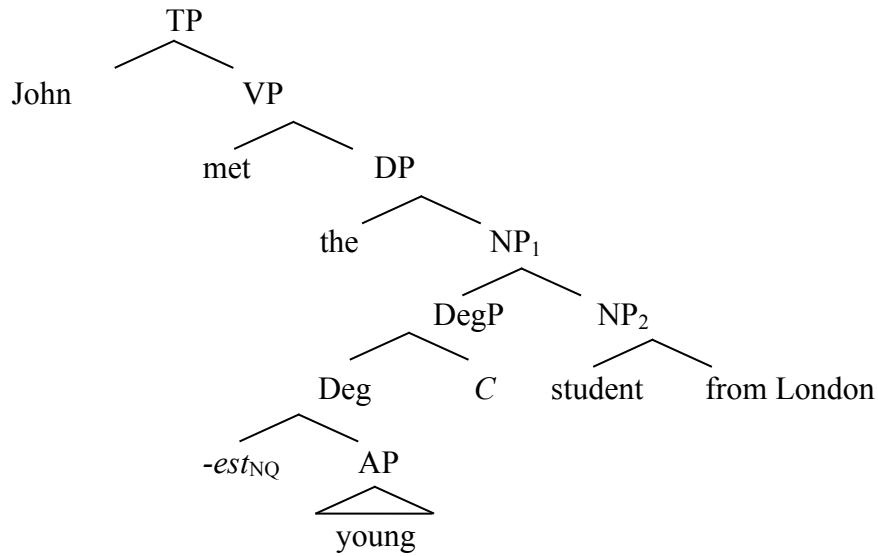
$$(14) \quad \llbracket -est_{NQ} \rrbracket = \lambda G_{\langle e,d \rangle} \lambda C_{\langle e,t \rangle} \lambda x_e [G(x) > \max(\lambda d[\exists y \in C [y \neq x \wedge d = G(y)]])]$$

where G is a gradable adjective, C is a comparison set containing individuals and

$$\max = \lambda P_{\langle d,t \rangle}. \llbracket the \rrbracket (\lambda d[P(d) \wedge \forall d_1[P(d_1) \rightarrow d_1 \leq d]])$$

⁵ If monotonicity is dropped, Jan cannot meet two students of the same age (e.g., twins) from the same city, which is also a wrong specification for the comparison set.

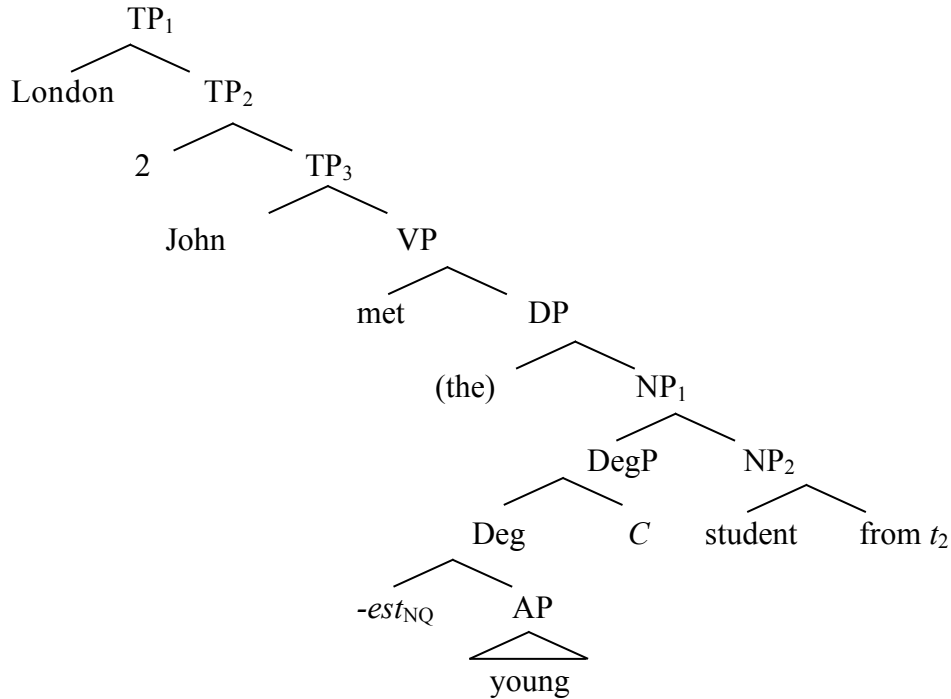
(15) a)



- b) $\llbracket \text{NP}_2 \rrbracket = \lambda x [x \text{ is a student from London}]$
- c) $\llbracket \text{young} \rrbracket = \lambda x [\text{young}(x)]$
- d) $\llbracket \text{Deg} \rrbracket = \lambda C_{\langle e, t \rangle} \lambda x [\text{young}(x) > \max(\lambda d [\exists y \in C [y \neq x \wedge d = \text{young}(y)])]]$
- e) $\llbracket \text{DegP} \rrbracket = \lambda x [\text{young}(x) > \max(\lambda d [\exists y \in C [y \neq x \wedge d = \text{young}(y)])]]$
- f) $\llbracket \text{NP}_1 \rrbracket = \lambda x [x \text{ is a student from London} \wedge \text{young}(x) > \max(\lambda d [\exists y \in C [y \neq x \wedge d = \text{young}(y)])]]$
- g) $\llbracket \text{DP} \rrbracket = \lambda x [x \text{ is a student from London} \wedge \text{young}(x) > \max(\lambda d [\exists y \in C [y \neq x \wedge d = \text{young}(y)])]]$
- h) $C \subseteq \{x: x \text{ is a student from London}\}$

The comparison set C is established contextually and contains the relevant alternatives to x , (15h). If a subconstituent of the DP is able to QR as in (16a), NP_2 , on the basis of which the contents of C are specified, contains an unbound variable, and accordingly the contents of C are assignment dependent, (16c), i.e., C contains students from the cities selected by the assignment function g . The context further specifies that the relevant students are those students who Jan met. The comparison among the members of this set yields the *Relative-2* reading.

(16) a)



b) $[[NP_2]]^g = \lambda x [x \text{ is a student from } g(2)]$

c) $C^g \subseteq \{x: \exists y [x \text{ is a student from } g(2) \wedge y \text{ met } x]\}$

The blocking effect of the definite determiner on the *Relative-2* reading on the non-quantificational approach would result from the unavailability of the movement of the nominal subconstituent ‘London’ from the superlative DP. The blocking of this movement is also the basis of the blocking mechanism in hypothesis (ii) in (13).

3. Definiteness and island effects

Can the presence of the definite determiner be taken to interact with the movement of ‘London’ in (16a) and (12a) and thus determine the availability of the *Relative-2* reading? In this section I argue that this not a viable account of the cross-linguistic variation.

In section 3.1., I show that the definite determiner does not preclude overt subextraction when the DP has an inherently unique denotation, which is necessarily the case with superlatives. Yet, unlike what we expect on the basis of the derivation in (16a), the presence of a gap does not readily allow for the *Relative-2* reading with the definite determiner in Bulgarian and English. This suggests that the availability of the movement of ‘London’ is not the only factor determining the availability of *Relative-2*, which argues against the non-quantificational analysis in (16a).

The quantificational analysis (hypothesis (ii) in (13)) still has the option of claiming that both a gap and the QR of *-est* are needed, so that even when *-est* can QR, the movement of ‘London’ can be blocked and the *Relative-2* reading would not be available. In section 3.2., I discuss the cases in Polish where the overt movement of nominals from DP internal positions is blocked, but the *Relative-2* reading with respect to the constituents in the exact same positions is available. This suggests that it is the presence of *-est* that facilitates covert movement, and not the other way round. That is, *Relative-2* with indefinite superlative DPs means that the covert movement of ‘London’ is automatically triggered, as opposed to the analysis on which the movement of ‘London’ has a licensing effect on *Relative-2*. In section 3.3., I use the evidence from

indefinite superlatives in Polish to argue against the view that the covert movement of a DP-internal constituent is dependent on the internal structure of the DP, and thus ends up having a licensing effect on *Relative-2*. The data undermines the hypothesis in (13ii) as the basis for cross-linguistic variation.

More support for the idea that *-est* provides the trigger for the covert movement of ‘London’ comes from the fact that this movement is an instance of optional QR, i.e., QR driven by semantic considerations other than type mismatch. In section 3.4., I show that obligatory QR of quantificational noun phrases, triggered by type mismatch, is not possible either out of definite or out of indefinite DPs, so the optional QR of ‘London’ must be linked to the presence of *-est*, and not merely be allowed by the absence of *the*.

I thus conclude that the availability of the *Relative-2* reading is not contingent on the movement of the nominal subconstituent of the superlative DP, as predicted by the non-quantificational approach and by hypothesis (ii) on the quantificational approach. Instead, the availability of the *Relative-2* reading is determined solely by the availability of the DP-external scope for *-est*, as proposed in Pancheva and Tomaszewicz (2012).

3.1. Morphological definiteness and extraction

Definite DPs, in comparison to indefinite DPs, tend to resist extraction, (17a) vs. (17b) and (17c). It is, however, not the case that movement out of all definite DPs is disallowed – DPs with possessors and quantifiers categorically prohibit extraction, but DPs headed by *the* do not, (17b) vs. (17c). The contrast in (18) shows that while DPs in the subject positions are islands for extraction, (18b), the movement out of an object DP headed by *the* in (18a) is judged grammatical (Chomsky 2008).

- (17) a. *Which man did you discover a poem about* _?
 b. ^{??}*Which man did you discover the poem about* _?
 c. **Which man did you discover Mary's poem about* _?
 ((6) in Szabolcsi and den Dikken 1999/2002: 215)

- (18) a. *Of which car did they find the (driver, picture)* _? ((5) in Chomsky 2008: 147)
 b. **Of which car did the (driver, picture)* _ *cause a scandal?* ((6) in Chomsky 2008: 147)

The acceptability of subextraction in the presence of *the* has been shown to be dependent on factors such as argument structure (Davies and Dubinsky 2003), and specificity/referentiality (Fiengo and Higginbotham 1981; Manzini 1992, 1998). For example, complex event process nominals and result nominals that are complements of verbs of creation freely allow subextraction; cf. (19) and (20).

- (19) *What did they observe/hear about/remember/decry the production of* _?
 ((30a) in Davies and Dubinsky 2003: 15)

- (20) *Who did you paint/^{??}see that portrait of* _? ((54a) in Davies and Dubinsky 2003: 23)

The data from Szabolcsi (1986) in (21) below indicates that superlative DPs are not islands for *wh*-movement.

- (21) a. *Who did you take a picture of* _?
 b. **Who did you take the/every picture of* _?
 c. *Who did you take the best picture of* _? ((1) in Szabolcsi 1986: 245)

Furthermore, as we pointed out in Pancheva and Tomaszewicz (2012), definite superlative DPs also allow A'-movement in *it*-clefts (I discuss covert movement out of definites in section 3.4.). In (22) and (24) *wh*-movement of 'which city' is possible in both English and Bulgarian. A'-movement for the English cleft construction is possible, (23), and for focus fronting in Bulgarian, (25). Crucially, focus fronting in (25) does not yield the *Relative-2* reading, which is contrary to the predictions of the non-quantificational approach to *-est*, where the presence of the gap in the derivation in (16a) is sufficient to derive the *Relative-2* reading.

(22) *Which city did John meet* [DP *the youngest* [NP *student from* _]]?

(23) *It was London that John met* [DP *the youngest* [NP *student from* _]].

(24) *Ot koj grad se zapozna Ivan s* [DP *naj-mlad-ija* [NP *student* _]]? (Bulgarian)
 from which city refl met Ivan with youngest-the student
 'From which city did Ivan meet the youngest student?'

(25) *Ot London se zapozna Ivan s* [DP *naj-mladi ija* [NP *student* _]].
 from London refl met Ivan with youngest-the student
 'It is London that John met the youngest student from.'

Comparison between (22) and the ungrammatical **From which city did John meet the young student?*' suggests that it is the presence of the superlative that allows extraction. Coppock and Beaver (2014: 183) observe that "extraction out of inherently unique definites is typically felicitous" considering examples such as those in (26). These examples indicate that in (21c) it is the semantics of the superlative DP that allows for extraction, rather than the putative absence of the definite determiner at LF (as proposed by Szabolcsi (1986) on the basis of (21)).

- (26) a. *Who did you take the first/second/next picture of* _ ?
 b. *Which country is she the Queen of* _ ?

Coppock and Beaver (2014: 183) conclude that "since superlative descriptions can reasonably be analyzed as inherently unique, the fact that there is no general ban on extraction from inherently unique definites implies that the extraction data does not bear on the question of whether superlatives are semantically definite."

In Pancheva and Tomaszewicz (2012) we presented the data in (22)–(25), and here I add the observation that overt movement of focus in *it*-clefts facilitates the *Relative-2* reading for some native speakers. The cleft construction in (27i) and (27ii) involves A'-movement of the focused constituent (pied-piping as in (27ii) is preferred by some speakers). 'London' in (27i) is exactly the constituent that needs to be moved in (10c)/(12) for the derivation of *Relative-2* followed by the QR of *-est*. Native speakers who accept (27i–ii) as (borderline) grammatical allow both the absolute reading in (27a) and the relative reading established with respect to the focus, i.e., *Relative-2*; see (27b).

- (27) (i) *It was London_i that John met* [DP *the youngest* [NP *students from* *t_i*]].
 (ii) *It was from London_i that John met* [DP *the youngest* [NP *students* *t_i*]].
 (a) 'John met those students from London that were the youngest *Absolute* among the students from London.'
 (b) 'John met younger students from London than from any other *Relative-2* city.'

On the absolute reading (27a) the comparison is between all the students from London relevant in the context. If, for example, this set includes four students from London: Percy, 21; Archie, 20; Liam, 19 and Alfie, 18, for (27) to be true John has to meet Alfie and Liam. On the *Relative-2* reading (27b) the comparison involves different cities from which John met students of a certain age. If the set of students in the context contains: Pierre from Paris, 25; Fabrice from Paris, 24; Helmut from Berlin, 24; Klaus from Berlin, 23; Percy from London, 21; Archie from London, 20; Liam from London, 19 and Alfie from London, 18, (27) is true if John met Percy and Archie, even though he did not meet Alfie and Liam.

Importantly, the same speakers who accept the *Relative-2* reading for (27i) and (27ii) do not accept it for (6). Since overt movement of the focus ‘London’ is possible, why would parallel covert movement be blocked? Perhaps because there is no covert focus movement in English. But then in Bulgarian the availability of overt focus fronting, (25), is not sufficient to derive the *Relative-2* reading. This means that the (marginal) availability of the *Relative-2* reading with clefts in English is not solely due to the presence of the gap in the superlative DP. The availability of the movement of ‘London’ cannot be the only factor conditioning the availability of *Relative-2*, as predicted by the non-quantificational approach.

3.2. Focus movement at LF?

In Polish, where the superlative DP is always morphologically indefinite, the availability of the *Relative-2* reading indicates that the movement of ‘London’ must have taken place covertly. Interestingly, this covert movement is available also when parallel overt movement is not possible, which is hard to explain, if the trigger in both cases is the same, e.g., focus. As in Bulgarian, overt focus fronting is available in Polish, but in some syntactic configurations the focus cannot be moved overtly. We would expect that the same structural considerations block the covert movement of the focus. If, on the other hand, the covert movement is unrelated to focus movement at LF, but it is instead associated with the scope of *-est*, we do not expect parallelism between overt and covert movement from the same position. Recall that *-est* needs to tuck in under a QRed constituent of the right type to saturate its third argument, which can be described as a ‘parasitic’ scope configuration (Barker 2007; Szabolcsi 2012). Since, however, the QR of ‘London’ does not seem to have any motivation other than to serve as *-est*’s argument, the two movement operations appear to be parasitic on one another. Again, if ‘London’ QRed simply due the fact that any DP can undergo QR, the syntactic configuration should have an effect on both overt and covert movement from the same position.

It can be shown that the DP-internal constituent with respect to which the *Relative-2* reading is established is interpreted as focused in Polish. The sentence in (5) is in principle three-way ambiguous; however, prosody disambiguates between the three readings. The *Relative-2* reading requires prosodic focus on the noun ‘London’, this, however, does not preclude the absolute reading. Things are different in the sentence in (28), where the superlative adjective is fronted via Left Branch Extraction and receives the status of the topic (optionally, a topic marker ‘*to*’ may be present), while ‘London’ is accented as a focus. The ‘split superlative’ construction in (28) admits only the *Relative-2* interpretation, i.e., it cannot be truthfully uttered in a situation where Jan meets the students who are the youngest among the London students, but he also meets students who are of the same age or younger but from a different city.⁶

⁶ For help with all the Polish judgments reported in this paper I would like to thank Joanna Błaszczak, Anna Bondaruk, Barbara Citko, Piotr Gulowski, Anna Janas, Łukasz Jędrzejowski, Piotr Kaźmierczak, Dorota Klimek-Jankowska, Karolina Krzyżanowska, Agnieszka Łazorzyc, Krzysztof Migdałski, Joanna Pietraszko, Agnieszka Pysz, Bożena Rozwadowska, Artur Rozwadowski, Ewa Tomaszewicz, Bartosz Wiland, Ewa Willim, Wojciech Witkowski.

- (28) $[[NajMŁODszych]_{1-Topic} (to)]_i$ $[Jan\ spotkał\ t_1\ studentów\ z\ [LonDYnu]_{-Focus}]_i$
 youngest_{Acc} TOPICPARTICLE Jan met students_{Acc} from London
 LH* HL*
- (a) *‘Jan met those students from London who were the youngest.’ *Absolute*
 (b) *‘Jan met younger students from London than anyone else did.’ *Relative-1*
 (c) ‘Jan met younger students from London than from any other city.’ *Relative-2*

I first suggested in Tomaszewicz (2013) that the ‘split superlative’ construction in (28) provides us with the evidence that *Relative-2* requires DP-external scope of *-est* and focus on its third argument. Here I explain why this is so.

First, let us consider the semantic effects of the split topicalization in (28). The canonical word order in Polish is SVO and A’-movement derives non-canonical word orders to satisfy the requirements of the discourse component of grammar (referred to as Information Structure (Valldví 1992), Information Component (Lambrecht 1994), F-Structure (Erteschik-Shir 1997), Assertion Structure (Zubizarreta 1998)). In the Slavic languages various ‘split constructions’ (split scrambling, split topicalization) are associated with a “marked information structure” (Féry, Paslawska, and Fanselow 2007). Each of the parts of the split phrase has a different information status (topic, focus, given, new) even if they remain in a single intonation phrase. In Polish, an all-new sentence (wide focus) receives the unmarked prosody, where pitch accents fall on each argument and adjunct, the last being the strongest, the (nuclear) pitch accent. Topics and foci are marked by pitch accents with different contours as well as intonational phrasing. As Féry, Paslawska, and Fanselow (2007) report for Ukrainian, and which is also the case in Polish, splitting a constituent is driven exactly by the need to phrase the parts separately and assign different accents to them.

The effect of the Left-Branch Extraction in (28) is such that the fronted element, the superlative adjective, is accented as a topic (with a rising LH* contour) and the rest receives the full intonational contour with the strongest accent on ‘London’, HL* (two intonation phrases are formed, as marked by the *i*-subscripts).

The prosody of (28) contrasts with (29), where the Left-Branch Extracted superlative adjective ‘youngest’ is contrastively focused (with a rising pitch accent H*L), while the part remaining in-situ is de-accented together with the rest of the sentence and interpreted as given (there is only one intonational phrase). With this prosody, Left-Branch Extraction of the superlative adjective in (29) results in the presence of the absolute reading only. The sentence in (29) requires a very special context such that the property ‘youngest’ is in the common ground and can be contrasted with other properties. For example, when properties such as youngest, oldest, tallest, shortest students are under discussion, (29) is a felicitous answer to the question in (30).

- (29) $[[NajMŁODszych]_{1-Focus}]_i$ $[Jan\ spotkał\ t_1\ studentów\ z\ Londynu]_{-Given}]_i$
 youngest_{Acc} Jan met students_{Acc} from London
 H*L
- (a) ‘Jan met those students from London who were the youngest.’ *Absolute*
 (b) *‘Jan met younger students from London than anyone else did.’ *Relative-1*
 (c) *‘Jan met younger students from London than from any other city.’ *Relative-2*

- (30) Q: $Jakich_1/których_1\ studentów\ z\ Londynu\ Jan\ spotkał\ t_1\ ?$
 what-kind/which students_{Acc} from London Jan met
 ‘What kind of/Which students of linguistics did Jan meet?’

A: (29).

We have thus identified two grammatical environments where the scope of *-est* must be constrained. In (28) the scope of *-est* cannot be DP-internal since the absolute reading is unavailable, i.e., just the pied-piped adjective reconstructs, (31a). In (29) the absolute reading is the only available reading, therefore *-est* must be able to reconstruct within the DP, together with the adjective, resulting in the LF in (31b).

- (31) a. LF for (28):
 London [~~young-est~~_Q C] $\lambda d. \lambda x. \text{Jan met } [_{\text{DP}} d\text{-young students from } x]$
 $C \subseteq \{x: \exists d [\text{Jan met } d\text{-young students from } x]\}$ *Relative-2*
- b. LF for (29):
~~young-est~~ Jan met [_{DP} the [~~-est~~_Q C] $\lambda d. d\text{-young students from London}]$
 $C \subseteq \{x: \exists d [x \text{ are } d\text{-young students from London}]\}$ *Absolute*

The contrast in the availability of the different readings for (28) and (29) provides the evidence for both the role of the scope of *-est* and the role of focus in the derivation of the *Relative-2* reading.

We can now look at examples showing that focus is not what triggers the movement of DP-internal constituents such as ‘London’. We will see that *Relative-2* gets derived whether or not the constituent serving as the third argument can be moved overtly via *wh*-movement or focus fronting. This shows that in Polish covert movement is always available irrespective of the constraints on overt focus fronting, which, as I pointed out at the beginning of this subsection, is unexpected if both movement operations are motivated by focus. Instead, the data suggests that the covert movement of *-est* and the covert movement of its third argument are mutually parasitic on one another.

The derivation of the *Relative-2* reading for (28) requires covert movement of the focus ‘London’. This movement has its correlate in the *wh*-movement in (32Q) and the overt movement of the PP ‘from London’ in (32A) (question-answer congruence identifies ‘London’ as focus). We could assume that Polish has *Relative-2* readings because it can both QR *-est* out of the DP (as evidenced by the lack of the absolute reading with the ‘split superlative’ in (28)) and overtly move focused constituents to the left-edge of the clause.

- (32) Q: [_Z *jakiego miasta*]₁ *Jan spotkał studentów* t_1 ?
 from which city Jan met students_{ACC}
 ‘Which city did Jan meet students from?’
- A: [_Z *Londynu*]₁ *Jan spotkał studentów* t_1 .
 from London Jan met students_{ACC}
 ‘Jan met students from London.’

The examples in (33) and (34) show that the possibility of covert extraction of the constituent merging as *-est*'s third argument at LF need not coincide with the availability of overt extraction. (33), just like (28), receives only the *Relative-2* reading, for which the Genitive noun ‘linguistics’ must raise just as ‘London’ does in (10c)/(12). However, the overt counterpart of this movement results in unacceptability or reduced acceptability (with variation between speakers), (34Aa), according to the majority of my informants. In contrast, the speakers judge the sentence in (35A), where the fronted focus is a PP, as either fully acceptable or more acceptable than (34Aa) (i.e., all speakers prefer (35A) to (34Aa)). The sentence in (33) thus provides further evidence for the conclusion from section 3.1. that the possibility of overt subextraction from the superlative DP cannot be solely responsible for the availability of *Relative-2* readings in a language.

- (33) [NajMŁODszych]_{1-Topic} (to) Jan poznał t₁ studentów [lingWIStyki]_{-Focus}
 youngest_{ACC} TOPICPARTICLE Jan met students_{ACC} linguistics_{GEN}
 LH* HL*
- (a) *‘Jan met those students of linguistics who were the youngest.’ *Absolute*
 (b) *‘Jan met younger students of linguistics than anyone else did.’ *Relative-1*
 (c) ‘Jan met younger students of linguistics than of any other major.’ *Relative-2*

- (34) Q: *Jakiego kierunku studentów spotkał Jan?*
 which_{GEN} major_{GEN} students_{ACC} met Jan
 ‘Students of which major did Jan meet?’

A: (a) *^{/?} [_{NP} *Lingwistyki*]_i Jan spotkał studentów t_i.
 linguistics_{GEN} Jan met students_{ACC}
 ‘Jan met students of linguistics.’

(b) *Jan spotkał studentów lingwistyki.*
 Jan met students_{ACC} linguistics_{GEN}
 ‘Jan met students of linguistics.’

- (35) Q: *Z jakiego kierunku studentów spotkał Jan?*
 from which_{GEN} major_{GEN} students_{ACC} met Jan
 ‘Students of which major did Jan meet?’

A: [_{PP} *Z lingwistyki*]_i Jan spotkał studentów t_i.
 from linguistics_{GEN} Jan met students_{ACC}
 ‘Jan met students of linguistics.’

The same point is further illustrated with a Genitive NP that does allow overt focus fronting, and an adjunct that does not. The sentence in (36) in the given context receives the *Relative-2* reading, where the comparison class is set with respect to the NP-complement ‘crown caps’, as required by the context. The split construction grammatically precludes the absolute and *Relative-1* readings. As opposed to the Genitive NP in (34), now the Genitive NP has a partitive interpretation and allows both *wh*-movement and focus fronting, (37Q, Aa) (judged by my informants as acceptable but not fully so).

- (36) *Context:* Although none of his friends had a collecting hobby, Marek started to collect stamps, crown caps and coins at the same time.

Po dwóch miesiącach największą_i pro miał t₁ kolekcję [kapsli]_F.
 after two months biggest_{ACC} had collection_{ACC} crown-caps_{GEN}
 ‘In two months his collection of crown caps was bigger than his other collections.’

- (37) Q: [?]*Czego Marek miał kolekcję?*
 what_{GEN} Marek had collection_{ACC}
 ‘What did Marek have a collection of?’

A: (a) [?][*Kapsli*]_i Marek miał kolekcję t_i.
 crown-caps_{GEN} Marek had collection_{ACC}

(b) *Marek miał kolekcję kapsli.*
 Marek had collection_{ACC} crown-caps_{GEN}
 ‘Marek had a collection of crown-caps.’

If we modify the NP ‘crown caps’ with an adjunct, on the *Relative-2* reading the comparison class will be set with respect to the adjunct, (38). The adjunct itself, however, resists overt fronting, (39)

((39Aa) is judged as questionable by my informants as opposed to (39Ab), which is fully acceptable⁷).

(38) *Context*: Although none of his friends had a collecting hobby, Marek started to collect crown caps for beer bottles, soda bottles and juice bottles. After two months ...

Największą_i pro miał t_i kolekcję kapsli [od piwa]_F.

biggest_{ACC} had collection_{ACC} crown-caps_{GEN} from beer

‘His collection of crown caps for beer bottles was bigger than his collections of caps for other bottles.’

(39) Q: *Kapsli od czego Marek miał kolekcję?*

crown-caps_{GEN} from what_{GEN} Marek had collection_{ACC}

‘What kind of crown-caps did Marek have a collection of?’

A: (a) *^{1/2} [*Od piwa*]_i *Marek miał kolekcję kapsli t_i.*

from beer Marek had collection_{ACC} crown-caps_{GEN}

‘Marek had a collection of beer bottle crown-caps.’

(b) [*Kapsli od piwa*]_i *Marek miał kolekcję t_i.*

crown-caps_{GEN} from beer Marek had collection_{ACC}

‘Marek had a collection of beer bottle crown-caps.’

In all of the above examples of split superlatives, the *Relative-2* reading requires the covert movement of the focus that is a subconstituent of the superlative DP: a PP-adjunct to the head NP in (28), a genitive complement in (33), a genitive-partitive complement in (36), and a PP-adjunct to the genitive complement in (38). However, the movement into the clause of these constituents is not always available overtly. These examples provide us with complementary evidence to the English and Bulgarian data in section 3.1., where we saw that the possibility of the overt movement of the focus extracted from the superlative DP cannot be the only factor determining the availability of *Relative-2* cross-linguistically. Overt movement facilitates *Relative-2* in English, but not in Bulgarian, which argues against the non-quantificational approach to *-est*. In Polish *Relative-2* obtains, even though the same environment resists overt extraction of focus in some of the cases.

This last point is important to rule out hypothesis (ii), recall (13), on the quantificational account, according to which the cross-linguistic availability of *Relative-2* depends solely on the availability of extraction from the superlative DP in a language, because the scope of *-est* is unconstrained. This account predicts that, within a single language, the variability in the availability of extraction out of a DP should affect the availability of *Relative-2*. I have shown above that this prediction does not hold for Polish, where the structure of the DP clearly affected the availability of overt extraction, but had no effect on the covert movement as *Relative-2* was always available.

The account in (13ii) has nevertheless recently been defended by Shen (2014). Below I review his account and show that in the light of the facts presented in sections 3.1. and 3.2., his analysis for the contrast between English and Polish cannot be maintained. This undermines the hypothesis in (13ii) as the basis for cross-linguistic variation.

3.3. The DP projection and restrictions on the movement of NPs?

Shen (2014) follows Bošković and Gajewski’s (2011) idea that different relative readings of superlatives will be available cross-linguistically depending on whether or not a language lacks a

⁷ Somewhat surprisingly, (39Ab) is judged as fully acceptable in contrast to (37Aa). Perhaps this has to do with PF considerations, rather than strictly syntactic movement. This further reinforces my point that LF movement of the focus on the *Relative-2* reading is easily available in the split construction irrespective of the availability of overt focus fronting in Polish.

DP-projection. Bošković (2008) introduced the NP/DP cross-linguistic parameter according to which in determinerless languages the category D is not syntactically projected. Since Polish has no determiners, a superlative phrase such as ‘youngest students’ is an NP on that account. In English, ‘the youngest students’ is a DP. As a consequence of this distinction, on Bošković and Gajewski’s (2011) proposal, *-est* in English has the option of adjoining to the NP, (40a), or of QRing within the clause, (40b), while in Polish it either needs to stay in-situ, (40c) (which on their account gives the absolute interpretation), or has to QR within the clause, (40d). Adjunction to NP in Polish-type languages is prohibited because in those languages NPs are arguments and adjunction to arguments is banned (Chomsky 1986).

(40) English-type languages:

(a) [_{DP} the [_{NP} [*-est*_Q C] [_{NP} *d*-young students]]]

(b) [*-est*_Q C] ... [_{DP} the [_{NP} *d*-young students]]

Polish-type languages:

(c) [_{NP} *est*_Q-young students]

(d) [*-est*_Q C] ... [_{NP} *d*-young students]

(Bošković and Gajewski 2011)

The typology in (40) makes no predictions for the availability of *Relative-2* in English- and Polish-type languages, but Shen (2014) uses it to argue that in English the DP-projection prevents the extraction of the focus out of the superlative DP, thus preventing *Relative-2*. On his account cross-linguistic variation is attributed to the hypothesis in (13ii). However, he also makes predictions for contrasts within Polish with respect to the availability of *Relative-2* depending on the possibilities for extraction of the focus. These possibilities depend on whether the superlative is contained within an NP that is a phase or not.

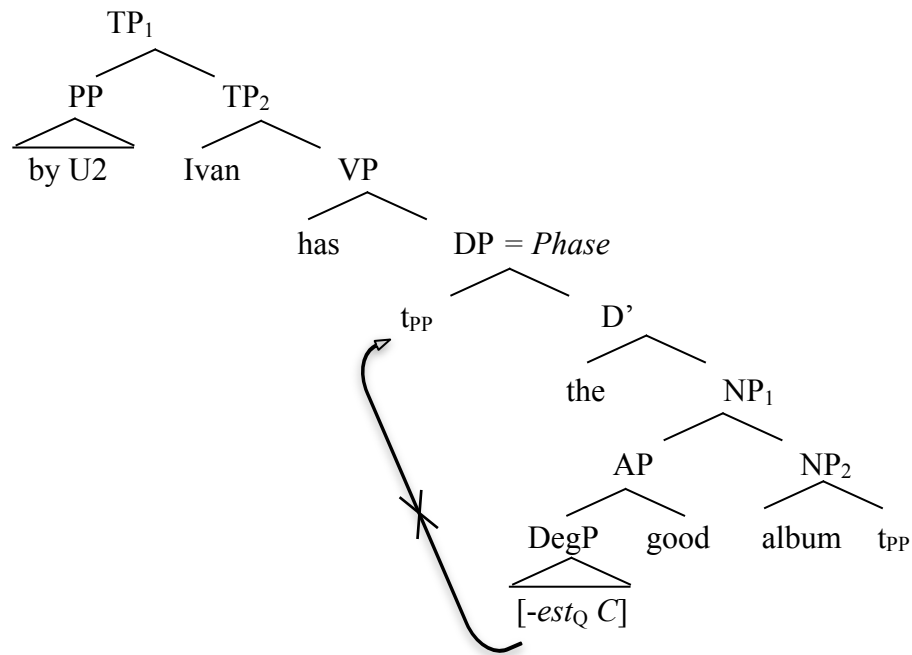
Shen (2014) follows the dynamic approach to phasehood in Bobaljik and Wurmbrand (2005), Wurmbrand (2013), and Bošković (2014). This approach proposes that the highest projection in the extended projection of a lexical category is a phase, instead of treating only the *v*P and the CP as phases (Chomsky 2001). Cross-linguistically, as well as within a language in different constructions, the number of phrases within the extended projection of the same category may be different. A nominal phrase in a determinerless language does not contain a DP projection, but it can either be an NP or a QP, i.e., the presence of the quantifier in a nominal phrase results in the QP being projected. Shen argues that *Relative-2* in a determinerless language can obtain in both cases, with either an NP or a QP being a phase, if the standard constraints on movement out of phases are satisfied. In contrast, *Relative-2* can never be derived in a determiner language where the superlative DP is a phase, because of Chomsky’s (2000) Phase Impenetrability Condition (PIC). The PIC requires that movement out of a phase must proceed through the specifier of the phase head. This means that for the *Relative-2* interpretation of (41) both *-est* and its third argument must pass through Spec, DP. On Shen’s proposal, since the first movement fills Spec, DP with a trace, the second movement is blocked, (42).

(41) *John has the best albums of/by U2.* ((8) in Pancheva and Tomaszewicz 2012: 294)

(a) ‘John has better albums by U2 than anyone else does.’ *Relative-1*

(b) *‘John has better albums by U2 than by any other band.’ *Relative-2*

(42) LF for (41), ((9) in Shen 2014: 413):



In a determinerless language like Polish the DP is never projected and in its absence, as in (43) ((15b) in Pancheva and Tomaszewicz 2012: 295) and (44), the NP is the phase. In (44) both *-est* and ‘U2’ are in adjoined positions (the edge of the phase), therefore, they move straight to adjoin to TP for the derivation of the *Relative-2* reading.

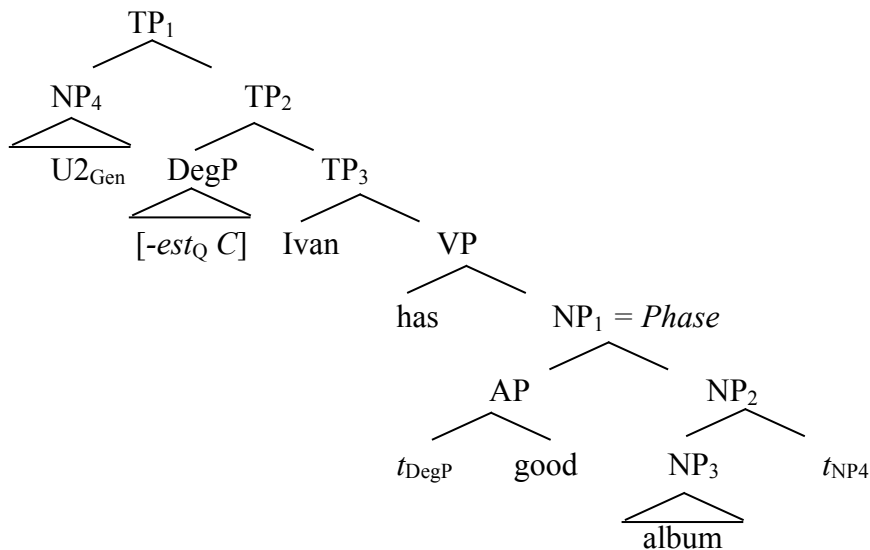
(43) *Jan ma najlepsze albumy U2.* (Polish)

Jan has best_{ACC} albums_{ACC} U2_{GEN}

- (a) ‘Jan has better albums by U2 than anyone else does.’
- (b) ‘Jan has better albums by U2 than by any other band.’
- (c) ‘Jan has those albums by U2 that are the best.’

Relative-1
Relative-2
Absolute

(44) LF for (43b), ((10) in Shen 2014: 413):



However, the PIC together with locality considerations not only preclude movement out of DPs, but also out of NPs from the complement position. In (44) the movement of the genitive noun ‘U2’ is taken to be from an adjoined position, while in (45) the genitive noun ‘linguistics’ is a complement of the N phase head. The movement from a complement position is precluded by locality considerations, and hence Shen wrongly predicts the unavailability of *Relative-2* for (45) ((12a) in Shen 2014: 414).

(45) *Jan poznał najmłodszych studentów lingwistyki.* (Polish)
 Jan met youngest_{ACC} students_{ACC} linguistics_{GEN}

	Shen (2014)	my informants	
(a) ‘Jan met younger students of linguistics than anyone else did.’	✓	✓	<i>Rel-1</i>
(b) ‘Jan met younger students of linguistics than of any other major.’	*	✓	<i>Rel-2</i>
(c) ‘Jan met those students of linguistics who were the youngest.’		✓	<i>Abs</i>

The example we previously saw in (33) is the split version of (45) and it has only the *Relative-2* interpretation. All of the native speakers I consulted⁸ agreed that in a context requiring *Relative-2* the unambiguous (33) would most naturally be used, however, many of them also agreed that *Relative-2* is an available interpretation for (45) (with a pitch accent on ‘linguistics’), albeit only secondary to the absolute.

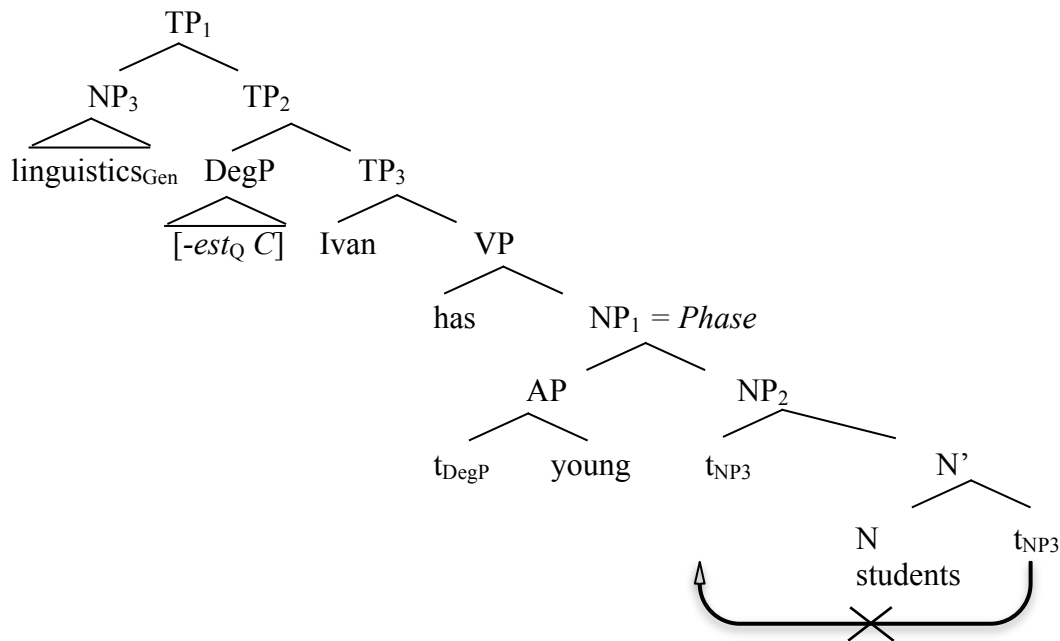
The adjunct/complement asymmetry should arise as the result of Abels’ (2003) Anti-Locality Constraint, according to which there can be no movement from the complement to the specifier position of the same head. Such movement is unavailable because there is no formal reason to move given that all features are already satisfied in the Head-Complement Relation. Abels’ postulate relates to movement triggered by feature-checking. Shen applies this reasoning to a movement that is not feature-driven, but is optional on the Fox (2000)/Wurmbrand (2013) approach to QR. On this view obligatory QR resolves a type-mismatch, while optional QR applies to extend scope. While both types of QR are restricted by locality, only the optional QR is also subject to

⁸ As listed in footnote 6.

Scope Economy: “Scope-shifting operations (SSOs) cannot be semantically vacuous” (Fox 2000: 3).

The derivation of *Relative-2* for (45) requires the movement of ‘linguistics’ from the complement of N to SpecNP₂, (46). This movement violates anti-locality; it is too local. (There are no problems with locality in (44), since the NP ‘U2’ (NP₄), being an adjunct, is merged at the edge of the phase (the edge domain consists of the phase head and its specifiers and adjuncts), and can move straight to Spec, TP.)

(46) LF for (45b), (Shen 2014: 414):



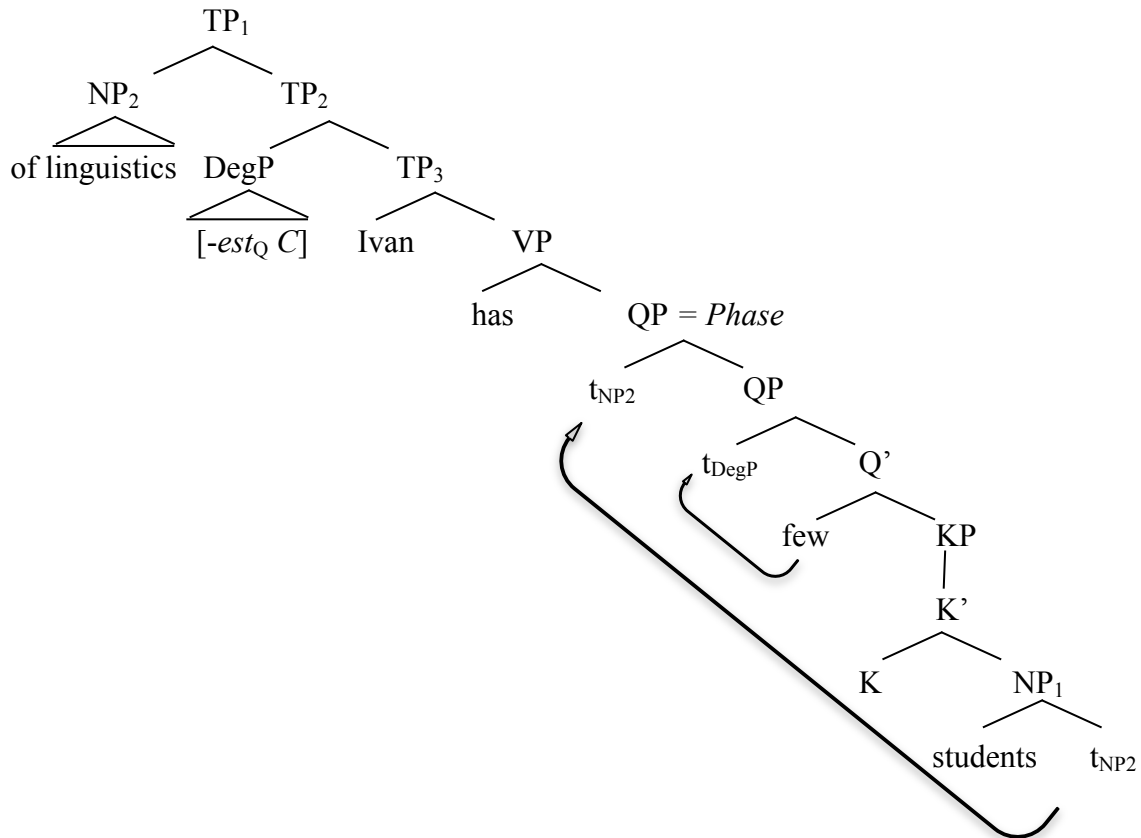
In addition to the adjunct/complement asymmetry, Shen’s proposal also incorrectly predicts an asymmetry in terms of grammaticality between adjectival and quantifier superlatives, such that (45) should be ungrammatical in contrast to (47). If (45) containing adjectival superlative disallowed *Relative-2* due to the locality violations of the movement of ‘linguistics’, it should contrast with (47) that contains a superlative quantifier. The superlative quantifier is assumed to head its own projection and extend the nominal domain so that the QP is the phase; see (48). The *-est* morpheme is merged in the Spec, QP (as in Bošković and Gajewski 2011). The movement of the complement is not too local, unlike in (46), and can proceed through a QP adjoined position. (Curiously, in (42) the movement through Spec, DP was said to be blocked by the trace of *-est*, but in (48) the complement is allowed to adjoin rather than move through the specifier of QP. This adjunction is not precluded although the QP is an argument, even though for Bošković and Gajewski (2011) adjunction to arguments is not allowed. As Shen (2014) notes in footnote 4 (p. 6), an extra assumption about the difference between adjunction to QPs in Polish and to DPs in English is needed.)

(47) *Jan spotkał najmniej studentów lingwistyki.* (Polish)

Jan met fewest students linguistics_{GEN}

- (a) ‘Jan met fewer students of linguistics than anyone else did.’ ✓ *Relative-1*
 (b) ‘Jan met fewer students of linguistics than of any other major.’ ✓ *Relative-2*

(48) LF for (47), ((13) in Shen 2014: 414):



The predicted adjective-quantifier asymmetry does not hold, since as I pointed out, *Relative-2* is available for (45) and not exclusively for (47). Note, however, that (45) is three-way ambiguous, while (47) is two-way ambiguous, as it lacks the absolute reading,⁹ therefore we expect *Relative-2* to be more easily available for (47). The split superlative construction, on the other hand, unambiguously receives the *Relative-2* interpretation, hence speakers report a strong preference for (33) in comparison to (45). Shen’s approach wrongly excludes the derivation of *Relative-2* for both (33) and (45), by which it wrongly predicts the complement-adjunct and adjective-quantifier asymmetries. Instead of categorical grammaticality judgments, we, in fact, observe gradient acceptability due to competition contingent on the scope of *-est* (in the split construction the absolute reading is not available indicating clausal scope) and identification of narrow focus (splitting is a more reliable indicator of focus than prosody with canonical word order).

Shen’s analysis aims to develop the hypothesis in (13ii), but the Polish data argues against it. The facts presented in sections 3.1.–3.3. are consistent with the hypothesis (13i) – in Polish *-est* is free to take clausal scope and its third argument is saturated by the constituent that undergoes covert movement at LF. Crucially, the covert movement has been shown to be available even when the corresponding overt movement is subject to restrictions. This suggests that DP-external *-est* and its third argument are in a mutually parasitic scope configuration. More support for the view that *-est* and the covert movement of ‘London’ trigger one another comes from the fact that this movement is an instance of optional QR, as I show in the next section.

⁹ Quantity superlatives cannot receive the absolute reading either in English (Szabolcsi 1986; Hackl 2009) or in Polish (Pancheva (to appear)). The sentence ‘John met the youngest students from London’ on the absolute reading says that John met those students from London who were younger than any other relevant students from London. In contrast, the sentence ‘John met the most students from London’ cannot mean that John met a larger number of students from London than any other number of relevant students from London.

3.4. Morphological definiteness and QR

It can be shown that covert movement of quantified noun phrases in superlative DPs in English is necessary. The sentence in (49) can have the reading where *every city* takes wide scope; cf. (49b) (Pancheva and Tomaszewicz 2012).

- (49) *Some boy met [DP1 the youngest students from [DP2 every city]].*
 a. $\exists > \forall$ ‘There is a boy who met the youngest students from every city.’
 b. $\forall > \exists$ ‘For every city there is a boy who met its youngest students.’

It is unclear, however, whether for the inverse scope reading (49b) DP2 *every city* QRs out of DP1 to the sentential level, or rather the whole DP1 moves to scope over *some boy*. To decide between the two options we need examples with three quantifiers over individuals. In fact, (50) shows that interweaving scope, (50c), is not allowed, which has been taken to indicate that DPs are scope islands for quantifiers (May 1985; Larson 1985; Heim and Kratzer 1998; Barker 2001; Buring 2004; Charlow 2010).

- (50) *Two boys met [DP1 students from [DP2 every city]].*
 a. $2 > \forall > \exists$ Two boys are such that for each city they met the students from that city.
 b. $\forall > \exists > 2$ Each city is such that there are students from that city who were met by two boys.
 c. $*\forall > 2 > \exists$ *Each city is such that there are two boys who met students from that city (i.e., for each boy the students can be different).

At the same time, (50) does require QR of DP2 to the edge of DP1 (the interpretation requires ‘inverse linking’, i.e., the quantifier needs to take scope outside of the PP complement of a DP). What is not possible is the movement of DP2 to the edge of the clause. Indeed, the latter is required for the derivation of the Relative-2 reading.

However, we need to ask if the constraints barring the QR of DP2 to the clausal level in (50) are the same ones that prevent the QR of ‘London’ in (16a) and (12a) for the *Relative-2* reading in English. The following data from Polish shows that this may not be the case. Polish freely allows the *Relative-2* reading for superlative sentences, so it must allow the movement of constituents such as ‘London’ in (16a) and (12a). However, in examples parallel to (50) above, (51), interweaving scope of quantifiers is also not possible. The Subject-Verb-Object order in (51a) has the same readings as (50), while the scrambled orders in (51b) and (51c) admit only the wide scope reading (in (51c) *every* is contrastively focused).¹⁰

- (51) a. *Dwie dziewczyny przywitały studentów z każdego miasta.*
 two girls met students from each city
 ‘Two girls met students from every city.’
 $2 > \forall > \exists$
 $\forall > \exists > 2$
 $*\forall > 2 > \exists$

¹⁰ It is not possible to scramble to get a $\forall > 2 > \exists$ surface scope; in (i) below the PP can only be interpreted as modifying *two girls*.

(i) *Z każdego miasta dwie dziewczyny przywitały studentów.*
 from each city two girls met students
 ‘Two girls from every city met students’.

- b. *Studentów z każdego miasta przywitały dwie dziewczyny.*
 students from each city met two girls
 ‘Two girls met students from every city.’
 $\forall > \exists > 2$
 $*\forall > 2 > \exists$
- c. *?Z każdego miasta studentów przywitały dwie dziewczyny.*
 from each city students met two girls
 ‘Two girls met students from every city.’
 $\forall > \exists > 2$
 $*\forall > 2 > \exists$

We have empirical arguments that DPs are islands for the covert movement of quantifiers, but the fact that the same restriction is observed in English and in Polish calls into question the relevance of the QR of DPs headed by *every/some* in inverse linking constructions to the QR of the nominal subconstituent of the superlative DP. According to hypothesis (ii) whatever constrains the covert movement of ‘every city’ in (50) and (51) could also be responsible for constraining the movement of ‘London’ for the *Relative-2* reading. Since there is no correlation between the two cases in Polish, the two covert operations cannot be parallel.

Consider also the fact that *wh*-quantification into inverse linked DPs is impossible, (52) (whether they are in subject or object position (Larson 1985)), but *wh*-movement out of superlative DPs, as we have seen in (22) and (24), is fine.

- (52) a. $*[$ Which freeway in a large California city] did two engineers
 repair $[_{DP1}$ some exits from $[_{DP2}$ _]]? ((16b) in Larson 1985)
 b. $*[$ Which city] did two boys met $[_{DP1}$ students from $[_{DP2}$ _]]?

Notably, the reasons for the QR of ‘every city’ for the inverse scope reading in (49)–(51) and the QR of ‘London’ in (16a) and (12a) for the derivation of the *Relative-2* reading are different. Though both movements derive a new reading, it is only in the inverse linking construction that the movement is required by the grammar to resolve a type-mismatch: DP2 is quantificational (i.e., it is of type $\langle\langle e, t \rangle, t \rangle$) so it cannot be directly combined with the noun (type $\langle e, t \rangle$). Since DP2 on its own cannot QR to the top sentential node (as has been claimed on the basis of data as in (50)), it QRs to the edge of DP1 that contains it, by which DP1 remains a constituent at LF and denotes a generalized quantifier (with its type adjusted to $\langle\langle e, t \rangle, t \rangle$).

The movement of ‘London’ in (16a) and (12a) is not obligatory in this way, its sole purpose is the derivation of the *Relative-2* reading. It is an instance of ‘optional QR’ – a QR operation that applies only when it is necessary to derive an interpretation that a sentence would otherwise not have (e.g., the inverse scope readings in (49b) and (50b)). It has been argued that QR operations that do not result in a truth-conditional difference are excluded by principles of economy (Fox’s (2000) Scope Economy, Reinhart’s (2006) Interface Economy). The availability of optional QR of ‘London’ is compatible with the derivation of *Relative-2* that I proposed using the non-quantificational analysis, (12a) (what excludes that derivation independently is the Bulgarian data in (25), where overt movement of ‘London’ in the presence of the definite determiner fails to derive *Relative-2*). However, optional QR presents a problem for hypothesis (13ii) on the quantificational approach, which assumes that *-est* takes DP-external scope both for *Relative-1* and *Relative-2* readings. In both cases it is required that a constituent of the right type to saturate its argument has QRed to the edge of the clause; see (53a) and (54a). In the case of *Relative-1*, this first intermediate step on its own does not result in a new interpretation, the QR of ‘John’ has no semantic effect – (53a) receives the absolute reading since the comparison class is as in (53b). In (54a), however, the

trace is interpreted as a variable that is free within the DP. The denotation of the NP is assignment dependent, (54b). The comparison class contains students of a certain age from a place whose choice depends on the assignment g , (54c).

(53) *Derivation of Relative-1*

- a. 1st Step:
John₁ [_{TP} t_1 met [_{DP} (the) [-*est*_Q C]₂ [_{NP} d_2 -young student from London]]]
- b. $C \subseteq \{x: \exists d [x \text{ is a } d\text{-young student from London}]\}$
- c. 2nd Step:
John₁ [-*est*_Q C]₂ [_{TP} t_1 met [_{DP} (the) d_2 [_{NP} d_2 -young student from London]]]
- d. $C \subseteq \{x: \exists d [x \text{ met a } d\text{-young student from London}]\}$

(54) *Derivation of Relative-2*

- a. 1st Step:
London₁ [John met [_{DP} (the) [-*est*_Q C]₂ [_{NP} d_2 -young student from t_1]]]
- b. $\llbracket [2 [t_2\text{-young student from } t_1]] \rrbracket^g = \lambda d \lambda x [x \text{ are } d\text{-young student from } g(1)]$
- c. $C \subseteq \{x: \exists d [x \text{ is a } d\text{-young student from } g(1)]\}$
- d. 2nd Step:
- e. London₁ [-*est*_Q C]₂ [John met [_{DP} (the) d_2 [_{NP} d_2 -young students from t_1]]]
- f. $C \subseteq \{x: \exists d [\text{Jan met a } d\text{-young student from } x]\}$

The first step of the derivation of the *Relative-2* reading does not result in a semantically vacuous representation. The derivation of the *Relative-1* reading, on the other hand, is excluded by the economy principles since the QR of a DP-external constituent has no effect on the semantics until *-est* has QRed as well. This result is just the opposite of what hypothesis (ii), recall (13), is aiming for: ruling out the QR of a DP-internal constituent, i.e., ‘London’, for the derivation of *Relative-2*, while simultaneously allowing the QR of a DP-external constituent, i.e., ‘John’, for *Relative-1*.

4. Conclusions


The discussion in section 3 showed that definite superlative DPs are not islands for the movement of a nominal subconstituent of the superlative DP. These results are inconsistent with the non-quantificational analysis of *-est* (cf. the derivation in (16a)) and with the hypothesis (ii) in (13), according to which some general syntactic constraints should regulate the availability of subextraction from both superlative and non-superlative definite DPs.

Prior to the observation that the *Relative-2* reading is available in languages that allow morphologically indefinite superlative DPs in Pancheva and Tomaszewicz (2012), there had been no reliable diagnostic for the availability of the QR of *-est*. As I mentioned in the first section, Stateva (2002) concludes that while a quantificational analysis is needed for *-er*, a non-quantificational analysis is sufficient to derive all the interpretations of superlatives (she did not consider *Relative-2*). She bases her conclusion on the analysis in Sharvit and Stateva (2002), where the readings of superlatives in intensional contexts are shown to be derivable without the need to scope *-est* DP-externally (albeit with some non-standard assumptions about the semantics of the definite determiner). Sharvit and Stateva (2002) argue that for the data discussed in the literature, from English and Hungarian (Szabolcsi 1986; Heim 1985, 1999; Farkas and É. Kiss 2000), it is not necessary to allow *-est* to scope DP-externally, which is proposed in Szabolcsi (1986) and Heim (1985, 1999). (Neither English nor Hungarian allow *Relative-2* so their conclusion is in line with the present account.) The derivation of the *Relative-1* reading is possible by keeping *-est* DP-internally, both on the quantificational approach, (55a), and on the non-quantificational approach, (56a). But a DP-internal analysis for *Relative-2* makes the wrong prediction that this reading is

available when the definite determiner is present in the superlative DP and the movement of a DP-internal constituent such as ‘London’ creates an assignment dependent specification for the comparison set C ; cf. (55b) and (56b).

- (55) a. Jan met $[_{DP} \text{the } [-est_Q C] \lambda d [d\text{-young student from London}]]$
 $C \subseteq \{x: \exists d \exists y [x \text{ is a } d\text{-young student from London} \wedge y \text{ met } x]\}$ *Relative-1, (5b)*
 b. $[_{DP} \text{London}] \lambda x \text{ Jan met } [_{DP} \text{the } [-est_Q C] \lambda d [d\text{-young student from } x]]$
 $C^g \subseteq \{x: \exists d \exists y [x \text{ is a } d\text{-young student from } g(2) \wedge y \text{ met } x]\}$ *Relative-2, (5c)*
- (56) a. Jan met $[_{DP} \text{the } [_{NP1} [_{DegP} C [_{Deg} -est_{NQ} \text{young}]]] [_{NP2} \text{student from London}]]]$
 $C \subseteq \{x: \exists y [x \text{ is a student from London} \wedge y \text{ met } x]\}$ *Relative-1, (5b)*
 b. $[_{DP} \text{London}] \lambda x \text{ Jan met } [_{DP} \text{the } [_{NP1} [_{DegP} C [_{Deg} -est_{NQ} \text{young}]]] [_{NP2} \text{student from } x]]]$
 $C^g \subseteq \{x: \exists y [x \text{ is a student from } g(2) \wedge y \text{ met } x]\}$ *Relative-2, (5c)*

In section 3.1., I showed that while the movement of ‘London’ as in (55b) and (56b) is available in English and Bulgarian, the *Relative-2* interpretation is not. This suggests that the presence of a gap in the superlative DP is not sufficient to derive *Relative-2*. Therefore, the non-quantificational approach cannot account for the cross-linguistic variation. I then showed that the relevant cross-linguistic parameter on the quantificational approach is the blocking effect of *the* on the scope of *-est*, not on the movement of a DP-internal constituent such as ‘London’. With indefinite superlatives we do not find cases where *-est* is free to scope DP-externally but a nominal subconstituent is not; cf. (57). Instead, it appears that the two movements are mutually parasitic on one another.

- (57) London $[-est_Q C] \lambda d \lambda x [Jan \text{ met } [_{DP} \text{a } d\text{-young student from } x]]$


The results support our conclusion in Pancheva and Tomaszewicz (2012) that what precludes the *Relative-2* reading cross-linguistically is the blocking effect of the definite determiner on the scope of *-est*. In this paper I additionally showed that *-est* must be treated as a quantificational element, and the non-quantificational analysis for *-est* cannot be maintained. Accordingly, we do not need two different semantic types for gradable adjectives, $\langle e, d \rangle$ and $\langle d, \langle e, t \rangle \rangle$, for the superlative and the comparative construction (as concluded by Stateva (2002)). Perhaps, it can be shown that $\langle e, d \rangle$ is the basic type and that both the superlative and the comparative require type-shifting to $\langle d, \langle e, t \rangle \rangle$, but the important result of the present study is that assuming a unified semantics for *-est*, a quantifier over degrees whose scope is sensitive to the definiteness of the DP, we derive the cross-linguistic variation in the range of superlative readings, as well as, maintain the same type for gradable adjectives in both the superlative and the comparative construction. Correspondingly, the semantic type of the lexical category of gradable adjectives determines that in both constructions the functional syntax is the same, i.e., (59), and not (58).

- (58) $[_{DegP} [_{Deg} -er/-est] [_{AP} [A \text{ young}_{\langle e, d \rangle}]]]$
 (59) $[_{AP} [_{DegP} -er/-est] [A \text{ young}_{\langle d, \langle e, t \rangle \rangle}]]]$

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