The Superlative Clause Hypothesis

Isabelle Charnavel

1. Introduction

The overarching goal of this paper is to argue that comparative clauses have superlative counterparts: just like comparative morphemes (e.g. English *-er*), superlative morphemes (e.g. English *-est*) can be complemented by a degree clause denoting the standard of comparison as illustrated in (1).

(1) a. a long**er** book [than Tolstoy wrote (in 1867)]
b. the long**est** book [that Tolstoy (ever) wrote]

Glossing over differences in analyses (see Beck 2019, Lechner 2020, i.a., for reviews), the comparative *than*-clause in (1)a basically denotes the maximal degree of length of the book to be compared, namely the maximal number of pages of the book written by Tolstoy (in 1867). Similarly, the hypothesis to be defended in this paper treats the *that*-clause in (1)b as denoting the set of maximal degrees of length of the books to be compared, namely the set of maximal numbers of pages of the books written by Tolstoy. While the domain of comparison for superlatives is commonly assumed to be implicitly determined by context and focus (see Heim 1999, i.a.) or overtly expressed as a set of individuals (projected as an NP or a partitive construction such as *of all books*), I thus here hypothesize that it can be syntactically represented as a degree clause.

To my knowledge, this hypothesis has only been proposed twice to account for very limited cases. Howard (2014) adopts it to explain the fact exemplified in (2)a that NPIs can be licensed in clauses modifying superlatives under a relative reading. Romero (2013) (cf. Loccioni 2019) posits (elided) superlative clauses to derive modal superlative readings illustrated in (2)b.

(2) a. Mary sang the loud**est** [(that) anyone in the group has ever sung]. (Howard 2014)
b. John bought the largest possible [~~for him to buy~~] present. (Romero 2013)

The general hypothesis this work contributes to testing is that superlative clauses (partially or fully elided) are in fact as pervasive as comparative clauses. This hypothesis promises to bring closer together the syntax and semantics of comparative and superlative constructions.

In this short paper, I will restrict myself to show that this hypothesis can provide a novel solution to two empirical puzzles that remain debated in the literature. The first one is the puzzle raised by the twofold interpretation of so-called *intensional superlatives* (Bhatt & Sharvit 2005) exemplified in (3)a. I will summarize my proposal in section 2 (a longer version can be found in Charnavel 2022). The second puzzle, which will be the main focus here and developed in section 3, is the puzzle raised by so-called *upstairs de dicto readings* (Sharvit & Stateva 2002) illustrated in (3)b.

(3) a. The longest book that John said that Tolstoy had written (Bhatt 2002)
b. John wants to climb the highest mountain. (Heim 1999)

The main upshot is that the superlative clause hypothesis can compositionally derive the split scope between the superlative morpheme and the gradable adjective involved in both of these readings.

* Isabelle Charnavel, Université de Genève. For helpful feedback, thank you to the audiences of SuB26 and WCCFL 40. Note that this paper primarily concentrates on a part of my work that I did not have time to present in the talk (section 3). The main content of the talk itself (section 2) is detailed in Charnavel (2022).

 Proceedings of the 40th West Coast Conference on Formal Linguistics, ed. Jiayi Lu et al., 42-51. Somerville, MA: Cascadilla Proceedings Project.

2. Intensional superlatives

Intensional superlatives (i.e. superlatives modifying the head of a relative clause containing an intensional predicate such as *say* or *think*) are claimed to exhibit two main readings illustrated in (4).

(4) The longest book that John said that Tolstoy had written (Bhatt 2002)
a. longest according to the speaker (high reading)
b. longest according to John (low reading)

Longest in (4) seems to be interpreted above *said* under the so-called high reading, and below *said* under the so-called low reading. This ambiguity leads Bhatt (2002) to argue that superlative adjectives can reconstruct into relative clauses, thus supporting the raising analysis of relative clauses.

But as we will see in section 2.1, the analysis of the low reading remains under debate because scoping the superlative morpheme inside the embedded clause raises several issues. Based on the superlative clause hypothesis, I will instead propose in section 2.2 that the low reading derives from split scope of the superlative morpheme *-est* (outside the clause) and the adjective *d-long* (inside it).

2.1. The gist of the debate: do superlatives reconstruct into relative clauses?

As summarized in Table 1, four main arguments have been discussed to decide whether the low reading can be analyzed as involving reconstruction of the superlative.

For reconstruction (Bhatt 2002, Bhatt & Sharvit 2005, Hulsey & Sauerland 2006, i.a.)	**Against reconstruction** (Heycock 2005, Sharvit 2007, Heycock 2019, i.a.)
Interpretation	Re-interpretation
NPI licensing	Re-NPI licensing
Re-intervention effects	**Intervention effects**
Other adjectival modifiers	Re-other adjectival modifiers

Table 1. Arguments for and against reconstruction of superlatives into relative clauses

The reconstruction hypothesis is first based on the observation that under the low reading in (4)b, it is John – not the speaker – that expresses an opinion about the book length. Bhatt concludes from this that *longest* raises from within the relative clause. But as detailed in Sharvit (2007), reconstructing the superlative over- or under- generates whatever lexical entry is adopted for *-est*. For example, under the lexical entry adopted by Bhatt (proposed by Heim 1999 to capture relative readings, see (19)b), it is unexpected that focusing *Tolstoy* in (4) does not trigger the same relative reading as in a matrix clause.

The second argument for reconstruction is based on NPI licensing: according to Bhatt (2002), the position of NPIs correlates with the type of reading available as shown in (5).

(5) a. The longest book that John said that Tolstoy had ever written (low reading)
b. The longest book that John ever said that Tolstoy had written (high reading)

Based on the assumption that NPI licensing displays locality effects, Bhatt (2002) claims that the reconstruction hypothesis derives this correlation. But as argued by Heycock (2005), *ever* does not require a clausemate NPI licensor as exemplified in (6)a (involving a complement clause to avoid any reconstruction possibility); even more problematically, the blocking effect triggered by a universal quantifier as in (6)b demonstrates that *longest* cannot reconstruct below *think* to license *ever*.

(6) a. This was the first indication that they thought she would ever succeed.
b. This is the longest book that everyone thinks John has (*ever) read.

Heycock (2005) therefore motivates an alternative hypothesis that does not rely on reconstruction, but on neg-raising, by using a third type of argument. Based on the observation that elements such as negations, adverbs or factives – which are known to disallow neg-raising – block the low reading as illustrated in (7), she hypothesizes that all and only neg-raising predicates support a low reading.

(7) #The longest book that John {did not say/mistakenly thought/knows} that Tolstoy has written

According to Heycock, this generalization supports the hypothesis that the low reading derives from (semantic) neg-raising in the negative entailment that she assumes superlatives generate (cf. Giannakidou 1997) as shown in (8).

(8) a. *Anna Karenina* is the longest book John thinks Tolstoy wrote.
b. ¬[John thinks Tolstoy wrote another book as long as *Anna Karenina*].
c. John thinks ¬[Tolstoy wrote another book as long as *Anna Karenina*].

But as argued by Bhatt & Sharvit (2005), the neg-raising account both under- and over-generates: the low reading arises with some non neg-raising predicates like *say* in (4) (therefore treated as an evidential by Heycock) or *hope* in (9)a; and conversely, no low reading arises with some neg-raising predicates like *be likely* or *should* as in (9)b.

(9) a. The longest book that John hopes he will have to read
b. #The longest book that it is likely that John read

Finally, the behavior of other modifiers than superlatives has been used as an argument for or against reconstruction. On the one hand, some (e.g. Hulsey & Sauerland 2006) take the availability of low readings with adjectives such as *wonderful* in (10)a to support the reconstruction hypothesis. On the other hand, others (e.g. Heycock 2005) consider that the specificities of the low reading with such adjectives – square quote intonation, availability of reading without embedded clause, absence of intervention effects as illustrated in (10)b – show that it is not derived in the same way as the low reading triggered by intensional superlatives.

(10) a. The wonderful book that Siouxsie said that Lydia had written
b. The expensive car that his wife didn't think he should buy

In sum, the reconstruction account faces crucial challenges: how to derive the interpretation of *-est* within the relative clause, intervention effects and the specificity of superlatives as compared to other modifiers. But the alternative neg-raising account faces issues of over- and under-generation.

2.2. The gist of the proposal: superlatives can take degree clauses

As detailed in Charnavel (2022), the superlative clause hypothesis, which entails split scope of the superlative morpheme and the adjective as schematized in (11), offers a novel solution to the debate.

(11) the long book -est [that John said that Tolstoy had written d-long book]

For reconstruction	**Against reconstruction**
Interpretation: due to split scope of *-est* (external) and *d-long* (internal)	
NPI licensing: due to the interpretation of the comparison set	
Intervention effects: due to degree relativization	
Specificity of superlatives vs. other adjectival modifiers: due to the availability of superlative clauses	

Table 2. Reconciling the arguments for and against reconstruction of superlatives into relatives

Under the superlative clause hypothesis presented in the introduction, the embedded clause in (4) (see (12)a) need not be a relative clause, but can also be construed as a superlative clause, i.e. as a degree clause complementing the superlative morpheme *-est* and denoting the domain of comparison. This hypothesis is supported by the parallelism between (12)a and the comparative counterpart (12)b.

(12) a. the longest book [that John said that Tolstoy had written]
b. a longer book [than John said that Tolstoy had written]

Given that such degree clauses involve abstraction over a degree variable, it follows that *d-long* must be interpreted within the embedded clause; and given that they complement the degree operators, it follows that *-est* can only be interpreted outside it. Such split scope, I argue, derives the low reading (the low scope of *d-long* entails that John must have expressed an opinion about the lengths of the books under comparison) without the complications raised by reconstruction (*-est* scopes high – thus incidentally entailing that John need not explicitly *compare* book lengths under the low reading, cf. Bhatt & Sharvit 2005 vs. Bhatt 2002). By contrast, the high reading, under which John need not have an opinion about book lengths, can be derived under a relative clause construal as previously assumed.

The superlative clause hypothesis thus straightforwardly derives the interpretation of intensional superlatives under the low reading, as well as their specificity as compared to non-superlative modifiers, which, by nature, cannot take superlative clauses. The third point of the debate, related to intervention effects, is also explained, since degree quantification is independently known to trigger intervention effects as illustrated in (13)a (degree question) and (13)b (amount question with low creation verb).

(13) a. *How intelligent did she wonder whether she was?
b. *How many books did Charles wonder whether Diana might write?

Finally, the last point of debate, which concerns the correlation between NPI position and type of reading, can be accounted for by the superlative clause hypothesis if we re-examine the semantic contribution of *ever* and the contrast between the relevant two readings. As stated above, the superlative clause denotes the comparison set, e.g. in (12)b, the set of sets of degrees of lengths of books by Tolstoy according to John. Like Howard (2014), I hypothesize that NPI indefinites can participate in the creation of this set by introducing alternatives in a way similar to *wh*-words or focused elements (see (14)).

(14) the longest book that John (a. ever) said that Tolstoy had (b. ever) written
a. {λd. John said **at t** that Tolstoy had written a d-long book | $t \in D_i$}
b. {λd. John said that Tolstoy had written a d-long book **at t** | $t \in D_i$}

In the superlative clause construal, the books under comparison thus vary along the dimension of John's saying times with high *ever*, and Tolstoy's writing times with low *ever*. Under the assumption that comparison of length is only implied when the relevant books are discussed simultaneously, this distinction gives rise to an interpretive difference that resembles the contrast between the so-called high and low readings. This hypothesis is again supported by the parallelism between superlative and comparative cases:

(15) a. a longer book than John said that Tolstoy had ever written cf. (5)a
b. a longer book than John ever said that Tolstoy had written cf. (5)b

In sum, the superlative clause hypothesis can derive all the specificities of intensional superlatives mainly because of the split scope it entails between the superlative morpheme and the adjective. Split scope is also at the heart of the argument concerning the empirical puzzle we examine in the next section.

3. Upstairs *de dicto* readings

Heim (1999) observes that (3)b (repeated in (16)) is multiply ambiguous.

(16) John wants to climb the highest mountain. (Heim 1999)

Descriptively, this sentence can be understood as comparing mountains in an absolute way (e.g. picking the highest among all relevant mountains) or in a relative way (e.g. picking the highest among the mountains that all relevant people want to climb) (cf. Szabolcsi 1986, i.a.). Furthermore, due to the presence of the intensional verb *want*, *the highest mountain* can be construed *de re* or *de dicto* depending on whether it is the speaker or John that is responsible for the comparison. Mixing these possibilities gives rise to four readings (absolute *de re*, absolute *de dicto*, relative *de re*, relative *de dicto*), which can be derived by standard analyses of superlatives. But there is a problematic fifth reading (dubbed upstairs *de dicto* reading by Sharvit & Stateva 2002) under which the mountain height seems to be determined

de dicto, but a relative comparison seems to be established *de re*. As mentioned by Heim (1999), this reading can be made salient in a context in which the speaker conducts a survey about people's athletic ambitions: each relevant participant has a specific desire of climbing achievement (e.g. John wants to climb a 4000m mountain), and only the speaker compares the various desires. This reading is problematic for standard analyses: it seems that *the highest mountain* has to scope below *want* since there is no particular mountain that John wants to climb; at the same time, it seems that *the highest mountain* has to scope above *want* since John has a desire with no comparative content.

As will be discussed in section 3.1, this upstairs *de dicto* reading motivates the movement analysis proposed by Heim (1999), according to which *-est* can move on its own at LF; but as shown e.g. by Sharvit & Stateva (2002), the movement analysis is not without its problems. In section 3.2, I will instead propose that the superlative clause hypothesis can provide a new solution to the problem as long as we assume that a superlative clause can be fully elided as previewed in (17).

(17) the est [~~that anyone wants to climb~~] John wants to climb d-high mountain

3.1. The movement analysis vs. the in situ analysis

To resolve the apparent contradiction raised by upstairs *de dicto* readings (i.e. it seems that *the highest mountain* must scope both above and below *want*), Heim (1999) hypothesizes that *-est* can be interpreted in a different position than the gradable nominal. Specifically, she proposes two variants of this hypothesis depending on the lexical entry that is assumed for *-est* as shown in (18) and (19).

(18) a. John [C -est] λd [want$_{w0}$ λw[PRO to climb$_w$ a d-high$_w$ mountain$_w$]]
b. $[\![$*-est*$]\!](C_{<et>})(R_{<d,et>})(x_e) = 1$ iff $\exists$d | R(x)(d)=1 and $\forall$y $\in$ C | y $\neq$ x, R(y)(d)=0
$[\![$*-est*$]\!]$ is defined only if (a) x $\in$ C; (b) $\forall$y $\in$ C, $\exists$d | R(y)(d)=1

(19) a. [C -est] λd [John want$_{w0}$ λw[PRO to climb$_w$ a d-high$_w$ mountain$_w$]]
b. $[\![$*-est*$]\!](C_{<dt,t>})(P_{<dt>}) = 1$ iff $\exists$d | P(d)=1 and $\forall$Q | C(Q)=1 and Q $\neq$ P, Q(d)=0
$[\![$*-est*$]\!]$(C)(P) is defined only if P $\in$ C, $\exists$Q $\in$ C| Q $\neq$ P, and $\forall$P'$\in$ C, $\exists$d | P'(d)=1

The LF in (18)a relies on the hypothesis in (18)b that *-est* takes three arguments: an implicit domain of comparison C consisting of a set of individuals (e.g. a relevant set of mountains), a relation between degrees and individuals R (e.g. *high*), and an individual x (e.g. Mount Everest). In (18)a, C-*est* covertly moves and lands between the subject *John* and the VP, thus yielding abstraction over degrees and creation of a 2-place relation between degrees and individuals (i.e. the relation that x bears to d iff x wants to climb a d-high mountain). Given that John is the individual argument, this correctly predicts that John has a specific desire of climbing achievement without implying that any particular mountain is targeted. Furthermore, the domain of comparison consists in a set of individuals that are relevant aspirant climbers, which correctly predicts that the relative comparison is done by the speaker.

The LF in (19)a is based on a focus-sensitive two-place *-est* covertly moving to a propositional level: the implicit domain of comparison C consists in a set of sets of degrees determined by focus (i.e. in case *John* is focused, the sets of degrees d such that x – John or any relevant alternative individual – wants to climb a d-high mountain); the second argument is the set of degrees P created by *-est* movement (i.e. the set of degrees d such that John wants to climb a d-high mountain). This LF also correctly derives the intended reading given the split scope of *-est* and *d-high* it creates.

On the contrary, Heim (1999: 8-9) demonstrates that the LF obtained under the in-situ analysis (requiring the lexical entry in (18)b), which is shown in (20), cannot express the upstairs *de dicto* reading: given its scopal position, there is no value for C that is appropriate.

(20) John wants λw [PRO to climb$_w$ [the C-est [high$_w$ mountain$_w$]]][1]

[1] Heim (1999) considers an alternative to this LF (see (i)) involving QR of the superlative DP to capture the disambiguating effect of focus in superlatives in analogy to focus effects with adverbs of quantification like *always*. The intended upstairs *de dicto* reading cannot be captured by this LF either.

(i) λw_0[John wants$_{w0}$ λw_1[[the [$\cup$f(w_1) -est] [high$_{w1}$ mountain$_{w1}$]] [λx[PRO to climb$_{w1}$ x] ~ f(w_1)]]]

Upstairs *de dicto* readings thus support the *-est* movement hypothesis.[2] But as mentioned by Heim (1999) herself, the movement theory, unlike the in-situ theory, requires assumptions that are not unproblematic. Besides the possibility of *-est* movement, the movement analysis assumes that the determiner of superlatives can be interpreted as the indefinite *a* in LFs involving *-est* movement as can be seen in (18) and (19). This hypothesis is due to both syntactic and semantic constraints: first, movement out of definite DPs is known to be subject to island constraints; second, upstairs *de dicto* readings do not imply that the athletic ambitions of each relevant individual can be satisfied by a single mountain (e.g. John wants to climb any 4000m mountain).

Furthermore, the two assumptions required under the movement analysis entail that the same sentence can be assigned several LFs depending on whether *-est* moves or not, and whether the determiner is construed as definite or indefinite. Beyond potential redundancy, Sharvit & Stateva (2002) argue that this consequence of the movement analysis gives rise to problematic results in some cases by incorrectly predicting the existence of two different readings. Specifically, Sharvit & Stateva (2002) demonstrate that the availability of the two LFs in (21)a and (21)b, which are both generated under the movement theory (adopting (18)b vs. (19)b), makes wrong predictions in scenarios involving ties.

(21) John climbed the highest mountain.
a. John climbed [the [C-est] λd [d-high mountain]]
b. John [C -est] λd[climbed [a d-high mountain]]

First, consider (21) in a scenario where both John and Bill climbed the same mountain, which happens to be the highest mountain that was climbed. In this scenario, (21) is predicted to be true by (21)a (the only LF permitted by the in-situ analysis), and false by (21)b (another LF generated by the movement analysis). According to Sharvit & Stateva (2002), (21) is not false in this scenario, but misleading at best (cf. Heim 1999), which supports the in-situ theory (which can treat the misleading aspect of (21) in this scenario as the result of an implicature).

Second, consider (21) in a scenario where John climbed two 4000m mountains, while the other climbers reached lower summits. In this scenario, (21) is predicted to be neither true nor false by (21)a (because there is no mountain that is highest), and true by (21)b. According to Sharvit & Stateva (2002), many speakers hesitate when judging (21), thus corroborating the in-situ analysis (assuming that one of John's mountains can be ignored in the comparison set for speakers who judge (21) true).

Finally,[3] they show that negative superlatives raise a further challenge to the movement analysis:

(22) John climbed the least high mountain.

Sharvit & Stateva (2002) argue that the movement theory overgenerates in the case of 'sandwich scenarios', i.e. when the person who climbed the lowest mountain also climbed a higher mountain than someone else. For example, if Mary climbed a 2500m mountain and a 3500m mountain, John climbed a 3000m mountain, and Bill climbed a 4000m mountain, (22) is incorrectly predicted to be true by the movement theory because under movement of *least*,[4] it is enough for (22) to be true to find one degree d such that John didn't climb a mountain that is d-high but everyone else did (which is here the case of degrees between 3000 and 3500).

---

[2] Heim (1999) provides the case of transitive adjectives such as *angry at* as additional argument for the movement analysis: when the domain of comparison is built on variation of the internal argument (e.g. John is angrier at Mary than he is at anybody else), only the movement analysis seems to be able to yield the appropriate LF:
(ii) Mary [C -est] λd λx[John d-angry (at) x]

[3] Sharvit & Stateva (2002) (cf. Farkas & Kiss 2000) consider (iii) as a further argument against the movement analysis because according to them, (iii) does not yield a relative reading. But while the PP is indeed preferably construed as the comparison set (thus yielding an absolute reading), a relative reading does seem available if the context disfavors this construal (e.g. by the following possible continuations of (iii): *his friends only visited small cities in Europe*, or *Mary visited the largest city in Asia*).
(iii) John visited the largest city in Europe.

[4] In this scenario, Sharvit & Stateva (2002) show that the movement theory can however correctly predict *Mary climbed the least high mountain* to be true under the assumption that *least* can be decomposed into a superlative morpheme and a negation that can scope independently (i.e. *-est* > *climb* > neg; see Stateva 2000, cf. Rullmann 1995, Heim 2006). But the problem remains that simultaneous movement of *-est* and neg cannot be blocked.

For all these reasons, Sharvit & Stateva (2002) propose an alternative way of deriving upstairs *de dicto* readings based on a modification of the in-situ theory requiring additional stipulations, which I won't detail here. My goal in the next section is to show instead that the superlative clause hypothesis allows us to incorporate the advantages of both the in-situ and the movement theories.

3.2. The elided superlative clause analysis

According to the superlative clause hypothesis, the domain of comparison in (16) (cf. C in (19)b) can be syntactically expressed by a degree clause, in parallel to comparative clauses, as shown in (23).

(23) a. John wants to climb the highest mountain [that anyone wants to climb].
b. John wants to climb a higher mountain [than Mary does (want to climb)].

As exemplified in (23)b, comparative clauses can be (partially) elided (in multiple ways, see e.g. Lechner 2020 for a review). I hypothesize that the same holds of superlative clauses. In case of full ellipsis of the clause, comparatives involve a silent anaphoric or reflexive element (yielding the meanings 'higher than a salient mountain', 'higher than a salient individual (wants to climb)' as in (23)b, or 'higher than (he wanted to climb) before'; see Charnavel 2015). In the case of superlative clauses, I hypothesize that the silent element can be interpreted as a NPI such as *anyone* in (23)a due to focus on *John*: while in the comparative counterpart in (23)b, the subject *Mary* is the only remnant in the clause, the subject in the superlative in (23)a corresponds to a set of alternative individuals (focus alternatives to John expressible as *anyone*, cf. Howard 2014). Instead of assuming 'semantic ellipsis' (Heim 2000) incorporated in the lexical entry of *-est*, this hypothesis brings closer the syntax of *-est* and *-er* by assuming syntactic ellipsis of superlative clauses.

Crucially, this hypothesis predicts that the same kind of readings arises with superlatives and comparatives. Now, several readings are observed in the case of comparatives involving an intensional verb depending on (partially interrelated) choices of ellipsis, scope and *de re*/*de dicto* construals as illustrated in (24) (see Williams 1974, Sag 1976, Heim 2000, Bhatt & Pancheva 2004, i.a.).

(24) Mary$_i$'s father tells her$_i$ to work harder than her$_i$ boss does.
a. Mary$_i$'s father tells her$_i$ to work harder than her$_i$ boss does (~~work d-hard~~).
i. *-er* > *tell*: Mary's father tells her: "work d_1-hard"; Mary's boss works d_2-hard; $d_1 > d_2$.
ii. *tell* > *-er*: Mary's father tells her: "work harder than your boss works".
b. Mary$_i$'s father tells her$_i$ to work harder than her$_i$ boss does (~~tell her to work d-hard~~).
i. *-er* > *tell*: Mary's father tells her: "work d_1-hard"; her boss tells her: "work d_2-hard"; $d_1 > d_2$.
ii. **tell* > *-er*: Mary's father tells her: "work harder than your boss tells you to work".

When only the lower VP is elided as in (24)a, the comparative morpheme *-er* can be interpreted above *tell* (in which case the *than*-clause has to be read *de re* as in (24)a-i) or below *tell* (in which case the *than* -clause can also be read *de re* (cf. (24)a-i, see Heim 2000 vs. Williams 1974, Sag 1976) or *de dicto* as in (24)a-ii). When the higher VP is elided as in (24)b, *-er* must scope over *tell*, yielding a *de re* reading of the *than*-clause as in (24)b-i; the *de dicto* reading, which is available with the (almost) non-elliptical counterpart in (25), is unavailable in (24)b-ii.

(25) Mary$_i$'s father tells her$_i$ to work harder than her$_i$ boss tells her$_i$ to.

The unavailability of this reading in (24) is due to a correlation between ellipsis and DegP scope (Sag-Williams Ellipsis-Scope generalization): as explained by Heim (2000) (cf. Williams 1974, Sag 1976), ellipsis of the higher VP requires DegP movement to resolve antecedent containment as shown in (26).

(26) [-er than her$_i$ boss ~~tells her$_i$ to~~ ~~work t hard~~] Mary$_i$'s father tells her to work t hard.

Coming back to superlatives, this discussion reveals that the superlative clause hypothesis predicts more readings to arise in (16) than the five readings already identified. Beyond the absolute/relative and the *de re/de dicto* distinctions, it predicts a possible variation in ellipsis size as shown in (27).

(27) John wants to climb the highest mountain.
a. John wants to climb the highest mountain [that anyone does ~~want to climb~~].
b. John wants to climb the highest mountain [that anyone does ~~climb~~].

The upstairs *de dicto* reading corresponds to the *de re* reading in (27)a analog to (24)b-i.[5] The relative *de dicto* reading corresponds to the *de dicto* reading in (27)b analog to (24)a-ii. Furthermore, given the ellipsis-scope generalization, we correctly predict the *de dicto* reading corresponding to (24)b-ii to be unavailable in (27)a. But crucially, this hypothesis predicts the reading analog to (24)a-i to be available. It corresponds to another type of relative reading than the three already identified (relative *de dicto*, relative *de re*, upstairs *de dicto* reading): namely the relative reading under which scope of *-est* and *high* is split as in the upstairs *de dicto* reading and the domain of comparison is built on the lower VP only (i.e. x climbs a d-high mountain vs. x wants to climb a d-high mountain – henceforth 'low relative readings'). This reading is difficult to identify in (27) due to the particularity of the example, but consider (28)a:

(28) Mary needs to work the hardest [that anyone does ~~work~~]. [low relative readings]
a. *-est* > *need*: Mary needs: "I work d_1-hard"; the other people work less than d_1-hard. [upstairs]
b. *need* > *-est*: Mary needs: "I work harder than the other people work". [downstairs]

Here, the additional reading – which can be called low relative upstairs *de dicto*, while the low relative downstairs *de dicto* reading corresponds to the relative *de dicto* reading – is available, and this is crucially so whether the superlative clause is partially or fully elided. Importantly note that the movement analysis can predict the reading in (28)b, but not the new reading in (28)a, since under that analysis, the shape of the domain of comparison C is restricted by the LF sister of *-est* as shown in (29) (cf. Heim 2000).

(29) Mary needs [C-est] λd PRO to work d-hard.

To build the relevant domain of comparison (i.e. under the lexical entry in (19)b: the sets of degree sets such that x works d-hard, for any relevant alternative x to Mary), *-est* must move to the position below *needs*, which enforces a *de dicto* reading (i.e. downstairs *de dicto* reading (28)b). The *de re* reading in (28)a (i.e. upstairs *de dicto*) can only be captured by the superlative clause hypothesis as schematized in (30), thus constituting a crucial argument for it.

(30) -est [~~that anyone works d-hard~~] Mary needs to work d-hard.

To further demonstrate the difference between this low upstairs *de dicto* reading and the previous high upstairs *de dicto* reading, consider the following scenario: Mary is in a less demanding field than some of her fellow students, but it turns out that these fellow students do not satisfy the requirements of their field, and they even work less than what is expected in Mary's field. In that scenario, (28) is false under the high upstairs *de dicto* reading, but true under the low one in (28)a. Furthermore, we observe the reverse situation in the following scenario: Mary is in a more demanding field than her fellow students, but these fellow students work more than is expected in their field, and even harder than is expected in Mary's field. In that scenario, (28) is true under the high upstairs *de dicto* reading, but false under the low one in (28)a. Finally note that in both scenarios, there is no requirement on the student's relative work efforts, which makes the downstairs *de dicto* readings (*need* > *-est*) irrelevant.

There is yet another reading that is only derived under the superlative clause hypothesis. In (28), the choice of the adverbial superlative allowed us to ignore absolute readings and focus on various relative readings. But returning to our original example (16), applying the same strategy as in (28)a predicts the existence of an absolute (vs. relative) upstairs *de dicto* reading represented in (31).

[5] The potential confusion in existing terminologies is due to the fact that *de re* and *de dicto* do not qualify the same elements in the comparative literature and in the superlative literature: in the superlative case (upstairs *de dicto*), *de dicto* is intended to characterize the NP (*d-high mountain*); in the comparative case, *de re* is intended to characterize the DegP (*-er than* …). Below, I restrict the *de re*/*de dicto* distinction to the interpretation of the gradable NP, and the upstairs/downstairs distinction to the interpretation of the superlative morpheme as in the superlative literature.

(31) -est [that there is d-high mountain] John wants to climb a d-high mountain.

Under that reading, John does not want to climb a particular mountain (e.g. Mount Everest) as in the absolute *de re* reading, but any mountain of a certain height (e.g. a mountain higher than 8700m – and crucially, he may not know that only Mount Everest qualifies). Furthermore, he does not have any comparative desire as in the absolute *de dicto* reading: his goal is not to reach a summit higher than other ones, but to reach a specific height; only the speaker is responsible for the comparative component.

In sum, the superlative clause hypothesis uniquely derives two other previously unnoticed upstairs *de dicto* readings, because it does not only allow split scope of the superlative morpheme and the gradable adjective with respect to the intensional predicate, but also some independence between *-est* scope and ellipsis size.[6] This makes it superior to the movement and the in-situ theories. That said, it could be objected that the superlative clause hypothesis suffers from the same issues as the movement theory given that it also involves movement (both in the matrix clause – to resolve ACD – as in the movement theory, and in the superlative clause due to degree relativization). In fact, this is not the case.

First, it is worth noting that the superlative clause hypothesis further motivates movement by aligning the syntax-semantics of superlatives with that of comparatives. While degree movement is only assumed for interpretive reasons under the movement theory, it is also required for ellipsis licensing under the superlative clause hypothesis just as is the case for comparatives (see Heim 2000, i.a.).

Second, the superlative clause hypothesis need not adopt the assumption of the movement theory regarding indefiniteness. As seen above, the movement analysis requires interpreting the determiner as an indefinite for both syntactic and semantic reasons, which creates problems of redundancy and makes wrong empirical predictions in some scenarios involving ties. This is not necessary under the superlative clause hypothesis, which is compatible with a representation like (32) (vs. (21)b) with the definite article.

(32) the highest mountain [that anyone climbed t] John climbed t.

In (32), it is not just the superlative morpheme, but the whole DP containing it that is QR-ed. As in the in-situ analysis proposed in Heim (1999) (see fn. 1), this LF does not run into the syntactic and semantic issues forcing indefiniteness in the movement analysis. (32) correctly predicts a presupposition failure in case John climbed two mountains of equal and highest height: there is no unique mountain (but two) such that it is higher than any mountain climbed. Furthermore, (32) is correctly predicted to be true in case John tied with Bill: there is a unique mountain such that its height exceeds the other heights of mountains climbed.[7] [8] Finally, the LF in (32) provides a solution to the problem of negative superlatives like (22) in sandwich scenarios. Under split scope of *least* decomposed as *-est* and negation, (22) is correctly predicted to be false (see fn. 4). Under high scope of *least*, presupposition failure is predicted

[6] As a whole, the superlative clause hypothesis predicts eight readings for a sentence like (16) depending on the relative scope of the intensional predicate *want* and the gradable NP *d-high mountain* (yielding a *de dicto* reading only if the NP is outscoped by *want*), the relative scope of *want* and the superlative morpheme *-est* (yielding an upstairs reading if *-est* outscopes *want* and a downstairs reading otherwise) and the size of the ellipsis (DP ellipsis – *that there is*, low VP ellipsis – *that anyone climbs*, and high VP ellipsis – *that anyone wants to climb*, yielding absolute, low relative and high relative readings respectively). Given constraints on scope, only eight different readings remain out of the logical twelve possibilities, three of which are uniquely captured by our hypothesis: the low relative upstairs *de dicto* reading and the absolute upstairs *de dicto* reading discussed in the text, as well as a low relative upstairs *de re* reading, which is here not discussed for space reasons.

[7] Under the lexical entry in (19)b, C is expressed by the elided superlative clause denoting the set of sets of degrees d such that for any individual x (John or alternative), x climbed a d-high mountain, and P is expressed by the NP *high mountain* (cf. Romero 2013: 86-87) denoting the set of degrees such that the relevant mountain is d-high.

[8] Recall from (19)b that the argument P of *-est* is presupposed to belong to Q. Given that under the lexical entry in (19)b (see fn. 7), P corresponds to the height of the mountain climbed by John, and given that Bill climbed the same mountain, the height of the mountain climbed by Bill does not count as an alternative (it is indistinguishable). Note that for a similar reason, the movement analysis predicts falsity only under the lexical entry in (18)b (three-place *-est*), which is the only one considered by Sharvit & Stateva (2002), but not under the lexical entry in (19)b (two-place *-est*): in the latter case, the sets of degrees d such that John climbed a d-high mountain and such that Bill climbed a d-high mountain are indistinguishable. Further note that Howard (2014: 24) works with degree properties (intensions) instead of degree sets precisely to avoid this consequence, because he judges *Mary sang the loudest* as false if Lee sang as loud. As mentioned in Heim (1999: 14), judgments in scenarios involving ties thus require further investigation as they seem to differ depending on specific cases.

because there is no unique mountain (but two) such that its height does not reach a height reached by at least one other mountain climbed; this may provide the explanation for why this scopal possibility is blocked here (see fn. 4). At the same time, QR of the whole DP is not always required, which makes it possible to predict upstairs *de dicto* readings under which *d-high mountain* is interpreted low and only *-est* is interpreted high (as well as the definite article under the hypothesis that it marks definiteness of degree, see e.g. Loccioni 2019).

Finally, the superlative clause hypothesis shares with the movement theory some advantages over the in-situ theory. Notably, because it also involves movement, it predicts the same islands effects as in comparative clauses (see Charnavel 2015, i.a.), which is borne out (see Heim 1999, i.a.).

4. Conclusion

In sum, the superlative clause hypothesis provides novel solutions to two controversial empirical puzzles: intensional superlatives and upstairs *de dicto* readings. More generally, it promises to better reflect the parallelism between comparatives and superlatives. In future research, it remains to determine the extent of its empirical coverage (see e.g. Bumford & Sharvit 2022).

References

Beck, Sigrid (2019). Comparison constructions. In Klaus von Heusiger et al. (eds), *Semantics – Lexical structures and adjectives*, 415–476. Berlin: De Gruyter Mouton.

Bhatt, Rajesh (2002). The raising analysis of relative clauses: Evidence from adjectival modification. *Natural Language Semantics 10*, 43–90.

Bhatt, Rajesh & Roumanya Pancheva (2004). Late Merger of Degree Clauses. *Linguistic Inquiry* 35(1), 1–45.

Bhatt, Rajesh & Yael Sharvit (2005). A note on intensional superlatives. In E. Georgala and J. Howell (eds), *Proceedings of SALT XV*, pp. 62–78. Ithaca, NY: Cornell University.

Bumford, Dylan & Yael Sharvit (2022). Negative Polarity Items in Definite Superlatives. *Linguistic Inquiry* 53(2), 255–293.

Charnavel, Isabelle (2015). *Same*, *different* and other as comparative adjectives – A uniform analysis based on French. *Lingua* 156, 129–174.

Farkas, Donka & Katalin É. Kiss (2000). On the Comparative and Absolute Readings of Superlatives. *Natural Language and Linguistic Theory* 18(3), 417–455.

Giannakidou, Anastasia (1997). *The Landscape of Polarity Items*. Doctoral Dissertation, University of Groningen.

Heim, Irene (1999). Notes on superlatives. Ms., MIT.

Heim, Irene (2000). Degree Operators and scope. In Brendan Jackson & Tanya Matthews (eds), *SALT X*, 40–64, Ithaca, NY: Cornell University.

Heim, Irene (2006). *Little*. In M. Gibson and J. Howell (eds), *SALT XVI*, 35–58, Ithaca, NY: Cornell University.

Heycock, Caroline (2005). On the interaction of adjectival modifiers and relative clauses. *Natural Language Semantics 13*, 359–382.

Heycock, Caroline (2019). Relative reconstructions. In *Reconstruction Effects in Relative Clauses*. 87–112. De Gruyter.

Howard, Edwin (2014). *Superlative degree clauses: Evidence from NPI licensing*. MA thesis, MIT.

Hulsey, Sarah & Uli Sauerland (2006). Sorting out relative clauses. *Natural Language Semantics* 14, 111–137.

Lechner, Winfried (2020). Clausal vs phrasal comparatives. In Daniel Gutzmann et al. (eds), *The Wiley Blackwell Companion to Semantics*, 1–39.

Loccioni, Nicoletta (2019). The Romance of modal superlatives as degree descriptions. In *Proceedings of SALT 29*: 219–237.

Romero, Maribel (2013). Modal superlatives: a compositional analysis. *Natural Language Semantics* 21: 79–110.

Rullmann, Hotze (1995). *Maximality in the Semantics of Wh-Constructions*. Doctoral Dissertation, UMass Amherst.

Sag, Ivan (1976). *Deletion and Logical Form*. Doctoral dissertation, MIT, Cambridge, Mass.

Sharvit, Yael (2007). Two reconstruction puzzles. In Pauline Jacobson & Chris Barker (Eds.), *Direct Compositionality*, 336–359. Oxford University Press.

Sharvit, Yael & Penka Stateva (2002). Superlative expressions, context, and focus. *Linguistics and Philosophy 25*(4), 453–504.

Stateva, Penka (2000). In Defense of the Movement Theory of Superlatives. In R. Daly & A. Riehl (eds), *Proceedings of the Eastern States Conference on Linguistics 1999*, 215–226.

Szabolcsi, Anna (1986). Comparative Superlatives. In N. Fukui et al. (eds.), *MIT Working Papers in Linguistics* 8, 245–265. MIT Press, Cambridge.

Williams, Edwin (1974). *Rule Ordering in Syntax*. Doctoral dissertation. MIT, Cambridge, Mass.

Proceedings of the 40th West Coast Conference on Formal Linguistics

edited by Jiayi Lu, Erika Petersen, Anissa Zaitsu, and Boris Harizanov

Cascadilla Proceedings Project Somerville, MA 2024

ISBN 978-1-57473-482-9 hardback

Ordering information

Orders for the printed edition are handled by Cascadilla Press.
To place an order, go to www.lingref.com or contact:

Cascadilla Press, P.O. Box 440355, Somerville, MA 02144, USA
phone: 1-617-776-2370, fax: 1-617-776-2271, sales@cascadilla.com

Web access and citation information

This entire proceedings can also be viewed on the web at www.lingref.com. Each paper has a unique document # which can be added to citations to facilitate access. The document # should not replace the full citation.

This paper can be cited as:

Charnavel, Isabelle. 2024. The Superlative Clause Hypothesis. In *Proceedings of the 40th West Coast Conference on Formal Linguistics*, ed. Jiayi Lu et al., 42-51. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3696.