Plural Superlatives, Distributivity, and Context-Dependency

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We argue that the gradable adjective in a plural superlative has the distributive 'double-star'-operator attached to it. This analysis is consistent with the view (argued against in Stateva 2002) that the external argument of the superlative operator is always a member of its restrictor.

Stateva's observations. Stateva 2002 makes the following empirical observations regarding (1).

(1) John and Bill are the tallest students.

<u>Observation 1</u>: the truth of (1) entails that the property [λx. x's tallness exceeds the tallness of every student except John and Bill] holds of both John and Bill.

<u>Observation 2</u>: the truth of (1) does NOT entail that the property [λx. x's tallness exceeds the tallness of every student except x] holds of both John and Bill (for if it did, we would get a contradiction, namely, that John and Bill are taller than each other), and not even of one of them.

Stateva claims that any semantics for *–est* which presupposes that the external argument of *–est* is a member of the comparison set C (e.g., (2), inspired by Heim 1999), coupled with the assumption that plural morphology indicates the presence of the distributive 'star'-operator which attaches at the VP-level, works well for singular superlatives (e.g., (3)) but yields for (1) the contradictory reading from Observation 2 (see (4)).

(2) $[\![\textit{-est}]\!]^C(R^{<d,<e,t>>})(P^{<e,t>})(x^e)$ is defined only if (i) x∈C, and (ii) for all y∈C: P(y)=True and there is a degree d such that R(d)(y)=True. When defined, $[\![\textit{-est}]\!]^C(R^{<d,<e,t>>})(P^{<e,t>})(x^e)$=True iff for all y≠x such that y∈C: Max(λd. R(d)(x)) > Max(λd. R(d)(y)).

(3) When defined, $[\![$*John be* [*tall-est student*] $]\!]^C$ = True iff John is taller than any y∈C, y≠John.

(4) When defined (in particular, when {Bill,John}⊆C), $[\![$*John and Bill* *[*be* [*tall-est student*]] $]\!]^C$ = True iff John is taller than any y∈C, y≠John, and Bill is taller than any y∈C, y≠Bill.

One could perhaps avoid the problem by positing a second superlative operator, one that applies exclusively to pluralities (and demands that no one outside the plurality be R-er than any member of the plurality). But cross-linguistic evidence suggests that plural superlatives are always expressed with the same superlative morpheme as the singular superlative. Therefore, a solution along these lines, although technically sound, is not explanatory from a cross-linguistic perspective.

Stateva considers two solutions to the problem illustrated in (4): the "presupposition elimination" solution and the inverse scope solution. We reject the former, and propose our own version of the latter.

The "presupposition elimination" solution is to remove from (2) the presupposition that the external argument of *-est* is a member of C. This allows us to obtain from the LF in (4) (*John and Bill be* *[*be tall-est student*]) the interpretation "John is taller than any y∈C and Bill is taller than any y∈C, where C excludes both John and Bill", in accordance with Observations 1 and 2. We note, however, that interpreting the contradictory (5) relative to a C that excludes both John and Bill (an option allowed by this solution) yields a non-contradictory reading.

(5) ##John is the tallest student and Bill is too.

We may stipulate a pragmatic constraint (or procedure) according to which every minimal clause is interpreted relative to the largest C possible. This would yield a coherent interpretation for each conjunct in (5) individually, but putting them together – without changing C – would yield a reading according to which John and Bill are taller than each other. However, if the pragmatic requirement to interpret minimal clauses relative to the largest C possible always holds, *the tallest students* in an argument position (e.g., *The tallest students left*) is also interpreted relative to the largest C possible. This means that in every context where John and Bill are taller than everyone else, *the tallest students* obligatorily refers to John and Bill. But in some contexts we may want its reference to include one or more shorter individuals. We therefore maintain that the badness of (5) is due to the presupposition that the external argument of *–est* is a member of C.

The inverse scope solution is to take *–est* out of the scope of '*', thus avoiding the attribution of 'being tallest student' to both members of the subject term in (4). As Stateva herself explains, her movement-based implementation of this solution suffers from various syntactic and semantic problems. We propose our own, non-movement-based implementation of this solution, illustrated by the LF in (6), with '**' (Sternefeld 1998, Beck 2000) on *tall* and '*' on *student*.

(6) *John and Bill be* [[[***tall*]-*est*] **student*]

We assume that when attached to gradable adjectives (which denote downward monotonic <d,<e,t>>-functions), '**' delivers functions of the kind shown in (7), and that *–est* has the semantics in (8) (which maintains the first presupposition of (2)), yielding an interpretation that amounts to the following: "for every $d \in$ {John's-tallness, Bill's-tallness}, for every singular y such that $y \neq$ John, $y \neq$ Bill, and there is a $z \in C$ s.t. $y \leq_i z$: d exceeds y's tallness."

(7) a. The characteristic set of $[\![$***tall*$]\!]$ is {<d1,John>, <d2,Bill>, … ,<d1$\oplus$d2, John$\oplus$Bill>,...}.
b. For any two degrees d,d', d$\oplus$d' is the smaller of the two, if one of them is smaller than the other; otherwise, it is d.
c. Max(λd.$[\![$***tall*$]\!]$(d)(x)) is the maximal d' such that for all singular $z \leq_i x$, the height of z is at least d'.

(8) $[\![$-*est*$]\!]^C$(R)(P)(x) is defined only if (i) $x \in C$, (ii) for all $y \in C$ such that $y \neq x$: y doesn't overlap x, and (iii) for all $y \in C$: P(y)=True and there is a degree d such that R(d)(y)=True. When defined, $[\![$-*est*$]\!]^C$(R)(P)(x)=True iff for all y such that $y \in C$ and $y \neq x$, for all $z \leq_i y$: Max(λd. R(d)(x)) > Max(λd. R(d)(z)).

This interpretation is compatible with Observations 1 and 2. Still, we think that (8) can be improved upon. To appreciate why, consider (9) and (10).

(9) A: Who are the best students, John and Bill? Or John, Bill and Fred?
B: I would say John and Bill. It's true that no student is better than Fred but worse than Bill an John, but c'mon! Fred has a D average!

(10) A: John and Bill are the tallest students.
B: You are forgetting Fred; he is only half an inch shorter than Bill.
A: My mistake. John, Bill and Fred are the tallest students.

The well-formedness of these discourses suggests that the context supplies a natural cut-off point on the relevant scale which determines a unique group of R-est individuals (see Herdan 2007). Determining the value of the cut-off point is a complicated matter and depends on various kinds of contextual information (some of which is supplied by the comparison class itself). The cut-off point is often vague, and often the speaker or hearer assumes that there is a unique cut-off point without knowing its value (in which case it can be said to be bound by a context-level existential). Like other contextual parameters, the cut-off point may be reset as speakers become more informed. The semantics in (8) ignores the cut-off point, and predicts that *John and Bill are the best students* and *John, Bill and Fred are the best students* can both be true in the same context (failing to account for (9)-(10)). We therefore offer (11) as the semantics for *–est* (C is a pair consisting of a comparison set (Comp(C)) and a cut-off point Cut-off(C)).

(11) $[\![$-*est*$]\!]^C$(R)(P)(x) is defined only if (i) $x \in$ Comp(C), (ii) for all $y \in$ Comp(C) s.t. $y \neq x$: y doesn't overlap x, and (iii) for all $y \in$ Comp(C): P(y) = True and there is a d such that R(d)(y) = True. When defined, $[\![$-*est*$]\!]^C$(R)(P)(x) = True iff for all y such that $y \in$ Comp(C) and $y \neq x$, for all $z \leq_i y$: Max(λd. R(d)(x)) > Cut-off(C) and Max(λd. R(d)(z)) $\leq$ Cut-off(C).

(12) When defined, $[\![$*John be* [*tall-est student*] $]\!]^C$ = True iff John's tallness exceeds the cut-off point of C and for every $y \in C$, $y \neq$ John: y's tallness does not exceed this cut-off point.

(13) When defined, $[\![$ *John and Bill be* [[[***tall*]-*est*] **student*] $]\!]^C$ = True iff for every $d \in$ {John's-tallness, Bill's-tallness}: d exceeds the cut-off point of C; and for every singular y, $y \neq$ John, $y \neq$ Bill, and there is a $z \in C$ s.t. $y \leq_i z$: y's tallness doesn't exceed this cut-off point.

The proposal is compatible with Observations 1 and 2 and with the discourses in (9)-(10).