Plural Superlatives and Distributivity

We propose 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 2005) that the external argument of the superlative operator is always a member of the comparison set.

Stateva’s observations. Stateva 2005 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) [[-*est*]]^C($R^{<d,<e,t>>}$)(x^e) is defined only if (i) x∈C, and (ii) for all y∈C: there is a degree d such that R(d)(y)=True. When defined, [[-*est*]]^C($R^{<d,<e,t>>}$)(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* [*–est* [*tall student*]]]]^C = True iff John is taller than any y∈C, y≠John (where [[*tall student*]](d)(x) = True iff x is a student and x’s tallness is at least d).

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

Our proposal. The problem with (4) is that *–est* is in the scope of ‘*’, which leads to the attribution of ‘being tallest student’ to both members of the subject term. We propose the LF in (5) instead, with ‘**’ (Sternefeld 1998, Beck 2000) on *tall* and ‘*’ on *student*.

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

We assume that when attached to gradable adjectives (which denote downward monotonic <d,<e,t>>-functions), ‘**’ delivers functions of the kind shown in (6), and that *–est* has the semantics in (7), yielding an interpretation that amounts to the following: “for every d ∈ {John’s-tallness, Bill’s-tallness}, for every singular y such that y≠John, y≠Bill, and there is a z∈C s.t. $y \leq_i z$: d exceeds y’s tallness.” This interpretation is compatible with Observations 1,2.

(6) a. The characteristic set of [[***tall*]] is {<d1,John>, <d2,Bill>, … ,<d1⊕d2, John⊕Bill>,...}.

b. For any two degrees d,d’, d⊕d’ is the smaller of the two, if one of them is smaller than the other; otherwise, it is d.

c. Max(λd.[[***tall* **student*]](d)(x)) is the maximal d’ such that for all singular students $z \leq_i x$, the height of z is at least d’.

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

Stateva’s proposal. Stateva considers two solutions. Her first solution offers (8) as an alternative to the LF in (4), and requires adjusting the semantics of *–est* as in, for example, (9).

(8) *John and Bill* [*-est* λ_1 *[t_1-*tall student*]]

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

This solution yields the right truth conditions for (8): it requires that the shorter of John and Bill (or if they are both of equal height, that both John and Bill) be taller than any other singular individual. The problem with this solution is that usually, degree operators cannot scope over quantifiers (Kennedy's Generalization). This is shown (Heim 2000) by the fact that *every student is less than 5 ft* is unambiguous: It can only mean that for each student x, x's height is less than 5 feet. It cannot mean that the maximal height of the shortest individual (a degree shared by the heights of all the individuals) is less than 5 feet. On the assumption that the second reading is obtained by moving *less than 5ft* over *every student*, the generalization can be stated as a ban on the movement of a degree operator over a quantifier. Stateva claims that '*' is also subject to this constraint, because of the lack of ambiguity of (10) (only the first reading is attested).

(10) Scott and Bill are less than 5 feet tall.
   a. For every x, $x \leq_i$ Scott⊕Bill, x's tallness is less than 5 feet.
   b. The maximal d such that for every x, $x \leq_i$ Scott⊕Bill, x is d-tall – is less than 5 feet.

Stateva concludes that (8) is not the right LF for (1).

The other solution to the problem posed by the LF in (4) that Stateva considers 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 $y \in C$ and Bill is taller than any $y \in C$, where C excludes both John and Bill", in accordance with Observations 1 and 2. We note, however, that interpreting the contradictory (11) relative to a C that excludes both John and Bill (an option allowed by this solution) yields a non-contradictory reading.

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

To avoid this, 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 (11) individually, but putting them together – without changing C – would imply that each boy is taller than the 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*) should also be 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 Presupposition (i) in (7) ('$x \in C$', borrowed from (2)) is the reason why (11) is bad.

Summary. We reject Stateva's first solution for the same reason she does, namely, that it involves what looks like an illicit movement. We reject her second solution for semantic reasons. Our proposal doesn't suffer from any of these problems. We conclude by discussing the pragmatic role of a contextually supplied "cut-off" point for plural superlatives, which discourse participants appeal to, as evidenced by discourses such as (12).

(12) 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 and John, but c'mon! Fred has a D average!

We discuss a potential alternative to (7) which takes into account a "cut-off" point which the discourse participants seem to assume.