Presuppositions in Superlatives

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Abstract: This paper discusses the distributive reading of plural superlatives. We argue that the compositional interpretation of plural superlative sentences requires that the referent of the superlative description is excluded from the comparison class associated with the degree morphology. We extend the claim to superlatives in general. The proposal implies that we need to rethink the presupposition conditions of superlatives previously defined in Heim (1999). The manner in which the presupposition conditions are stated, in contrast to our claim, relies on the assumption that the referent of the superlative description is a member of the comparison class.

0. Introduction

This paper is concerned with specifying presupposition conditions in superlatives. More specifically, we agree with Heim (1999) that the referent of a superlative description, along with every individual compared to it in the context of the superlative should be presupposed to be in the relevant relation with some degree. However, contra Heim, we argue that the individual denoted by a superlative expression must not be a member of the comparison set associated with the degree morphology.

The comparative construction, illustrated in (1) and (2) uses a restrictive clause whose ontological function is to denote a standard of comparison, call it *C*.

(1)   John is a more impressive candidate than Bill is.
        $C_1 = \{Bill\}$
(2)   John is more impressive as a candidate (than Bill or Sue are).
        $C_2 = \{Bill, Sue\}$

Sentences containing a superlative involve a standard of comparison which is associated with a non-singleton, non-empty set, i.e. a whole comparison class, but that set is contextually inferred. Following the pattern with comparatives one would intuitively expect C in superlative constructions to have the shape in (3b) but not in (3c) :

(3)   a. (All of these candidates are acceptable.) But John is most impressive.
        b. $C_3 = \{Bill, Sue\}$
        c. $C_4 = \{John, Bill, Sue\}$

This intuition, however, is not reflected in theories of superlatives. With one exception, the proposals about interpreting superlatives are all compatible with (3c) but not (3b) (Heim (1985, 1999, 2000), von Fintel (1999), Farkas and Kiss (2000), Sharvit and Stateva (2002), etc.), Bhatt (2002). In fact (Heim (1999)), which is the only study that discusses this particular choice ((3c)), states it as a presupposition condition of *–est/least* along with the condition that a sentence of the form *x is the R-est* is defined only if there exists some degree *d* for every member *y* of the comparison set that verifies the sentence *y is R to a degree d*:

> It is plausible that this value for C is a salient choice when these candidates have just been mentioned in the previous sentence. Salience and overall plausibility bear the main burden of fixing the domain argument of a given utterance of –est, but there seem to be some limits imposed by the semantics of the construction itself. Even though you didn't know who John was, when you read (1), you spontaneously inferred that he was one of these candidates. I suggest this is due to a general constraint on the choice of C, namely that x (the external argument) must be one of its elements. Another constraint I will assume is that C must be a subset of the left domain of R… We can think of these mutual constraints on the

values of –est's three arguments as presuppositions and incorporate them into the lexical entry.

The question whether (3b) or (3c) describes better the comparison set associated with the superlative has strong theoretical implications, which have not been explored so far. They pertain to debates about movement versus non-movement theories of superlatives, the structure of the comparison class and restrictions on its formation. This paper aims, therefore, at making the presupposition conditions related to the superlative morphology precise and studying the consequences of obliterating the difference, in this respect, in the treatment of comparatives and superlatives. The main focus of the paper will be on the discussion of distributive readings of plural superlatives. I will show that even competing theories must assume a version of (3b) in order to provide a compositional interpretation of such readings.

The paper is organized as follows. The first section states the problem that plural superlatives pose with respect to their compositional interpretation. We discuss Stateva's (2000a) solution to that problem. *Section 2* evaluates critically Stateva (2000a) and motivates the necessity for a different approach. *Section 3* spells out the proposal which is based on a particular strategy of specifying presupposition conditions in superlatives in general. *Section 4* examines the consequences of the proposal. *Section 5* discusses a potential alternative to the analysis of plural superlatives which treats distrubutivity as a lexical property of comparison. That alternative allows us to remain neutral on the question how to define presupposition conditions in superlatives. However, the alternative is criticized and abandoned. *Section 6* summarizes the results of the study.

1. A problem with plural superlatives
1.1 Target data

Plural superlatives rarely come to attention in semantic studies. But it is not a trivial issue to interpret them compositionally even if one has a reliable theory of interpreting singular superlatives. Let us start with an example:
(4) Mount Everest and K2 are the highest summits.

The meaning of (4) is paraphrased informally in (5):

(5)   The degree d to which Mount Everest is high is greater than any degree d_1 to which some other mount different from it and different from K2 is high. The degree d_2 to which K2 is high is greater than any degree d_1 to which some other mount different from it and different from Mount Everest is high.

Every property of the kind of *the highest, the richest, the most impressive* seems to imply uniqueness of the individual of which it is predicated. The intuition is similar to the intuition one has about definite descriptions. The utterance of phrases like *the mountain, the summit, the boy* implies that there is only one individual in the context that answers the relevant description. However, one can also use plural definite descriptions like *the mountains, the summits, the boys*. With plural definites we refer to a unique maximal group of individuals who share the property of being mountains, summits, boys.[1] If, for example, a context C includes the 10 summits over 8000m: Mount Everest, K2, Kanchenjunga, Makalu, Lhotse, Broad Peak, Gasherbrum, Cho Oyu, Shisha Pnagmu, Manaslu, it is inappropriate in this context to refer to Mount Everest and K2 using the description *the summits*. *The summits* can be felicitously used only to refer to the biggest or maximal group of individuals that have the property of being summits. Despite the similarity between singular definite descriptions and singular superlatives, plural superlatives are used in a different way. In the same context we can refer to different, and certainly not unique groups of individuals by the superlative

description *the highest summits*. These could be Mount Everest and K2, or Mt Everest, K2 and Kanchenjunga, or Mount Everest, K2, Kanchenjunga and Makalu, and so on. In other words the extension of the highest summits in a constant context is not unique. These different referents of the plural superlative description, however, have something in common. In every case there is a unique degree to (at least) which every singular member of the group of highest summits is high but none of the summits outside the group is that high. This property of plural superlatives has to be reflected in the compositional interpretation of (4).

Another requirement that an adequate theory of plural superlatives has to fulfill is to derive the appropriate plural reading by general tools. In other words, effects of plurality in plural superlatives should be described by general mechanisms affecting plurals. The literature distinguishes among collective, distributive and cumulative readings of sentences with plurals (Scha (1984), Link (1983), Landman (1989a, 1989b), Lasersohn (1990), Schein (1986), Schwarzschild (1996), among others). Let us briefly illustrate these and then decide how to classify the meaning of (4). Consider (6):

(6)   a. The students organized a semantics workshop.
         b. The students from Potsdam took the train to Berlin to get to the workshop site.
         c. Sabine, Barbara and Andreas presented papers on questions, ellipsis and tense.

(6a) is most naturally interpreted as asserting that the students together organized one semantics workshop. This reading is called *collective* since the agent of the predicate is a group of individuals who satisfy the predicate as a group. (6b) is different from the previous example in that it involves a predicate which is true of each individual which is a member of the group of 'students from Potsdam': Eva, who is a student from Potsdam, took the train to Berlin to get to the workshop site, Milena, who is a student from Potsdam, took the train to Berlin to get to the workshop site, Arwin, who is a student from Potsdam, took the train to Berlin to get to the workshop site, etc. (6b) illustrates the *distributive* reading of plurals. Finally, (6c) can illustrate what a *cumulative* reading of plurals is if it is uttered, for example, in the following context: Sabine presented a paper on tense, Barbara presented a paper on ellipsis, and Andreas presented a paper on questions. The cumulative reading is in some sense a weak distributive reading that involves a relation between two sets of plural individuals. For each individual from the first set there is an individual from the second set with which it stands in that relation and for each individual from the second set there is an individual from the first set with which it stands in a relation.

Going back to (4), we can now characterize it as involving distributivity, cumulativity or collectiveness. The intuitive paraphrase of the sentence in (5) suggests that we are dealing with a plural distributive reading.[2] We immediately, however, point to a peculiarity of this reading in the context of superlatives. Unlike (6b), (4) cannot be unfolded in a series of conjunctions like (7):

(7) Mt Everest is the highest summit and K2 is the highest summit.

In *Section 3* we will have more to say about that and how to reconcile the standard view on distributivity with superlatives.

Let us now see how distributivity can be represented in the context of a degree construction.

1.2. First attempt for compositional interpretation

Since (4) involves a superlative construction and a plural distributive reading we have to specify our assumptions about each of them in order to interpret the sentence compositionally.

We begin with the superlative. We will assume the 'standard' theory of Heim (2000). According to that theory –*est/least* takes three arguments: a covert restriction on its domain, a relation between individuals and degrees, and an individual. The first argument we briefly discussed in the introduction. It is a set of individuals that form the comparison class. The second argument is a scalar predicate like *tall, impressive, high summit*, etc. Scalar predicates are functions from degrees to functions from individuals to truth values. Their semantic type is $<d,<et>>$. A superlative property like *tallest, highest, highest summit* is predicated of an individual. The standard theory assigns –*est/least* the following meaning:[3]

(8) a. $[[est]]:= \lambda C: C \in D_{<e,t>} . [\lambda R: R \in D_{<d,et>} . \lambda x: x \in D \ \& \ x \in C \ \& \ \forall z[z \in C \rightarrow \exists d[R(d)(z)]].$
  $[max(\lambda d.R(d)(x)) > max(\lambda d. \exists y \neq x[y \in C \ \& \ R(d)(y)])]]]$

  b. $[[least]]:= \lambda C: C \in D_{<e,t>} . [\lambda R: R \in D_{<d,et>} . \lambda x: x \in D \& \ x \in C \ \& \ \forall z[z \in C \rightarrow \exists d[R(d)(z)]].$
  $[max(\lambda d.R(d)(x)) < max(\lambda d. \forall y \neq x[y \in C \rightarrow R(d)(y)])]]]$

(8) is to be understood under the auxiliary assumptions that (i) the *max* operator is defined as in (9), and (ii) every scalar predicate is a monotone function defined in (10):

(9) $max := \lambda P \in D_{<d,t>} . [[the]] (\lambda d. [P(d) \ \& \ \forall d_1[P(d_1) \rightarrow d_1 \leq d]])$
(10) A function R of type $<d,et>$ is monotone iff
  $\forall x,d,d_1[d > d_1 \ \& \ R(d)(x) \rightarrow R(d_1)(x)]$[4]

The semantics of –*est/least* specified in (8) formalizes the intuition that the biggest degree out of the set of degrees with which the external argument of –*est/least* stands in a relation is greater than the biggest degree out of the set of degrees with which any of the other individuals in the comparison class stands in that relation. The theory is illustrated in (11b) which shows the compositional interpretation of (3), repeated in (11a):

(11)   a. John is the most impressive.
    b.   IP, *max(λd.impressive(d)(John))> max(λd.∃y≠x[y∈C₁*
                   & impressive(d)(y)])

    DP   I'

  John   I   DP
           is   _____   *λx.max(λd.impressive(d)(x)) >*
                   D   AP *max(λd.∃y≠x[y∈C₁&impresive(d)(y)])*
                  ~~the~~   _____
 λR.λx.max(λdimpressivel(d)(x)) >   DegP   A
 max(λd.∃y≠x[y∈C₁&R(d)(y)])   impressive

                  est   **C₁** *λd.λx.impressive(d)(x)*

$C_1 = \{x : x \text{ is a (relevant) impressive person}\}$

The second ingredient in a recipe for interpreting plural superlatives is an assumption about distributivity. We will follow Lønning (1987), Lasersohn (1990), Schwarzschild (1996), Brisson (1998), among others, by assuming that distributivity is a property of the verb phrase. For concreteness we will use Brisson's definition of the distributive operator *D* in (12) via whose presence in the Logical Form (LF) of a sentence distributive readings arise.

(12) $[[D]] := \lambda P:P \in D_{<e,t>} . [\lambda X:X \in D_e . \forall x[x \in X \rightarrow x \in P]]$
    where *X* denotes a group individual, and *x* denotes a singular individual

The distributive operator can be seen at work in deriving the most natural, distributive reading of (13):

(13)   Sue and Leah had coffee.

We want to derive an interpretation for (13) according to which the predicate *have coffee* is true of each individual which is a member of the group 'Sue and Mary'. This is indeed the interpretation resulting from the LF of the sentence in (14) in which the distributive operator is attached as a sister to the λ-abstract in the VP:[5]

(14) [$_{IP}$ [$_{DP}$ Sue⊕Leah] [$_{VP}$ ^{D} [1 [$_{VP}$ t_1 had coffee]]]]
(15) [[Sue and Leah had coffee]] =1 iff
     $\forall x[x \in$ Sue⊕Leah $\rightarrow$ have coffee(x)]

        Putting together our assumptions about the semantics of superlatives and the semantics of distributivity, we can now approach the data of interest: plural superlatives. (4) contains the superlative predicate *be the highest summit*. Since we assumed that distributivity is a property of the predicate it seems reasonable to try to derive the interpretation of (4) by having *D* to apply to that predicate.[6] The resulting LF is that in (16):

(16)   [[MtEverest⊕K2][^{D}[1[t_1 (be) (the) [-est [high summit]]]]]]]

The structure is interpretable but the truth conditions that follow from it are counterintuitive. The sentence is predicted to be trivially false. Let us look at the conditions in (17) and check what they imply:

(17)   [[Mount Everest and K2 are the highest summits]] =1 iff
        $\forall x[x \in$ MtEverest⊕K2 $\rightarrow$ max(λd.high(d)(x) & summit(x)) > max(λd.∃y≠x[y∈C & high(d)(y)& summit(y)])]

Since Mount Everest and K2 are members of the group individual MtEverest⊕K2, it follows that each of them has to satisfy the condition in (17):

(18)   a. [MtEverest∈ MtEverest⊕K2 $\rightarrow$ max(λd.high(d)(MtEverest) & summit(MtEverest)) > max(λd.∃y≠MtEverest[y∈C & high(d)(y)& summit(y)]) & K2∈ MtEverest⊕K2 $\rightarrow$ max(λd.high(d)(K2) & summit(K2)) > max(λd.∃y≠K2[y∈C & high(d)(y) & summit(y)])]
        b. C ={x:x is a summit}

Obviously, if the comparison class has the form in (18b), irrespective of what the world looks like, (18a) will never be fulfilled. The reason is that each of the summits in the group of highest summits is required to be higher than the rest, including each other.
        What seemed to be the most natural direction for deriving the truth conditions of (4) which contains a plural superlative turned out to give wrong results. In the next section we discuss an earlier proposal and its own problematic aspects.

1.3. Stateva (2000a)

Stateva (2000a) identifies two reasons for the failed attempt to derive adequate truth

conditions of (4) by the LF in (16). The first claim is that the 'right' interpretation of (4) requires converse scope relations between the distributive operator and the superlative operator. The intuition here is that we should avoid the requirement that each of the summits Mt Everest and K2 be the highest summit. Second, the lexical entry for the superlative operator should make reference to subparts of a group, as in (19). For singular superlatives that newly added clause in the assertive part is supposed to apply vacuously:

(19) a. $[[est]]:= \lambda C: C \in D_{<e,t>} .[\lambda R: R \in D_{<d,et>} .\lambda x: x \in C \ \& \ \forall y[y \in C \rightarrow$
$\exists d_1[R(d_1)(y)=1]].[max(\lambda d.R(d)(x)) > max(\lambda d.\exists y[y \in C \ \& \ y \neq x \ \& \ \forall z[z \in x \rightarrow y \neq z] \ \&$
$R(d)(y)])]]$

   b. $[[least]]:= \lambda C: C \in D_{<e,t>} .[\lambda R: R \in D_{<d,et>} .\lambda x: x \in C \ \& \ \forall y[y \in C \rightarrow$
$\exists d_1[R(d_1)(y)=1]].[max(\lambda d.R(d)(x)) < max(\lambda d.\forall y[y \in C \ \& \ y \neq x \ \& \ \forall z[z \in x \rightarrow y \neq z] \ \&$
$R(d)(y)])]]$

The new clause in (19) is designed to relax the truth conditions associated with plural superlatives. The relevant individuals *y* from the comparison class who stand in a relation *R* with some degree and are compared to the external argument *x* of *–est/least* are required to be different from *x* and also from its subparts. It is important to realize that this change in the semantics of the superlative operator has no impact if *–est/least* is in the immediate scope of a distributive operator. The configuration in (20) results in having a singularity as a referent of the external argument of *–est/least* by virtue of the semantics of the distributive operator: it distributes a predicate over singularities.[7]

(20)   [D .... [[–est/least C] R]]

Therefore, similar to the case with singular superlatives, the new clause in the value description of the entry for *–est/least* applies vacuously. This means that referring to subparts of a group in the way suggested in (19) alone cannot solve the problem with plural superlatives we started with. Let us show this. We consider again the LF for (4) in (16) but this time we calculate the resulting truth conditions on the basis of the entries in (19):

(16) $[[MtEverest \oplus K2][^{D}[1[t_1 (be) (the) [-est [high summit]]]]]]$
(21)   a. $\forall x[x \in MtEverest \oplus K2 \rightarrow max(\lambda d.high(d)(x) \ \& \ summit(x)) > max(\lambda d.\exists y \neq x[y \in C \ \&$
$\forall z[z \in x \rightarrow y \neq z] \ \& \ high(d)(y) \& \ summit(y)])] \Leftrightarrow$
b. $[MtEverest \in MtEverest \oplus K2 \rightarrow max(\lambda d.high(d)(MtEverest) \ \& \ summit(MtEverest))$
$> max(\lambda d.\exists y \neq MtEverest[y \in C \ \& \ \forall z[z \in MtEverest \rightarrow y \neq z] \ \& \ high(d)(y) \& \ summit(y)])$
$\& \ K2 \in MtEverest \oplus K2 \rightarrow max(\lambda d.high(d)(K2) \ \& \ summit(K2)) >$
$max(\lambda d.\exists y \neq K2[y \in C \ \& \ \forall z[z \in K2 \rightarrow y \neq z] \ \& \ high(d)(y) \ \& \ summit(y)])]$
c. $C = \{x : x \text{ is a summit}\}$

The truth conditions in (21) are logically equivalent to those we saw previously in (18). As expected, they carry the same problem: they predict (4) to be trivially false since both summits are required to be higher than each other. And it is now easy to see why *–est* should not be in the scope of the distributive operator. Under this scopal configuration *–est*'s external argument is either MtEverest or K2 but not the group containing both. Consequently, we end up in (21) with the requirement that the summits whose degree of highness are compared to MtEverest should exclude Mt Everest and its subparts and the summits compared to K2 should exclude K2 and its subparts. But the fact that K2 is not excluded from the set of summits compared to MtEverest and the fact that MtEverest is not excluded from the set compared to K2 makes the conditions impossible to satisfy.

The solution in Stateva (2000a) we referred to is the following. The distributive operator has to attach to the syntactic structure lower than the attachment site of *–est*. However, the most natural candidate for an attachment site, *-est's* sister *high summit* is not of the appropriate semantic type. *D* applies to a function from individuals to truth values but *high summit* is a function from degrees to functions from individuals to truth values. The proposal to resolve the type mismatch is to have *–est* move locally at the edge of the DP, leave a trace of type *d* which will fill the degree argument slot of the relation *high summit*. As a result, the denotation of AP = [$_{AP}$[$_{DegP}$ t] [high summit]] ends up being of the appropriate semantic type <e,t> to combine with the denotation of the distributive operator which is syntactically adjoined to it. The proposed LF for (4) under these considerations is that in (22):

(22) [[MtEverest⊕K2] [(be) ~~the~~ [$_{AP}$ est+C [1 [^{D}[t$_1$ high summit]]]]]]

The following truth conditions are derived from this LF:

(23) a. max(λd. $\forall$x[x ∈ MtEverest⊕K2➔ high(d)(x) & summit(x)]) >max(λd.$\exists$y[y∈C & y≠MtEverest⊕K2 & $\forall$z[z∈MtEverest⊕K2➔y≠z] & high(d)(y) &summit(y)])
    b. C={x: x is a summit}

What (23) requires for (4) to be true is that the height of the lower of the two summits is greater than the height of any summit different from MtEverest⊕K2 and its subparts Mt Everest and K2. These conditions correspond to speakers' intuitions although strictly speaking, for them to serve the intended purpose we need to make sure that the elements in the comparison class are only singularities. Otherwise, the truth conditions in (23) will be too weak: one can easily find a group of summits (for example, Makalu, Lhotse, and Broad Peak) whose height together will be greater than the height of Mt Everest or K2. However, this is not a problem. Since the value of the comparison class is furnished mostly pragmatically, the relevance of singularities as members of the comparison class will find its way in the constructed restriction on the domain of *–est*:

(24) C = {x: x is a relevant summit and x is a singularity}

Still, the solution can be challenged on at least three grounds. The next section focuses on the shortcomings of this proposal.

2. Problems for Stateva (2000a)
2.1. A "missing reading"

An immediate question that arises with this solution follows from its assumptions: in the adopted Heim (2000)-type of semantics for the superlative operator, *-est* is an element with significant scopal properties (see also Stateva 2000b). If the distributive operator *D* is also a scopal element, which remains to be seen, then one will need to know why only one scopal configuration leads to an interpretation that is actually attested. In other words, we have to account for the fact that the contradictory interpretation (that MtEverest and K2 are the highest summits only if they are higher than every other summit and higher than each other) is not available too in addition to the contingent one formalized in (23). The proposal in Stateva (2000a) alone does not offer any insight on this question.
    But before we conclude that the missing reading of (4) resulting from the LF in (16) in which *D* has *–est* in its scope in is indeed a problem for Stateva (2000a) we have to show that this reading is predicted by Stateva (2000a). This we do by giving arguments that *–est* and *D* are scope bearing elements.

Let us start with the superlative. It will immediately become obvious that the issue is quite complicated since it is hard, if not impossible to take a theory neutral stand on the quantificational status of *–est/least*. There are two types of approaches to the semantics of superlatives, one of which is the adopted framework of Heim (2000). This analysis of superlatives is a direct extension of the quantificational type of analysis of comparatives (cf. cf. Seuren (1973), Cresswell (1976), Hoeksema (1983), Hellan (1984), von Stechow (1984), Heim (1985), Heim (1998), Heim (2000), Rullmann (1995), Lerner and Pinkal (1995), (Beck (1997), Hackl (2000), Schwarzschild and Wilkinson (2002), etc.). In it, the comparative operator *–er/less* is given a semantics of a generalized quantifier over degrees and naturally, the analysis gives it the potential to interact scopally with other elements.[8] The common ground between the analysis of comparatives and superlatives is in the view about the semantics of gradable adjectives as relations between degrees and individuals which participate in both comparison constructions. An argument that the quantificational approach to superlatives is warranted comes from the so called split scope readings with superlatives. They are called so because such readings require that a scope bearing element is interpreted in a position that splits the interpretation of the superlative quantifier, *-est/least* and the restriction on its domain C, and the rest of the superlative description. Here is an example from Heim (2000). Consider (25):

(25) John needs to drive fastest.

Suppose that John, Bill and Mary are taking part in a race and we support John in this competition. But for him to win the race, he will have to drive fastest. (25), which is a good description of this situation is used in its *de dicto* reading. There is another reading of (25) which becomes prominent in a situation like the following. Suppose that John, Bill, and Mary are driving on their own to Ithaca and they all have to arrive there by 8pm. But Bill and Mary have started earlier than John and are already closer to Ithaca than Bill is. For John to arrive by 8pm he will need to drive with at least 65 miles per hour while it is sufficient for Bill and Mary to drive with 60 and 50 miles per hour, respectively, in order to get to Ithaca on time. This reading, known as *upstairs de dicto* reading is different from the regular *de dicto* reading described in the first scenario.[9] It is John's needs that are compared to everybody else's needs in the second scenario, while in the *de dicto* reading of (25) John's needs are defined on the basis of the comparison between his performance, on the one hand, and everyone else's performance, on the other. Heim (2000) shows that this ambiguity is easily accounted for if it is treated as a result from scope interaction between the superlative operator and the intensional verb *need*. The two different scopal configurations are represented in the LFs in (26a) and (26b):

(26) a. John [1[needs [t_1 [-est [2 [to drive t_2 fast]]]]]]
    b. John [-est [2 [1 [needs [t_1 to drive t_2 fast]]]]]

The interpretations resulting from each of the above LFs are those in (27a) and (27b), respectively:

(27) a. In all of John's need worlds *w'*
    max(λd. John drives d-fast in w') > max(λd.$\exists$y$\neq$John[y$\in$C in w' & y drives d-fast in w'])
        C = {John, Bill, Mary}
    b. max(λd. in all of John's need worlds w' he drives d-fast) > max(λd.$\exists$y$\neq$John[y$\in$C &
        in all of y's need worlds w'' y drives d-fast)
        C = {John, Bill, Mary}

The truth conditions in (27) show that we are able to derive the *de dicto* reading of (25) from the LF in (26a) and the *upstairs de dicto* reading from the LF in (26b), i.e. if one assumes that the superlative operator can interact scopally with *need*, (s)he will have a straightforward way of accounting for the ambiguity in sentences like (25).

If this was the only theory of superlatives on the market, we would have safely concluded from the argument involving an *upstairs de dicto* reading that *–est/least* has significant scopal properties. However, as mentioned above, there is an alternative framework of analyzing superlatives in which they are assigned a semantics that is incompatible with the assumption that superlatives have any quantificational force (cf. Farkas and Kiss (2000), Stateva (2003)).[10] We will discuss in detail that framework later in *Section 2.3*. What is important for our purposes at this point is to demonstrate that if one assumes the standard theory of superlatives of Heim (2000), then one subscribes to the view that *–est/least* has a potential for scopal interactions.

Next, we are going to discuss the quantificational status of the distributive operator. Here is an argument from Schwarzschild (1996) that *D* is a scope bearing element. Consider (28):

(28)   Each boy killed a dog.

(28) has a pragmatically plausible reading according to which it describes a series of dog killings by different boys. However, the sentence also has an implausible reading, which talks about multiple killings of the same dog. Indefinite noun phrases can serve as antecedents for pronouns when they have wide scope. If we add a sentence to (28) with such a pronoun, we force its implausible reading. Thus, within the discourse of (29), for example, we can only attest that insensible reading of (28):

(29)   Every boy killed a dog. It turned out to have nine lives.

These data illustrate the ability of the generalized quantifier to interact scopally with the indefinite NP. Similarly to (28), (30) is ambiguous between a sensible distributive reading describing two events of killing different dogs, and an implausible distributive reading about multiple acts of killing the same dog:

(30)   John and Mary killed a dog.

The implausible reading, again, can easily be detected if forced by adding a sentence with a pronoun referring to the indefinite in (30) in a discourse, as in (31) :

(31)   John and Mary killed a dog. It was buried in the parking lot.
The conclusion is that there is an operator in (30), which interacts scopally with the indefinite there, much like the generalized quantifier in (28) interacts with the indefinite. Since the only plausible candidate is the *D*-operator, it follows that the *D*-operator is a scope bearing element.

To summarize this section, we showed that the assumptions on which Stateva's (2000a) solution to the plural superlative puzzle is based lead to an unfulfilled prediction: (4) is predicted to have two possible LFs, (16) and (22), repeated below, leading to two different interpretations.

(16) [[MtEverest$\oplus$K2][^{D}[1[t_1 (be) (the) [-est [high summit]]]]]]
(22) [[MtEverest$\oplus$K2] [(be) ~~the~~ [$_{DegP}$ est+C [1 [^{D}[t_1 high summit]]]]]]

However, only one interpretation is attested. The theory provides no explanation for the absence of one of the readings that it predicts.

2.2. Kennedy's generalization and distributive readings of superlatives

A closer look at the solution in Stateva (2000a) shows that the problem raised in the previous section is worse than it looks. Not only do we have to account for a 'missing' reading but even the one that we can derive raises concerns about the legitimacy of its corresponding LF.

As we discussed at some length, the standard theory of superlatives is couched in quantificational terms and is related directly to a quantificational theory of comparatives. This theory has been criticized, most notably in Kennedy (1999), for predicting scopal interactions between degree elements and other scope bearing elements where such interactions cannot be attested through sentence ambiguity. Heim (2000) takes the complaint into scrutiny and shows that there are three independent reasons which block sentence ambiguity in the relevant domain:

(i)   For some sentences reversing the scopal ordering at LF has no effect on the derived truth conditions. Both sets of conditions might be logically equivalent and therefore no ambiguity can be attested.

(ii)   There are cases in which a particular scopal configuration in a LF results in uninterpretability of the resulting structure.

(iii)   A scopal configuration can violate well-formedness conditions at the syntax-semantics interface.

If each of (i)-(iii) is taken into account, the quantificational theory can still be maintained. The last reason accounting for the lack of expected ambiguity in degree constructions is the one relevant for our discussion of plural superlatives. Let us elaborate. From the point of view of the standard theory (32) involves two scope bearing elements: the comparative quantifier and the quantifier *every student*:

(32) Every student is less tall than 180cm.

We expect, therefore, to find two readings in (32). There are two LFs representing the different scopal configurations involving the two quantifiers, as in (33) and (34):

(33) [[every student] [1 [[less than 180cm] [2 [t_1 is d_2-tall]]]]]
(34) [[less than 180cm] [2 [[every student] [1 [t_1 is d_2-tall]]]]]

In order to calculate the truth conditions resulting from these LF, we need to know what semantics is ascribed to the comparative operator. (35) gives the lexical entries for the positive and the negative comparative. Bear in mind that these entries are used only in comparative sentences in which the *than*-clause contains a measure phrase, as in (32):

(35)   a.$[[est]]:= \lambda d:d \in D_d.\lambda P:P \in D_{<d,t>}.max(\lambda d_1.P(d_1)) > d$
         b.$[[less]]:= \lambda d:d \in D_d.\lambda P:P \in D_{<d,t>}.max(\lambda d_1.P(d_1)) < d$

From (33) in which the quantifier *every student* takes wider scope than the comparative quantifier we derive the truth conditions in (36):

(36)   [[Every student is less tall than 180cm]] = 1 iff
         $\forall x[student(x) \rightarrow max(\lambda d.tall(x)(d)) < 180cm]$

These conditions require that each students' maximal height is smaller than 180cm. We also derive a set of truth conditions from (34):

(37)   [[Every student is less tall than 180cm]] = 1 iff
        max(λd.∀x[student(x) → tall(x)(d)]) <180cm

Unlike the previous conditions, the conditions in (37) are counterintuitive. (32) does not have a reading according to which the shortest of the set of all students is asserted to be shorter than 180cm. But this is an interpretation predicted by (37).

The theory which assumes that the comparative head is a scope bearing element faces a problem of overgeneration. Some explanation is needed then to account for the fact that the predicted reading of (32) in (37) does not exist. Careful examination of different types of data lead Heim to formulate a syntactic condition on the well-formedness of LFs involving a DegP. This condition rules out (34) as an illegitimate LF and makes the quantificational theory consistent with the facts. Heim (2000) refers to this condition as the *Kennedy generalization*:

(38)   If the scope of a quantificational DP contains the trace of a DegP, it also contains DegP itself.

The derivation of (34) involves a movement of the comparative operator, a comparative DegP, across the quantificational DP *every student* and leaves a trace in its base position which is c-commanded by the universal quantifier. It is this movement that creates the offending configuration viewed by Kennedy's generalization:

(39) * DegP   Quantified expression   t$_{DegP}$

With this in mind we go back to the derivation of (4) in Stateva (2000a). We can now see that (22), the LF used to derive the interpretation of (4) runs against Kennedy's generalization: the superlative DegP is raised across the distributive operator leaving a trace in the scope of *D*. We see three possibilities for explaining the state of affairs. The first is to argue that the distributive operator is not an intervener in the sense of Heim (2000). Second, we can argue that Kennedy's generalization is not correct, or finally that Stateva's (2000a) account of distributivity with plural superlative predicates cannot be maintained and that we need a new analysis.

The first possibility leads us to the question about the status of *D* as a potential intervener in the context of Kennedy's generalization. Such interveners are necessarily scope bearing elements although not all scope bearing elements are interveners. For example, intensional verbs are shown in Heim (2000) to allow movement of DegP across them. We discussed the quantificational properties of *D* in the preceding subsection and concluded that it is a scope bearing element. But in order to check whether it blocks DegP movement we will modify Heim's data from (32) so that it involves a plural instead of a universal quantifier. Following her strategy, we will construct the possible LFs representing different scopal configurations and then we will compare the truth conditions derived from these LFs with the readings attested independently by speakers' intuition. (40) is the relevant sentence if it is understood in its most natural distributive reading.

(40) Scott and Bill are less tall than 180cm.

If the distributive operator is scoped above the comparative DegP in the LF of (40), we get the configuration in (41a) and the resulting truth conditions in (41b):

(41) a. [IP [DP Scott and Bill] ^{D}[1[[DegP er than 180cm] [2[t_1 is t_2 tall]]]]]
b. $\forall x[x \in$ Scott$\oplus$Bill $\rightarrow$ max(λd.*tall*(d)(x)) < 180cm]

For (40) to be true, (41b) requires that each member of the group containing Scott and Bill be shorter than 180cm. The alternative scope relations between DegP and *D* lead to the LF in (42a) and consequently to the counterintuitive truth conditions given in (42b) which require that the shorter one of Scott and Bill is shorter than 180cm:

(42) a. [IP [DegP er than 180cm][2[[DP Scott and Bill] ^{D}[1 [t_1 is t_2 tall]]]]]
b. max(λd.$\forall$x [x$\in$Scott$\oplus$Bill $\rightarrow \lambda$d.*tall*(d)(x)]) <180cm

If we assume that *D* is an intervener we have an available explanation to the question why the second reading is not attested: the constraint behind Kennedy's generalization rules out the LF in (42a). If we do not make that assumption, the unavailability of that reading is a mystery.
We conclude then that the option of claiming that *D* is not an intervener is not tenable and that the problem for Stateva (2000a) remains unsolved. We also cannot easily pursue the option of arguing against Kennedy's generalization since we will lose the explanation of the data on which it is based and since no feasible alternative explanation for them is available at this point. What remains then is the possibility of giving a new analysis of distributive readings of superlatives. That we will do in *Section 3*.

2.3. Theory dependence

Stateva's (2000a) solution to the problem that (4) raises suffers also from being dependent on the core assumptions of the quantificational theory of superlatives. That solution relies on the superlative quantifier movement and on establishing a particular scopal configuration with the distributive quantifier. However, as we already pointed out, there is an ongoing debate about the quantificational status of degree words, and of the superlative morpheme in particular (cf. Kennedy (1999), Heim (2000), Hackl (2000), Sharvit and Stateva (2002), Stateva (2002)). It may well turn out that the quantificational theory in which Stateva's (2000) proposal is couched is the preferable one. However, in the lack of conclusive evidence that this is so it is desirable that the analysis of distributivity in the context of superlatives is neutral with respect to the quantificational force of superlatives.
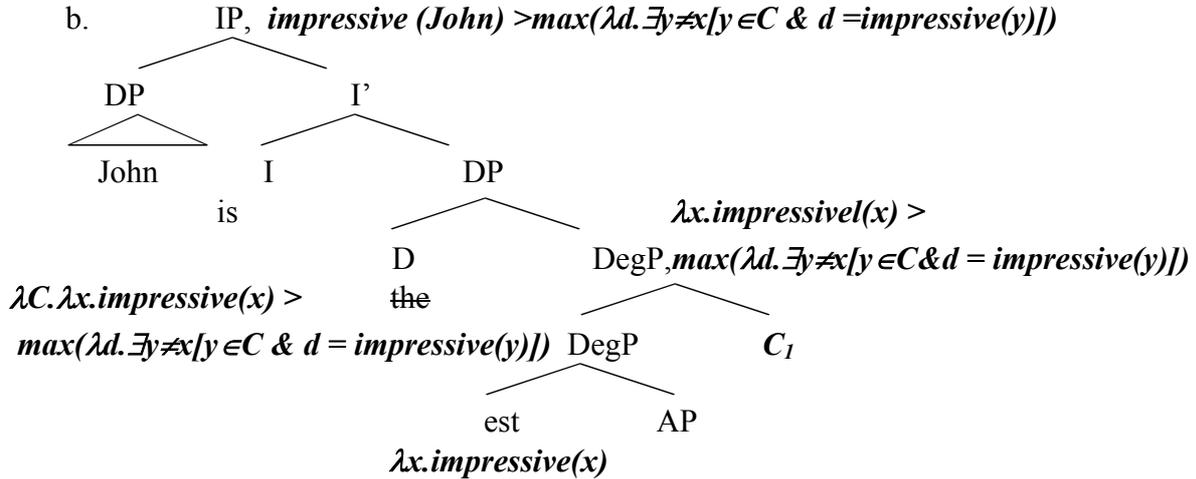In the remainder of the section we will illustrate the claim that Stateva (2000a) cannot be translated into the alternative theory. The non-quantificational alternative to Heim (2000) is an extention of Kennedy's (1999) theory of comparatives in which he views gradable predicates as measure functions: a measure function maps an individual to a degree from a contextually specified scale (see Farkas and Kiss (2000)). This means that *tall, sharp, fat*, etc. are now functions from individuals to degrees. -*Est/least* provides the relation greater than/ smaller than that holds between a reference and a standard value. Applying a measure function to the referent of the superlative description gives the reference value. Choosing the maximal value from the sequence of applications of the measure function to the individuals compared to the referent of the superlative gives the standard value. Note in passing that the monotonicity principle that was assumed in the quantificational framework is incompatible with the idea of measure functions. With this in mind consider the lexical entries for the superlative degree words in (43):

(43) a.[[est]]:= λG:G$\in$D$_{<e,d>}$.[λC:C$\in$D$_{<e,t>}$.[λx:x$\in$D.[G(x) > max(λd.$\exists$y$\neq$x[y$\in$C & d = G(y)])]]]]

b.[[least]]:=λG:G∈D$_{<e,d>}$.[λC:C∈D$_{<e,t>}$.[λx:x∈D.[G(x) < max(λd.∀y≠x [y∈C& d=G(y)])]]]]

Example (44) illustrates the workings of the non-quantificational theory of superlatives. We see that the truth conditions derived for (44a) are logically equivalent to the ones derived for the same sentence in (11b) within the quantificational theory.

(44) a. John is the most impressive.
b.

IP, *impressive (John) >max(λd.∃y≠x[y∈C & d =impressive(y)])*

DP

I'

John

I
is

DP

λx.impressivel(x) >

D
the

DegP,*max(λd.∃y≠x[y∈C&d = impressive(y)])*

λC.λx.impressive(x) >

max(λd.∃y≠x[y∈C & d = impressive(y)])

DegP

C_1

est

AP

λx.impressive(x)

Looking again at (4) we observe that the problem for deriving its adequate truth conditions is replicated in the non-quantificational theory, too. Within that theory *be the highest summit* is of the appropriate semantic type, <e,t>, for the distributive operator to apply to it. In fact, this, and DegP are the only nodes of that type but if *D* is attached to any of them we run again into a problem of predicting (4) to be trivial contrary to fact. It is easy to see that the solution in Stateva (2000) cannot be reworked within the assumptions of the alternative theory of superlatives. The problem cannot be attributed to the scope relations between D and *–est* if *–est* is assumed to have insignificant scope.

3. Proposal: new presupposition conditions for *–est/least*

We conclude from the discussion of the shortcomings of Stateva's (2000a) analysis of distributive readings in plural superlatives that a new solution to the problem is needed. The proposal we advance in this paper is intended to be theory neutral and to avoid the disadvantages that the previous account faces. We propose that the comparison set in superlative constructions include only those individuals that are different from the external argument of *–est/least*, or its subparts, if they are contextually salient elements of comparison. For example, (45) can be uttered in different contexts, say c_1, c_2, c_3 and in each the comparison set will have different values since different individuals will be relevant for comparison. However, in all of these cases the comparison class will be constructed in a way which excludes the subparts of the group individual Olga⊕Larissa which is the external argument of *–est* in (45):

(45) a.Olga and Larissa are the tallest.
b. c_1: We are comparing the girls in a school by height.
C(c_1) = {x: x is a girl & x ≠ Olga & x ≠ Larissa}
c. c_2: We are comparing the second-graders in a school by height.
C(c_2) = {x:x is a second-grader and x ≠ Olga & x ≠ Larissa}
d. c_3: We are comparing the second-grade girls in a school by height.

$$C(c_3) = \{x : x \text{ is a second-grade girl and } x \neq \text{Olga \& } x \neq \text{Larissa}\}$$

The examples above do not seem to follow strictly the proposed rule for constructing the comparison class. Should we have done that (45b), for example, would rather have the shape in (46):

(46) $C(c_1) = \{x: x \text{ is a girl \& } x \neq \text{Olga} \oplus \text{Larissa \& } x \neq \text{Olga \& } x \neq \text{Larissa}\}$

(46) has the same effect on the truth conditions as the comparison set in (45b). However, (45b) is the more plausible formulation of this comparison class. Since the value of the comparison class is (at least partially) furnished on pragmatic grounds, on uttering (45a), one will conclude that only singularities are relevant for comparison and any group, even the one that happens to be the external argument of *–est/least* will simply not make it in the comparison class by the relevance criterion. But the strategy of constructing the comparison class and especially excluding the subparts of a group individual from the comparison class need more discussion which we will postpone until the end of the section when we will see how the proposal handles our target data.

　　In essence, the proposal goes against what Heim (1999) formulates as a definedness condition in superlative constructions. Recall that she identifies two presupposition conditions of *–est/least*: (i) that the external argument of *–est/least* is a member of the comparison class, and (ii) that every member of the comparison class is an a relation with some degree(s) from the scale that the scalar predicate introduces. We certainly share Heim's intuition in (ii). But since we now define the comparison class in a way different from Heim (1999), we have to say that on top of (ii) *–est/least* carries a presupposition that its external argument is also in a relation with some degree(s) from the scale introduced by the scalar predicate. Contra Heim, we believe that whether the external argument of *–est/least* should or should not be a member of the comparison class is an empirical question rather than a presupposition. We argue that distributive readings of plural superlatives provide an argument against including the external argument in the comparison class. But we go even further. Not only do we believe that this is not a presupposition associated with the superlative degree morpheme, but that this is not even asserted information. The comparative construction with a universal quantifier in the *than*-clause also gives some support for our claim. (47) has an equivalent interpretation to that of (45a).

(47) Olga and Larissa are taller than everyone **else**.

Note that the exception clause realized by the anaphor *else* is obligatory in the interpretation, just like it is obligatory, according to our proposal, to exclude Olga and Larissa from the comparison class of (45).[11]

　　Our proposal requires new lexical entries for the superlative degree words, as in (48), in which the presupposition conditions will be defined in a way different from (8).

(48) a. $[[est]] := \lambda C: C \in D_{<e,t>} . [\lambda R: R \in D_{<d,et>} . \lambda x: \underline{\exists d[R(d)(x) = 1] \ \& \ \forall y[y \in C \rightarrow}$
$\underline{\exists d_1[R(d_1)(y) = 1]]} . [max(\lambda d.R(d)(x)) > max(\lambda d.\exists y[y \in C \ \& \ R(d)(y)])]]$

　b. $[[least]] := \lambda C: C \in D_{<e,t>} . [\lambda R: R \in D_{<d,et>} . \lambda x: \underline{\exists d[R(d)(x) = 1 \ \& \ \forall y[y \in C \rightarrow}$
$\underline{\exists d_1[R(d_1)(y) = 1]]} . [max(\lambda d.R(d)(x)) < max(\lambda d.\exists y[y \in C \& R(d)(y)])]]$

We are now ready to go back to the data we started with and see the benefit of the proposal we are advancing. We repeat below (16), the LF of (4) in which the property of being the highest summit (compared to the non-mentioned relevant summits) is distributed down to Mt Everest and K2:

(16) $[[\text{MtEverest}\oplus\text{K2}][^D[1[t_1 \text{ (be) (the) [-est [high summit]]]]]]]$

The truth conditions derived from this LF are such that (4) is not predicted to be trivially false due to the "new" value for *C*. That value does not lead to the requirement that MtEverest and K2 are higher than each other:

(49) a. $[[\text{Mount Everest and K2 are the highest summits}]] = 1$ iff
$\forall x[x \in \text{MtEverest}\oplus\text{K2} \rightarrow \max(\lambda d.\text{high}(d)(x) \ \& \ \text{summit}(x)) > \max(\lambda d.\exists y[y \in C \ \&$
$\text{high}(d)(y) \ \& \ \text{summit}(y)])]$
  b. $C = \{x: x \text{ is a summit} \ \& \ x \neq \text{Mt Everest} \ \& \ x \neq \text{K2}\}$

The outcome is as desired. The derived interpretation is now equivalent to the one we stated in the first section as reflecting the speakers' intuition. Recall also that we observed that the distributive reading of (4) has a peculiarity that it cannot be unfolded as a conjunction of two propositions with the same predicate. Now we can see why this is so. The interpretation of every superlative sentence carries covertly represented information about the domain of comparison. But since we now concluded that the covert restriction on the domain of the superlative operator excludes the referent(s) of the superlative description it follows that (4) cannot be expected to be equivalent on its distributive reading to (50):

(50) Mt Everest is the highest summit and K2 is the highest summit.

(50) asserts (i) that Mt Everest is the highest summit compared to the every summit in a set excluding MtEverest, and (ii) that K2 is the highest summit in a set excluding K2. There are two superlative operators and consequently two sets of comparison in (50). (4), on the other hand, has one superlative operator and one set of comparison which excludes both Mt Everest and K2. (4) can still be represented as a conjunction of two propositions with the same predicate but the restriction on the domain of comparison will be just one unlike the case in (50). (51) is that conjunction:

(51)   Mt Everest is the highest summit compared to the summits different from it and K2, and K2 is the highest summit compared to the summits different from it and K2.

With this in mind, we can conclude that the superlative predicates do not constitute an exception in the manner of representing distributive readings.

Let us now make sure that the problems on which Stateva's (2000a) analysis stumbled are now avoided. We derived the truth conditions of (4) using the quantificational semantics of Heim (2000). And again this assumption leads to a possible objection that the sentence in question in unambiguous, i.e. we would expect the distributive operator and the superlative quantifier to interact scopally and their interaction to result in ambiguity. However, with the new analysis, (4) is predicted to be unambiguous in line with the facts. We derived the available reading by using the LF in (16) in which the *D*-operator has wider scope. The alternative LF, (22), as we argued previously, is illegitimate since it instantiates the scopal configuration that falls under Kennedy's generalization.

(22) $[[\text{MtEverest}\oplus\text{K2}] [(\text{be}) \ \text{~~the~~} [_{AP2} \text{est}+C [1 [^D[_{AP1} t_1 \text{ high} [_{NP} \text{summit}]]]]]]]]$

Of course, one might question the claim that (22) is the only possible LF in which *–est* takes scope over *D*. However, the other imaginable LFs representing this scopal order that do not lead to problems of interpretability are all illegitimate or inappropriate. *D*'s attachment site

cannot be higher than AP_1 since D will intervene between *–est* and its trace. On the other hand, D cannot be attached lower than AP because the only node to which it can attach and be interpreted is the NP node but such a LF leads to counterintuitive truth conditions: for (4) to be true it has to be the case that MtEverest and K2 are each summits but their joint height is greater than the height of the rest of the summits.

This leads us to address the second objection against the earlier account. That account relied on deriving the truth conditions of (4) via a LF that did not fit Kennedy's generalization. Our proposal obviously avoids that problem since the interpretation of (4) can now be based on (16).

Finally, it is important to realize that our proposal which makes use of the definedness conditions in superlatives does not depend on the choice of superlative theory. Unlike the previous account, the solution is general enough to allow us to derive adequate truth conditions for (4) under the competing non-quantificational theory. We only need to define the presupposition conditions of *–est/least* as in (52) in order to interpret compositionally plural superlatives within that framework:

(52) a. $[[est]] := \lambda G : G \in D_{<e,d>}.[\lambda C : C \in D_{<e,t>}.[\lambda x : \underline{\exists d_1[G(x) = d_1] \,\&\, \forall y[y \in C \to \exists d_2[G(y) = (d_2)]]}.$
$[G(x) > max(\lambda d.\exists y[y \in C \,\&\, d = G(y)])]]]]$

   b. $[[least]] := \lambda G : G \in D_{<e,d>}.[\lambda C : C \in D_{<e,t>}.[\lambda x : \underline{\exists d_1[G(x) = d_1] \,\&\, \forall y[y \in C \to \exists d_2[G(y) = (d_2)]]}.$
$[G(x) < max(\lambda d.\forall y[y \in C \,\&\, d = G(y)])]]]]$

Since in this account of the distributive reading of plural superlatives we rely on a LF like (16) in which we interpret every terminal node of the superlative description in situ the choice of assumptions about the semantics of the superlative becomes insignificant. If we use the lexical entries in (52) along with the assumption that the external argument of *–est/least* is not a member of the comparison class, we derive from (16) truth conditions for (4) which are equivalent to those we derived earlier within the framework of the quantificational theory:

(53) a. $[[\text{Mount Everest and K2 are the highest summits}]] = 1$ iff
$\forall x[x \in \text{MtEverest} \oplus \text{K2} \to \text{high-summit}(x) > max(\lambda d.\exists y[y \in C \,\&\, d = \text{high-summit}(y)])]$
   b. $C = \{x: x \text{ is a summit } \& x \neq \text{Mt Everest} \& x \neq \text{K2}\}$

We now want to go back to the formulation of the proposal and briefly discuss the strategy of constructing the comparison class. In the initial formulation we proposed that the comparison set in superlative constructions include only those individuals that are different from the external argument of *–est/least*, or its subparts, if they are contextually salient elements of comparison. In the key example we are discussing we need to exclude from consideration in the comparison class MtEverest and K2 which are subparts of the group individual MtEverest$\oplus$K2. We therefore stipulated that subparts of the external argument should also be excluded from the comparison class. Under closer consideration, it turns out that we do not need to make this stipulation. The semantic calculation of our basic example shows that if the superlative operator does not take scope above the distributive operator through movement out of the superlative description, then only singularities or atomic elements can become external arguments of *–est/least*.[12] In other words, the relevant subparts of the group end up being the external argument of *–est/least*. Let us look once again at the way we derive the truth conditions for (4) under our proposal.

(54) $[[\text{Mt Everest and K2 are the highest summits}]] = 1$ iff
$D(\lambda y.[[est]](C)([[\text{high summit}]])(y))(\text{MtEverest} \oplus \text{K2}) = 1$ iff
$\forall x[x \in \text{MtEverest} \oplus \text{K2} \to [[est]](C)([[\text{high summit}]])(x)]$
$C = \{y : y \text{ is a relevant mountain } \& y \neq \forall z \,[\,[[est]](C)(R)(z) = 1]\}$

The third line of (54) shows that the external arguments of –*est* is not the group individual *MtEverest⊕K2*. Each of the subparts to which the property of being the highest summit (compared to the rest) is distributed is becoming recursively the external argument of –*est*. As far as we can see, in the formulation of the rule about constructing the comparison class we can dispense with the clause referring to the relevant subparts of the group individual. That rule should then be formulated as (55):

(55)   The comparison set in superlative constructions include only those individuals that are different from the external argument of –*est/least*, if they are contextually salient elements of comparison.

4. Implications of the proposal
4.1. An argument against movement theories of superlatives

Our argument from plural superlatives against including the referent of the superlative description in the comparison class carries an implication against movement theories of superlatives (essentially Heim (1999, 2000)). The movement theory of superlatives is a variant of the standard theory we already discussed. The most prominent feature of the theory is in its ambition to relate a particular pattern of ambiguity to structural differences. We will illustrate the two readings with (56).

(56) a. John climbed the highest mountain.

That example, and most sentences containing superlatives are systematically ambiguous between what Szabolcsi (1986) called a comparative reading and an absolute reading (cf, Ross (1964), Heim (1999), Farkas and Kiss (2000), Sharvit and Stateva (2002)). The comparative reading of (56) becomes prominent in contexts in which there are necessarily other mountain climbers in addition to John and the mountain climbed by John is the highest among the mountains climbed even if it happens to be a very low mountain otherwise. On the other hand, on its absolute reading (56) does not require that there be other climbers apart from John. It can be uttered as an assertion that John climbed the highest of a group of relevant mountains while the rest of the mountains might well remain unclimbed in that context. Heim (1999) proposes two strategies of deriving this ambiguity: a purely pragmatic one and one in which the two interpretations are syntactically determined. The first one is known as the *in situ* theory. The absolute and the comparative readings are derived from the same LF, as in (57).

(57) a. John climbed [the [[est+C][high mountain]]]

The differences by the two readings come from the different individuals that find their way into the comparison set, as (58b) and (58c) show:

(58) a. John climbed [[the]] $(\lambda x.[\max(\lambda d.high(d)(x)$ & $mountain(x)) > \max(\lambda d.\exists y \neq x[y \in C$ & $high(d)(x)$ & $mountain(x)])])$
    b. $C_1 = \{x:$ x is a (relevant) mountain$\}$ *absolute reading*
    c. $C_2 = \{x:$ There is a y such that y is a (relevant) person & y has climbed x and x is a mountain$\}$ *comparative reading*

The value of *C* is regulated in this case by purely pragmatic factors. The alternative to the *in situ* theory, the movement theory, uses a syntactic strategy to define the value of *C*, thus

predicting the systematic ambiguity in superlative sentences. Let us elaborate on the basis of (56). The superlative morpheme and its restriction *C* with which it forms a syntactic constituent can in principle be interpreted in its base position as a sister of the relation *λd.λx.high(d)(x) & mountain(x)* or in a syntactically higher position as a sister of the relation *λd.λy.∃x[climb(x)(y) & high(d)(x) & mountain(x)]*. If *–est* is interpreted in its base position, the referent of its external argument happens to be a mountain. But if *–est* is interpreted in the higher position, the referent of its external argument is John. Since in the standard theory it is claimed that there is a presupposition that the external argument of *–est/least* is a member of the comparison class, we have a very natural way of defining the other elements that enter the comparison class for each reading. In the lower reading, the members of the comparison class have to be mountains, like the mountain climbed by John, while in the higher reading the members of the comparison class have to be climbers like John. These two possibilities correspond, in fact, to the absolute and the comparative reading, as (59) and (60) illustrate:

(59) a. John climbed [the [[est+C][high mountain]]]   *absolute reading*
    b.C = {x: x is a (relevant) mountain}   *derived as in the in situ theory*
(60) a. John [est+C] [1 [2 [t$_2$ climbed ~~the~~ [t$_1$- high mountain]]]] *comparative reading*
    b. max(λd.∃x[high(d)(x) & mountain(x) & climbed(John)(x)]) >
       max(λd.∃z∃y≠John[y∈C & high(d)(z) & mountain(z) & climbed(z)(y)])
    c. C$_2$ = {x: x is a relevant person who climbed a mountain}

The comparative reading derived by syntactic movement of the *–est* operator above the predicate *climb a high mountain* is equivalent (in the relevant respects) to that derived without movement within the *in situ* theory.[13]

The most important advantage of the movement theory is that syntactic movement of the superlative operator forces it to change its external argument and therefore predicts a different value for the comparison class. In other words, the ambiguity in superlatives is expected within this approach.

Let us now evaluate the movement theory from the point of view of the idea we advance in this paper that the external argument of *–est/least* should not be a member of the comparison class. If that individual is not in *C* to define the description value of the members of *C*, then the value of *C* must be decided on pragmatic grounds, as far as we can see. In other words, nothing will force us to derive comparative readings by movement unless we do it to derive a reading that could not otherwise de derived in situ. It seems then that if our proposal is on the right track, the conceptual grounds for having a movement strategy will largely disappear.
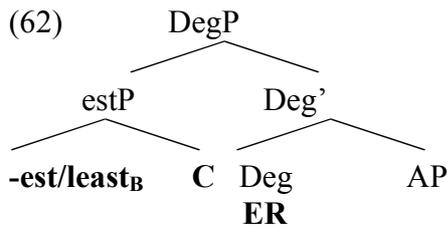
4.2. Support for "Superlative More"

Capitalizing on cross-linguistic variation and some peculiarities of superlatives like their syntactic incompatibility with measure phrases, and with the adjectival anaphor *so*, Stateva (2003) advances a novel non-quantificational theory of superlatives. Our proposal regarding the membership of the external argument of the degree morpheme shows that in this respect Stateva (2003) is not different from what alternative theories will have to assume anyway in order to handle plural superlative interpretation. Stateva (2003) assumes without argument that the comparison class excludes the external argument of the degree head of the superlative construction. The proposal of this paper therefore gives empirical support for the assumption necessary for the execution of Stateva's (2003) theory.

Data like (61) give some of the empirical basis for this theory.

(61) Jānis   uzkāpa   visaugstākajā   kalnā   (Latvian)

John	climbed	most-high-er-the	mountain

'John climbed the highest mountain.'

The superlative construction in Latvian, as well as in Old Bulgarian, Russian, Serbo-Croatian, and perhaps other languages too, requires both the superlative and the comparative degree morphology. It is not possible to omit the comparative morpheme in superlative constructions in any of these languages. Stateva (2003) makes two other important observations: (i) that the comparative and the superlative constructions use the same comparison relation *greater/smaller than* and (ii) that universally, the superlative construction disallows an overt *than*-clause in contrast to the comparative. The proposal that she advances to account for these facts is in a nutshell the following. The superlative construction is a variety of the comparative construction and as such the degree head of the superlative description is the comparative morpheme which expresses the comparative relation. Languages of the Latvian/Slavic type use the same comparative degree word in superlatives as the one they use in comparative constructions while languages of the English type use a phonologically null counterpart of their respective comparative morphemes. The role of the superlative morpheme is to provide, along with the comparative class, a standard of comparison. In other words, together they function as a *than*-clause in this special comparative construction. This explains the lack of a *than*-clause in superlatives. The proposed syntactic structure of superlatives is illustrated in (62):

(62)
```
              DegP
            /      \
        estP        Deg'
       /    \      /     \
  -est/least_B  C  Deg    AP
                   ER
```

The semantic analysis is couched in terms of the non-quantificational approach to degrees of Kennedy (1999). We need two lexical entries for the head of the construction: one for the cases in which *ER* heads a positive superlative and another for the negative superlative constructions.

(63) a. $[[ER_1]]:= \lambda G:G \in D_{<e,d>}.[\lambda d:d \in D_d.[\lambda x: \underline{\exists d_1[G(x) = d_1]}. [G(x) > d]]]$

   b. $[[ER_2]]:= \lambda G:G \in D_{<e,d>}.[\lambda d:d \in D_d.[\lambda x: \underline{\exists d_1[G(x) = d_1]}. [G(x) < d]]]$

ER applies to an adjective denotation *G* first, then to a degree *d*, which is the standard value, and finally to an individual *x* to yield *True* just in case the reference value *G(x)* is greater than the standard value *d*.

   -Est/least is a sister of the variable that denotes the comparison set and together they supply the standard value. Notice that the comparison class must exclude the referent of the superlative description or what in the alternative theories of superlatives we identified as the external argument of the superlative degree word. *–Est/least* now have the lexical entry in (64). For better visibility, the presupposition condition that *–est/least* comes with is underlined.
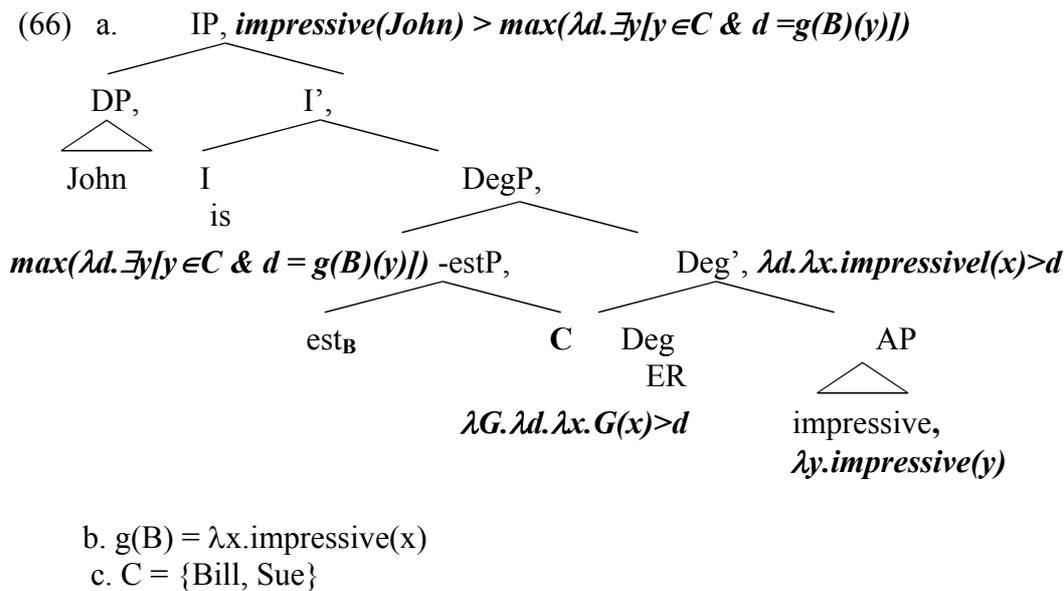
(64) $[[-est/least_B]]^g := \lambda C:C \in D_{<e,t>}.max(\lambda d:\underline{\forall z[z \in C \rightarrow \exists z[d = g(B)(y)]]}. \exists y[y \in C \& d = g(B)(y)])$

-Est/least applies to the denotation of the comparison set to yield a degree. That degree is the

maximum of the set of degrees *d* such that *d* corresponds to some individual from the comparison set on the scale associated with the relevant gradable adjective. But how do we know which is the relevant gradable adjective? The idea is that *-est/least* contains an anaphoric element, an index which corresponds to a variable of the type of gradable adjectives $\langle e,d \rangle$. Its value is contextually fixed. Consider again, for example, (65):

(65) John is most impressive.

Mentioning the gradable adjective *impressive* in the context of utterance of (65), makes the $\langle e,d \rangle$-function *λx.impressive(x)* appropriate as a value of the index of *most*. Let us illustrate the proposal with the sample calculation of the interpretation of (65):

(66) a. IP, *impressive(John) > max(λd.∃y[y∈C & d =g(B)(y)])*

       DP,   I',

     John   I   DegP,
             is

max(λd.∃y[y∈C & d = g(B)(y)]) -estP,   Deg', *λd.λx.impressivel(x)>d*

         est**B**   **C**   Deg   AP
                     ER

               λG.λd.λx.G(x)>d   impressive,
                             λy.impressive(y)

     b. g(B) = λx.impressive(x)
     c. C = {Bill, Sue}

      Let us summarize the section. We reviewed Stateva's (2003) suggestion to interpret the superlative construction as a special kind of the comparative construction. That theory independently needs to assume that the referent of the superlative description is not included in the comparison class associated with the degree morphology in order to account for the cross-linguistic variation in superlatives. We see Stateva's (2003) treatment of superlatives as further evidence that our proposal is on the right track.

5. An alternative for interpreting plural superlatives

Recall from the discussion of (4) in *Section 1.1* that the sentence cannot be unfolded as a conjunction of the propositions that MtEverest is the highest summit and K2 is the highest summit. We later provided an explanation of this 'peculiarity' of the distributive reading in superlatives. However, we also looked for alternative accounts that could factor out the problems imposed by the semantics of plurals on the semantics of comparison. Manfred Krifka (p.c.) suggests a way of 'merging' plurality and comparison in a generalized theory of comparison fashioned after a generalized theory of cumulativity. Suppose we assume that it is a part of the semantics of comparison that whenever we have a group individual as a term of comparison we have the following implication rule:

(67) $x \oplus x' > y \Rightarrow x > y$ & $x' > y$

Let us see what that would mean for the case with superlatives within the standard theory.

Recall the lexical entry for –*est*:

(68) [[est]]:=

(68) $[[est]]:= \lambda C: C \in D_{<e,t>}.[\lambda R: R \in D_{<d,et>}.\lambda x: x \in D \& x \in C \& \forall z[z \in C \rightarrow \exists d[R(d)(z)]].$
$[max(\lambda d.R(d)(x)) > max(\lambda d.\exists y \neq x[y \in C \& R(d)(y)])]]]$

To make the semantics of superlatives compatible with the principle in (67), we have to revise it as in (69):

(69) $[[est]]:= \lambda C: C \in D_{<e,t>}.[\lambda R: R \in D_{<d,et>}.\lambda x: x \in D \& x \in C \& \forall z[z \in C \rightarrow \exists d[R(d)(z)]].$
$[max(\lambda d.R(d)(x)) > max(\lambda d.\exists y \neq x[y \in C \& R(d)(y)]) \& \forall x[x = x'\oplus x'' \rightarrow$
$[max(\lambda d.R(d)(x')) > max(\lambda d.\exists y \neq x'[y \in C \& R(d)(y)]) \& [max(\lambda d.R(d)(x'')) >$
$max(\lambda d.\exists y \neq x''[y \in C \& R(d)(y)])]]]$

This revised lexical entry for –*est* allows us to interpret (4) without assuming the presence of any plurality operator in the LF that leads to the intuitive truth conditions. (4) will be in this way predicted to be true when the following conditions are satisfied: (i) the height of Mt Everest and K2 together must be greater than the height of any other relevant summit and (ii) the height of each of the subparts of the group MtEverest⊕ K2 must be greater than the height of any other relevant summit. In essence this approach blurs the difference between collective and distributive readings in comparison constructions. This seems fine for the example we are discussing but is the source of trouble for true additive predicates. Suppose that we are considering the sentence in (70):

(70) John and Mary are the richest professors in our university.

Within this alternative approach, (70) will be predicted to be true only if John and Mary together are richer than any other professor in the university and if each of them is richer than the rest of the professors. But it is easy to find situations in which the second condition is not satisfied and yet the sentence describes such situations truthfully. These will essentially be situations that fit the collective reading of (70).

     The alternative approach has other undesirable consequences, too. Its biggest conceptual problem is that it treats the quantificational effects of plurality as part of the semantics of comparison. But for those who accept that distributivity is a property independent from comparison such a consequence will be unacceptable.

     We conclude then that the alternative that we briefly spelled out in this section is inferior to our original suggestion and therefore maintain that plural superlatives of the type in (4) are best described as we originally proposed by means of treating distributivity and comparison separated.

6. Conclusion

We focused the discussion in this paper around a problem arising with the distributive interpretation of plural superlatives. Considering different alternatives we showed that a satisfactory solution to the problem depends on a particular view on definedness conditions in superlatives. We proposed to preserve Heim's (1999) suggestion to translate speakers' intuition that every individual who enters the comparison relation R should have some degree of R into a presupposition condition. However, since we disagree with Heim (1999) on the content of the comparison class in superlatives, in essence, we disagree on the way in which the above presupposition condition should be formalized. We argued, from a theory neutral position, that the referent of the superlative description should not be a member of the

comparison class and therefore the presupposition conditions have to be specified in the appropriate way. A welcome outcome of our proposal is the unitary way of defining presupposition conditions in both domains of comparison: superlatives and comparatives.

The proposal makes predictions about the shape of the comparison set that can be tested empirically in further research. One direction to be taken, for example, is to consider superlative questions like (71).[14] There one would have to use some description containing a bound variable in order to specify the exception of the external argument of –*est* from the comparison class.

(71) Who is the tallest?

In order to test our proposal it will be important to learn whether positing bound variables in the exception clause of some comparison classes can be detected through standard syntactic tests.

*Acknowledgements

Endnotes

[1] We simplify matters by not mentioning exceptions involving *nonmaximality*. An example of nonmaximal interpretation of plural definite descriptions is given in (ii) which one could use to truthfully describe the situation in (i):
    (i)   There is a large group of boys who are building a raft but one or two are cleaning up from lunch.
    (ii)   The boys are building a raft.   (Brisson (1998))
For a detailed discussion of the issue the reader is referred to Brisson (1998) and references therein.
[2] Some readers might entertain the idea that (4) is better characterized by a cumulative reading. For this to be correct, we have to assume that *be* in (4) is relational and each member of the group Mount Everest and K2 stands in the identity relation with some individual which is a member of the group of the highest summits. Our objection is that this is not what the sentence is intended to mean, i.e. *be* in (4) is a function different from that in (i):
    (i)   a. The Morning Star is the Evening Star.
            b. Mark Twain is Samuel Clemens.

[3] We will show in *Section 2* that the problem we will discover with the interpretation of plural superlatives emerges with other theories of superlatives, too. In other words, our proposal in *Section 3* is not intended as an improvement of the standard theory but rather as a general, theory neutral solution.
[4] A degree d is bigger than a degree d' (d>d') iff d is higher on the relevant scale than d' is on that scale.
[5] Following a standard convention we will use the symbol $\oplus$ in the notation for group individuals.
[6] We will consistently assume throughout the paper that the definite article in the superlative construction in predicative position has no semantic contribution. This is a controversial assumption but we believe it has no impact on the argument we are building here. Therefore, for the sake of simplicity we choose to follow it. For a discussion on the possible deletion of the definite article in superlatives we refer the reader to Szabolcsi (1986), Heim (1999), Sharvit and Stateva (2002).
[7] We are simplifying matters again merely for ease of exposition. It is possible to distribute a predicate over non-singularities. Consider, for example (ii), due to Schwarzschild (1996), in the context (i):
    (i)   Two merchants have brought vegetables for sale and have placed them in a bunch of baskets. But in order to price them, the merchants have to weigh the vegetables. It turns out that the merchants have no appropriate scale: the gray one is too fine and can only measure a few vegetables at a time, while the black scale is too coarse and can only measure small truckloads.
    (ii)   The vegetables are too heavy for the gray scale and too light for the black scale.
By uttering (ii) the merchants imply that the properties of being too heavy for the gray scale and too light for the black scale are distributed down to small groups of vegetables (baskets). For discussion about such *intermediate readings* see also Fiengo and Lasnik (1973), Langendon (1978), Higginbotham (1981), Gillon (1987, 1990), Lasersohn (1989), Schwarzschild (1996)).
[8] The semantic type of the comparative operator is $<<d,t>, <<d,t>,t>>$. Its lexical entry is given in (i):
    (i) a. $[[er]] := \lambda P: P \in D_{<d,t>}.[\lambda R: R \in D_{<d,t>}.[max(\lambda d.P(d)) < max(\lambda d.R(d))]]$
       b. $[[less]] := \lambda P: P \in D_{<d,t>}.[\lambda R: R \in D_{<d,t>}.[max(\lambda d.P(d)) > max(\lambda d.R(d))]]$

The variables *P* and *R* in the formulae above stand for sets of degrees that make the *than*-clause, (iic), and the main clause, (iib), in a comparative sentence like (ii) true:

      (ii) a. John is taller than Bill is.

         b. λd.tall(d)(John)

         c. λd.tall(d)(Bill)

[9] For a detailed discussion of upstairs *de dicto* reading see also Sharvit and Stateva (2002).

[10] The reader will certainly be interested to find out whether split scope readings are accounted in the alternative theories mentioned in the text. If they are not, the standard theory which was shown to be able to handle such readings clearly has an advantage and more importantly we can assume without further discussion that the superlative operator has significant scopal properties. Split scope readings are not discussed in Farkas and Kiss (2000) and Stateva (2003). However, Sharvit and Stateva (2002) argue that *upstairs de dicto* readings do not come about as a result of scopal interactions between the intensional verb and the superlative operator and offer a pragmatic account of such readings. Sharvit and Stateva assume the lexical entry for *–est/least* from the standard theory but this is not a necessary assumption for them since the *–est/least* is not forced to undergo any quantifier movement. Stateva (2002), reanalyzes *upstairs de dicto* readings in the Sharvit and Stateva (2002) model on the basis of the non-quantificational semantics for *–est/least*. This comes to show that at best the argument from split scope readings is inconclusive with respect to the quantificational status of the superlative morpheme.

[11] There is a set of data which become important in light of our proposal to exclude the external argument of *–est/least* from the comparison class. Consider (i):

      (i) Out of Mary, Sue and Leah, Mary is the fastest.

One could argue that in cases like (i) we are dealing with an overt realization of the comparison class. If this is correct, then we clearly see that the comparison class includes Mary who happens to be the referent of the description *the fastest runner*. However, we believe that there is a viable alternative analysis of *out of*-phrases in superlatives that does not jeopardize our proposal. Notice first, that the phrase *out of Mary, Sue and Leah* is a structural adjunct that does not form a constituent with the superlative operator. So strictly speaking, it cannot be the restriction on the domain of *–est* although it can, in principle, serve as an antecedent to a variable, whose value restricts the domain of *–est*. Note also that the *out of*-phrase has a much less restricted structural distribution than its potential counterpart in the comparative construction, the *than*-clause.

      The idea we would pursue views the *out of*-phrase as establishing the frame of comparison or the context of comparison which includes all the terms that are compared: the one providing the standard value (in our terms this is the comparison class) and the ones providing the reference value (the referent of the superlative description). The corresponding examples with comparatives supports this view. Consider (ii):

      (ii) Out of Mary and Sue, Mary is faster.

Comparatives can also use such a 'large' frame of comparison, although the comparison class clearly excludes the individual providing the reference value.

[12] The superlative operator should never be able to move across the *D*-operator since in the quantificational theory that will violate the condition on well-formedness of LF and in the non-quantificational theory such movement will technically be impossible because *–est/least* cannot be subject to quantifier movement.

[13] For contexts that differentiate between the predictions of the in situ and the movement theory see Heim (1999) and Sharvit and Stateva (2002).

[14] The suggestion is due to Uli Sauerland.

References

Beck, Sigrid. 1997. On the semantics of comparative conditionals. *Linguistics and Philosophy* 20: 229-271.

Bhatt, Rajesh. 1999. *Covert modality in non-finite contexts*. Doctoral dissertation, University of Pennsylvania, Philadelphia.

Brisson, Christine. 1998. *Distributivity, maximality and floating quantifiers*. Doctoral dissertation, Rutgers University, New Brinswick.

Cresswell, M. 1976. The semantics of degree. In *Montague grammar*, ed. Barbara Partee, 261-292. New York: Academic Press.

Farkas, Donka F., and Katalin E. Kiss. 2000. On the comparative and absolute readings of superlatives. *Natural Language and Linguistic Theory* 18: 415-455.

Fiengo, Robert, and Howard Lasnik. 1973. The logical structure of reciprocal sentences in English. *Foundations of Language* 9: 447-468. [Reprinted in Essays on anaphora, Howard Lasnik, 37-57. Dordrecht: Kluwer, 1989]

von Fintel, Kai. 1994. *Restrictions on quantifier domains.* , University of Massachusetts, Amherst.

Gillon, Brendan, S. 1987. The readings of plural noun phrases in English. *Linguistics and Philosophy* 10: 199-219.

Gillon, Brendan S. 1990. Plural noun phrases and their readings: A reply to Lasersohn. *Linguistics and Philosophy* 13: 477-485.

Hackl, Martin. 2000. *Comparative quantifiers*. PhD thesis, MIT, Cambridge, Mass.

Heim, Irene. 1985. *Notes on comparatives and related matters.* Ms., University of Texas, Austin.

Heim, Irene. 1998. *Negative decomposition and comparatives.* Ms., University of Connecticut colloquium.

Heim, Irene. 1999. *Notes on superlatives.* Ms., MIT, Cambridge.

Heim, Irene. 2000. Degree operators and scope. In *Proceedings of the Semantics and Linguistic Theory* 10, ed. Brandon Jackson and T. Metthews. CLC Publications, Cornell University, Ithaca.

Hellan, Lars. 1984. Notes on some issues raised by von Stechow. *Journal of semantics* 3: 83-92.

Higginbotham, James. 1981. Reciprocal interpretation. *Journal of Linguistic Research* 1: 97-117.

Hoeksema, Jacob. 1983. Negative polarity and comparative. *Natural Language and Linguistic Theory* 1: 403-434.

Kennedy, Christopher. 1999. *Projecting the adjective: The syntax and semantics of gradability and comparison*. New York: Garland. (Ph.D. dissertation, University of California, Santa Cruz, 1997)

Landman, F. 1989a. Groups, I. *Linguistics and Philosophy* 12: 559-6-5.

Landman, F. 1989b. Groups,II. *Linguistics and Philosophy* 12: 723-744.

Langendoen, Terence D. 1978. The logic of Reciprocity. *Linguistic Inquiry* 9: 177-197.

Lasersohn, Peter. 1989. On the readings of plural noun phrases. *Linguistic Inquiry* 20: 130-134.

Lasersohn, Peter. 1990. *A semantics for groups and events*. New York: Garland Publishing.

Lerner, Jan, and Manfred Pinkal. 1995. Comparative ellipsis and variable binding. In *Proceedings of SALT V*, 222-236, Ithaca.

Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice theoretical approach. In *Meaning, use, and interpretation of language*, ed. Rainer Bauerle et al., 302-323. Berlin: Walter de Gruyter.

Lønning, Jan Tore. 1987. Collective readings in definite and indefinite noun phrases. In *Generalized quantifiers*, ed. Gardenfors. Dordrecht: Reidel.

Ross, John Robert. 1964. *A partial grammar of English superlatives*. MA, University of Pennsilvania, Philadelphia.

Rullmann, Hotze. 1995. *Maximality in the semantics of wh-constructions*. Doctoral dissertation, University of Massachusetts, Amherst.

Scha, R. 1984. Distributive, collective and cumulative quantification. In *Formal methods in the study of language*, ed. Gronendijk et al., 131-158. Amsterdam: Mathematisch Centrum.

Schein, Barry. 1986. *Event logic and the interpretation of plurals*. Doctoral dissertation, MIT, Cambridge, Mass.

Schwarzschild, Roger. 1996. *Pluralities*. Dordrecht: Kluwer Academic Publishers.

Schwarzschild, Roger, and Karina Wilkinson. 2002. Quantifiers in comparatives: A semantics of degree based on intervals. *Natural Language Semantics* 10: 1-41.

Seuren, Peter A.M. 1973. The comparative. In *Generative grammar in Europe*, ed. F. Kiefer

and N.Ruwet. Dordrecht: Riedel.

Sharvit, Yael, and Penka Stateva. 2002. Superlative expressions, context and focus. *Linguistics and Philosophy* 25: 453-505.

Stateva, Penka. 2000a. Towards a superior theory of superlatives. In *Proceedings of the eighth conference of the Student Organisation of Linguistics in Europe* 8, ed. Christine Czinglar et al., 313-326. SOLE, Leiden.

Stateva, Penka. 2000b. In defense of the movement theory of superlatives. In *Proceedings of the Eastern States Conference on Linguistics 1999*, ed. Rebecca Daly and Anastasia Riehl, 215-226. CLC Publications, Cornell University, Ithaca, NY.

Stateva, Penka. 2002. *How different are different degree constructions?* Doctoral dissertation, University of Connecticut, Storrs.

Stateva, Penka. 2003. Superlative *More*. In *Semantics and Linguistic Theory 13*. CLC Publications, Cornell University, Ithaca.

von Stechow, Arnim. 1984. Comparing semantic theories of comparison. *Journal of semantics* 3: 1-77.

Szabolcsi, Anna. 1986. Comparative superlatives. In *MIT Working Papers in Linguistics* 8, ed. Naoki Fukui et al., 245-265. MIT Press, Cambridge.