

The latest take on intensional superlatives

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Abstract. This work presents a new solution to the debate whether superlative adjectives can reconstruct within relative clauses containing an intensional predicate. I propose that *that*-clauses can be construed as superlative clauses corresponding to the domain argument of *-est* and involving degree relativization. This approach provides new ways to address the various issues of the debate related to interpretation, intervention effects, NPI licensing, and specificity of superlatives as compared to other adjectival modifiers.

Keywords: superlative, reconstruction, relative, degree, intensionality, negative polarity

1. Introduction

The goal of this paper is to provide a new solution to the puzzle raised by the twofold interpretation of so-called *intensional superlatives* (Bhatt and Sharvit, 2005). As illustrated in (1), an intensional superlative is a superlative adjective (e.g. *longest*)¹ that modifies the head of a relative clause containing an intensional predicate (e.g. *said*).

- (1) the longest book that John said that Tolstoy had written (Bhatt, 2002: 57)
- a. *High reading*: the longest book out of the books about which John said Tolstoy wrote them
 - b. *Low reading*: the book such that John said it is Tolstoy's longest

Bhatt (2002) observes that (1) is two-way ambiguous: under the reading he calls 'high' (paraphrased in (1a)), the superlative adjective seems to be construed above the intensional predicate; under the reading he calls 'low' (paraphrased in (1b)), *longest* seems to be interpreted below *said*. This ambiguity leads Bhatt (2002) to argue that superlative adjectives can reconstruct into relative clauses, thus supporting the raising analysis of relative clauses.

However, as we will see in Section 2, the analysis of the low reading remains under debate: while Bhatt (2002), Bhatt and Sharvit (2005), and Hulse and Sauerland (2006) provide arguments for the reconstruction analysis of superlatives, Heycock (2005, 2019) and Sharvit (2007) find evidence against it and propose alternative analyses.

As I will detail in Section 3, I show that both sides of the debate can be reconciled if we instead assume split scope of the adjective (e.g. *d*-long, i.e. long to degree *d*) and the superlative morpheme (*-est*) under the low reading, as schematized in (2).

- (2) the long **-est** book that John said that Tolstoy had written **d-long** book (low reading)

This proposal is based on the hypothesis that comparative clauses such as (3) have superlative counterparts.

¹ Like Bhatt (2002) and others, I also include the ordinal *first* and nominal *only* in intensional superlatives, which behave similarly. See discussion in fn. 16.

- (3) a longer book than John said that Tolstoy had written

In other words, I will propose that the clause in (1) is not a standard relative clause, but a superlative clause resulting from degree relativization, which is an argument of the superlative morpheme *-est* and denotes the domain of comparison: just like a comparative clause denotes the maximal degree (or set of degrees) of the compared element, a superlative clause denotes the set of maximal degrees (or set of sets of degrees) of the compared elements (cf. Howard, 2014). Beyond the debate on intensional superlatives, this hypothesis has important consequences for the syntax and semantics of superlative constructions.

The outline is as follows. In Section 2, I detail all the arguments provided for and against the reconstruction analysis of superlatives. In Section 3, I show how the superlative clause hypothesis provides an account for the observations by both sides of the debate.

2. The debate: For or against the reconstruction of superlatives into relative clauses

2.1. For reconstruction

2.1.1. The argument from interpretation

The first argument that Bhatt (2002) provides for the hypothesis that superlatives can reconstruct into relatives is based on their interpretation: under the high reading in (1), *longest* means ‘longest according to the speaker’ whereas under the low reading, it means ‘longest according to John’. This distinction is made clearer by Bhatt and Sharvit (2005), who provide scenarios under which only one of the two readings is true as shown in (4).

- (4) The longest book John said Tolstoy had written was *Anna Karenina*.
- a. *Scenario A* (high reading true, low reading false)
John: “Tolstoy wrote *Huckleberry Finn*, *Anna Karenina* and *Tom Sawyer*; *Tom Sawyer* is the longest of these.”
Anna Karenina is actually the longest among those books.
 - b. *Scenario B* (high reading false, low reading true)
John: “*Anna Karenina* is the longest book Tolstoy wrote. He also wrote *War and Peace* and some other shorter books.”
War and Peace is actually longer than *Anna Karenina*.

In scenario A, (4) is only true under the high reading because only the speaker considers *Anna Karenina* to be the longest book out of the books that John said Tolstoy wrote; according to John, *Tom Sawyer* is the longest. Conversely, (4) is only true in scenario B under the low reading because John actually says that *Anna Karenina* is the longest book; the speaker, however, considers *War and Peace* to be longer.

Bhatt analyzes this difference between the low and the high readings as a matter of scope: while the high reading corresponds to surface scope (*longest* > *said*), the low reading requires inverse scope between the superlative and the intensional predicate (*said* > *longest*); this can only derive, according to him, from reconstruction of the superlative into the relative. In other

words, Bhatt takes the low reading as a new argument for the raising analysis of relative clauses, corroborating other arguments such as the argument based on idioms illustrated in (5).

- (5) The headway that we made was satisfactory. (Bhatt, 2002: 47)
- a. We made headway.
 - b. *(The) headway was satisfactory.

Under the assumption (motivated by contrasts such as (5a) vs. (5b)) that an expression can only be interpreted as an idiom if its parts are merged locally, the acceptability of (5) entails that *headway* must originate inside the relative clause. This is the case under the raising analysis of relative clauses. However, neither the head external analysis nor the matching analysis, under which there is at least one head external to the relative, can straightforwardly derive the idiomatic interpretation of *headway*.

Similarly, Bhatt (2002) argues that *longest book* must be interpreted internal to the relative clause to give rise to the low reading in (4). More specifically, Bhatt provides the following LF's for the high and the low readings under a raising analysis of relative clauses:

- (6) the [longest book]_i [_{CP} *longest book*_i that [John said [_{CP} *longest book*_i that [Tolstoy had written *longest book*_i]]]] (copies are italicized)
- a. the λx longest [book, x][John said that Tolstoy had written x]
 - b. the λx [John said that [longest [Tolstoy had written [book x]]]].
- (Bhatt, 2002: 58)

The high reading in (6a) derives from interpreting the highest CP-internal copy *longest book* and deleting the other copies in the movement chain. The low reading in (6b) involves interpretation of the lowest CP-internal copy (by trace conversion as in Fox (2002) and *-est* movement²). Under the head external analysis, interpretation of *longest* within the relative is, however, impossible since *longest book* originates outside the relative. As for the matching analysis, although it allows interpretation of *longest book* inside the relative, Bhatt (2002: 68) argues that it overgenerates because *longest book* is also interpreted outside it (which incorrectly predicts that (6) is felicitous in case John has made different claims about Tolstoy's longest book over time).

2.1.2. The argument from NPI licensing

Bhatt (2002: 59-61) provides a further argument for the raising analysis based on the licensing of Negative Polarity Items (NPIs) such as *ever*. He observes a correlation between the interpretation of intensional superlatives and the position of NPIs illustrated in (7) and (8).

- (7) the longest book that John said that Tolstoy had ever written (Bhatt, 2002: 60)
- (8) the longest book that John ever said that Tolstoy had written

² Based on Szabolcsi (1986) and Heim (1995), Bhatt adopts the hypothesis that *-est* moves to associate with focus (thus assuming the lexical entry discussed in (34) below for the superlative morpheme) and further assumes that relative clause traces can be focused as discussed in Section 2.2.4.

When the NPI *ever* occurs in the embedded clause as in (7), only the low reading obtains. Conversely, only the high reading obtains when *ever* occurs in the higher clause as in (8).

Bhatt claims that the raising analysis derives this correlation once two independent hypotheses are adopted. First, it has been observed that superlatives are able to license NPIs as shown by simpler cases like (9).

- (9) This is the longest book that I have ever read. (Bhatt, 2002: 60)

Second, the licensing of NPIs displays locality effects (cf. Linebarger, 1980). Bhatt concludes from this that *longest* must be interpreted below *said* to be close enough to license *ever* in (7). This is possible under the raising analysis, and this correctly predicts that only the low reading is available in that case. Conversely, the low reading is correctly predicted to be unavailable in (8) under the raising analysis, since *longest* needs to outscope *ever* to license it, but *longest* needs to be outscoped by *said* to trigger a low reading.

2.1.3. The argument from other adjectival modifiers

Although their analysis differs from Bhatt's,³ Hulsey and Sauerland (2006) provide additional support for the hypothesis that low readings of superlatives result from the interpretation of a low copy within the relative by examining other adjectival modifiers. Bhatt restricts his investigation of low readings to superlatives, ordinals like *first* and nominal *only* as shown in (10), suggesting that the low reading of other adjectival modifiers such as *wonderful* in (11) does not follow the same constraints. For example, the low reading of *wonderful* in (11) seems to require a scare quote intonation, and with this intonation, a non-speaker-oriented reading of *wonderful* (which Bhatt calls 'sarcastic') does not even require an intensional predicate: consider (11) without the parentheses.

- (10) the first/only/longest book that John said that Tolstoy had written (Bhatt, 2002: 57)
 (11) the wonderful books (that Siouxsie said) that Lydia had written (Bhatt, 2002: fn. 18)

Hulsey and Sauerland (2006), however, argue for the unification of superlatives and other adjectives. The scare quote intonation, according to them, results from the fact that the adjective and the noun are interpreted in different worlds (in (11), the speaker disagrees with Siouxsie

³ Hulsey and Sauerland's (2006: 128) analysis relies on binding of world variables and intermediate traces. They propose two possible representations deriving the low reading of intensional superlatives (assuming the lexical entry of the superlative morpheme discussed in (39):

- (i) the [longest book]_i John believes t_i Tolstoy wrote t_i (Hulsey and Sauerland, 2006: 128)
 a. $\lambda w \dots$ the -est(C) $\lambda d \lambda x$ John believes(w) $\lambda w' x$ [long(d)(w') & λx Tolstoy wrote the_x book(w')]
 b. $\lambda w \dots$ the λx John believes(w) $\lambda w' x$ -est(C_w) λd [long(d)(w') & λx Tolstoy wrote the_x book(w')]

In both cases, the adjective *d-long* is interpreted at an intermediate position on the edge of the embedded CP, i.e. just below the intensional verb within the relative. Its world variable can therefore be bound by the λ -operator on the complement of *believe*. Further note that in (ib), Hulsey and Sauerland assume a uniformity presupposition in the semantics of *believe* as in Heim 2000 (see fn. 5).

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about the fact that what Lydia had written is wonderful, not that it is books). No such intonation is required if both the adjective and the noun must be interpreted in the scope of *say* as in (12).

- (12) The wonderful books that Siouxsie said that Lydia had written turned out to be just a bunch of one-page leaflets. (Hulsey and Sauerland, 2006: 125)

Furthermore, superlatives can also be read sarcastically in the absence of an intensional predicate as illustrated in (13).

- (13) Siouxsie was always going on about the new Tolstoy book she bought and that it's the longest by Tolstoy. But I've read that longest book and it's a lot shorter than *War and Peace*. (Hulsey and Sauerland, 2006: 125)

Hulsey and Sauerland conclude from these observations that superlatives are not specific, but any adjective modifying a relative head can be interpreted internal to the relative clause. This corroborates the raising analysis, which makes exactly this prediction.

Three main arguments thus support the reconstruction analysis of intensional superlatives: their interpretation that can depend on the intensional predicate within the relative clause; the correlation between this interpretation and the licensing of low NPIs within the relative; and the availability of this interpretation with other adjectival modifiers. As I will detail in the next section, all three arguments have, however, been disproven, mainly by Heycock (2005, 2019), thus questioning the reconstruction hypothesis and favoring an alternative hypothesis.

2.2. Against reconstruction

2.2.1. The counterargument from other adjectival modifiers

Heycock (2005) begins with refuting Hulsey and Sauerland's claim that superlative and non-superlative adjectives behave similarly with respect to low readings. She argues that their argument based on (13) does not support their unification but simply shows that superlative adjectives can also license (what Bhatt calls) sarcastic readings characterized by a scare quote intonation; such sarcastic readings, according to her, should be analyzed differently from Bhatt's original examples involving superlatives, *first* and *only*. Apart from intonation, her main motivation for assuming a different treatment for sarcastic and low readings⁴ is that

⁴ Heycock (2005) does not address Hulsey and Sauerland's (2006) argument based on (12). However, it is worth noting that this example involves the verb *turn out*, which seems to presuppose a different judgment for its subject and its object. In fact, Bhatt (2002: fn. 18) documents the following contrast (noticed by Bernard Schwarz):

- (i) The unicorn John said he found turned out to be a kangaroo. (low reading)
- (ii) The unicorn John said he found is in our backyard now. (no low reading)

Furthermore, Heycock (2019: fn. 5) observes that even when both the adjective and the noun are evaluated by the embedded attitude holder, the Condition C effects expected under a reconstruction account do not arise:

- (iii) When I heard about the portrait of Moss, that she, thought her agent was commissioning from Hirst, I was very surprised. And indeed, it turned out that what was commissioned was something completely nonfigurative.

sarcastic readings are not subject to the locality effects affecting low readings as exemplified by the contrast between (14) and (15).

(14) This is the first book that John didn't say that Antonia wrote. (Bhatt, 2002: 62)

(15) The expensive car that his wife didn't think he should buy was actually a Ford Mondeo. (Heycock, 2005: 363)

As observed by Bhatt (2002: 62), intervening negation blocks the low reading of *first* in (14). In (15), the apparent low reading of *expensive* (ascription of the judgment to the wife), however, is available despite the intervening negation.

Similarly, low readings of superlatives are blocked by extraposition of the relative as observed by Hulsey and Sauerland (2006: 116) and illustrated in (16). However, the acceptability of (17) reveals that the same does not hold of sarcastic readings.

(16) *I read the first novel last night that John said Tolstoy ever wrote.

(17) I read the awful novel last night that Mary thought Hugh wrote and thought it was actually quite good. (Heycock, 2005: 364)

In sum, the low readings of superlatives described by Bhatt seem to deserve a specific analysis that does not apply to non-superlative adjectives. This raises doubts about a reconstruction analysis, which should not discriminate between different types of adjectives.

2.2.2. The counterargument from NPI licensing

Heycock furthermore shows that Bhatt's argument based on NPI licensing does not hold, but in fact refutes the reconstruction hypothesis. Bhatt's argument seems to rely on the hypothesis that the NPI *ever* requires a clausemate licenser (in his analysis, the interpreted copy of the superlative and *ever* are in the same CP). However, as demonstrated by Heycock, this assumption is incorrect. *Ever* is a weak NPI that can be long-distance licensed as illustrated in (18), where the licenser *not* is in a superordinate clause.

(18) I am not arguing that he had ever been to Mali. (Heycock, 2005: 374)

Moreover, this possibility also applies to superlatives, contrary to Bhatt's (2002: fn. 9) suggestion that they may have specific locality conditions of licensing. Heycock makes the case using complement clauses as in (19).

(19) This is the best indication that he was ever here. (Heycock, 2005: 375)

Furthermore, licensing is even possible across several clause boundaries, thus disproving the hypothesis that Bhatt's analysis could rely on licensing across a single clause boundary.

Heycock (2019: 99) concludes that *de dicto* readings are not a good diagnostic for reconstruction, and refers to Harris and Potts (2009) on non-speaker-oriented readings of expressives outside attitude predications.

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- (20) This was the first indication that they thought she would ever succeed.
(Heycock, 2005: 375)

Thus, the correlation between the low reading and the low position of *ever* does not provide an argument for reconstruction. Even more problematically for Bhatt, Heycock shows that NPI licensing of *ever* can provide an argument against reconstruction. Linebarger (1987) shows that logical operators such as universal quantifiers intervene between a NPI and its licenser as illustrated in (21).

- (21) I didn't think that {John/*everyone} had ever been there. (Heycock, 2005: 376)

Crucially, such intervention effects also arise with intensional superlatives:

- (22) This is the longest book that {Mary/*everyone} thinks John has ever read.
(cf. Heycock, 2005: 376)

If *longest* had to reconstruct below *thinks* as required under Bhatt's analysis, *everyone* could not intervene between *longest* and *ever*. Such intervention effects thus constitute evidence against Bhatt's reconstruction analysis.

2.2.3. The counterargument from intervention effects

Bhatt (2002: 62) observes that the low reading is blocked by an intervening negation (see (14)) or by a negative verb as in (23).

- (23) This is the longest book that John doubted that Antonia wrote. (Bhatt, 2002: 62)

Although he does not provide a full account for such intervention effects, Bhatt suggests that they support the reconstruction analysis, given that they are also observed with some types of A'-movement such as in *how many* questions. For example, (24) cannot involve reconstruction of the degree variable (it cannot be a question about the number such that John did not feed that number of dogs, but only about the number of dogs there are that John did not feed).

- (24) #How many dogs did John not feed? (Bhatt, 2002: 62)

However, Heycock (2005: 365) observes that these intervention effects do not affect other phenomena argued to depend on reconstruction such as idioms: although downward-entailing *few* creates an intervention effect for amount quantification and intensional superlatives, it allows the idiom *make headway* (cf. (5)), as shown in (25).

- (25) a. How much do {those/*few} people weigh? (Heycock, 2005: 365)
b. #That is the first book that few people said she read.
c. That is the kind of headway that few people can make.

Such facts raise doubts about the hypothesis that these intervention effects can be derived by a reconstruction analysis. Furthermore, Heycock observes that these intervention effects are

created by a much wider range of cases than just those involving negation. For instance, they arise with some non-negative verbs and adverbs: the low reading is absent in (26)-(27).

(26) #This is the first book that we {mistakenly/foolishly} thought that Antonia had written.

(27) #This is the first book that they {agreed/conceded/proved} that Antonia wrote.

(Heycock, 2005: 367)

But these elements do not block the relevant kind of amount reading: (28) and (29) allow reconstruction of *n-many*.

(28) How many books did you {mistakenly/foolishly} think that Antonia had written?

(29) How many books did they {agree/concede/prove} that Antonia was planning to write?

(Heycock, 2005: 367-368)

These observations lead Heycock to propose the following generalization: the low reading is blocked by elements that block neg-raising. For instance, the adverb *mistakenly* blocks neg-raising as shown in (30).

(30) I am so relieved! For a moment, I didn't (#mistakenly) think that you loved me.

(Heycock, 2005: 371)

In other words, Heycock proposes that all and only neg-raising predicates support a low reading, such as factives, implicatives, weak and strong (vs. midscalar) epistemic and deontic operators.⁵ This derives, she further argues, from the negative entailment that superlatives generate (cf. Giannakidou, 1997), which is illustrated in (31) entailing (31b).

(31) *Anna Karenina* is the longest book that Tolstoy wrote.

(Heycock, 2005: 368)

a. *Anna Karenina* is g-long.

b. $\neg$ [Tolstoy wrote a book other than *Anna Karenina* g-long]

Heycock (2005) claims that the low reading of superlatives results from interpreting the negation in the entailment (e.g. (31b)) with lower scope. This is shown in (32), where (32a) corresponds to the high reading, and (32b) to the low reading, where neg-raising has occurred in the negative entailment of the superlative.

(32) *Anna Karenina* is the longest book that Jennifer thinks Tolstoy wrote.

a. $\neg$ [Jennifer thinks Tolstoy wrote a book other than *Anna Karenina* g-long]

b. Jennifer thinks $\neg$ [Tolstoy wrote a book other than *Anna Karenina* g-long]

(Heycock, 2005: 369)

⁵ Heycock is based on Horn's (1978) generalizations about neg-raising. She does not provide a specific analysis of neg-raising but note that her analysis relies on the hypothesis that the neg-raising phenomenon is not syntactic, but semantic or pragmatic (since neg-raising occurs in an entailment, i.e. the negative entailment that superlatives generate). As noted in fn. 3, Hulse and Sauerland (2006: 130) spell out Heycock's hypothesis by relying on Heim's (2000) uniformity presupposition hypothesis: neg-raising predicates presuppose that the referent of their subject believes either that the complement is true or that the complement is false. Heycock (2019: 91) similarly adopts the hypothesis that neg-raising predicates carry an excluded middle presupposition (Gajewski, 2005).

Furthermore, Heycock argues that her neg-raising account derives the NPI facts observed by Bhatt (see (7), (8)). The fact that the high position of *ever* is only compatible with a high reading (e.g. in (8)) is explained by the fact that VP adverbs block neg-raising. The low position of *ever* (e.g. in (7)), however, is compatible with neg-raising, and thus with the low reading.⁶

In sum, Heycock (2005) shows that far from supporting Bhatt's reconstruction analysis, intervention effects and NPI facts disprove it and support an alternative analysis relying on neg-raising. The fact that superlative modifiers do not pattern like other adjectives with respect to low readings (see Section 2.2.1) also follows more straightforwardly from the neg-raising account since superlatives are specific in triggering a negative entailment.

2.2.4. The counterargument from interpretation

Another type of argument against the reconstruction analysis is provided by Sharvit (2007), who – without supporting the neg-raising account – questions Bhatt's argument based on the interpretation of intensional superlatives. Recall that Bhatt (2002) derives the low reading of superlatives by assuming reconstruction of the superlative and the head as well as *-est* movement as shown in (33) specifying (6).

(33) the λx [John said that [-est λd [Tolstoy wrote [the d-long book x]]] (Bhatt, 2002: 65)

He thereby relies on the following focus-based semantics for superlatives:⁷

(34) $\llbracket -est \rrbracket (C_{\langle dt, t \rangle})(P_{\langle dt \rangle}) = 1$ iff $\exists d \mid P(d) = 1$ and $\forall Q \mid C(Q) = 1$ and $Q \neq P$, $Q(d) = 0$
 $\llbracket -est \rrbracket (C)(P)$ is defined only if $P \in C$, $\exists Q \in C \mid Q \neq P$, and $\forall P' \in C$, $\exists d \mid P'(d) = 1$
 (cf. Heim, 1995: 18; Bhatt, 2002: 87; Sharvit, 2007: 343)

Under that lexical entry, the superlative morpheme *-est* is a focus-sensitive operator taking two arguments: a property of degrees (P), and a set of such properties (C) whose value is determined via association with focus (cf. Rooth, 1992). This semantics was proposed by Heim (1995) to capture comparative readings of superlatives (cf. Szabolcsi, 1986) such as (35b).

(35) Tolstoy wrote the longest book. (Sharvit, 2007: 343)
 a. Tolstoy wrote the longest book out of all relevant books. (absolute)
 b. Tolstoy wrote the longest book out of books by all relevant authors. (comparative)

⁶ This seems to entail that Heycock, unlike Bhatt, assumes the low reading to be possible but not obligatory in sentences like (7). She does not discuss this point.

⁷ This lexical entry assumes (as is standard, see Cresswell (1976), Heim (1995), i.a.) that an (intransitive) adjective stem expresses a relation R between an object and a degree (e.g. $\llbracket \text{long} \rrbracket = \lambda d \lambda x [x \text{ is } d\text{-long}]$) and that such relations are downward monotonic (i.e. $\forall x, d, d' [R(x, d) \ \& \ d > d' \rightarrow R(x, d')]$). An alternative formulation of that lexical entry is provided in Hulsey and Sauerland (2006):

(i) $\llbracket -est \rrbracket (C)(P) = 1$ iff $\forall Q \in C \setminus \{P\} : \max_d P(d) > \max_d Q(d)$ (Hulsey and Sauerland, 2006 :131)

While under the absolute reading in (35a), the book by Tolstoy is compared with a set of relevant books, the comparative reading in (35b) implies that Tolstoy wrote a longer book than all contextually relevant authors. According to (34), the comparative reading is readily obtained when the subject is focused and when *-est* moves to the propositional level as represented in (36): (34) entails that (36) is true iff the length of the book by Tolstoy ((36a)) exceeds the lengths of the books by all other relevant authors (cf. (36b)).

- (36) *est*-C [[1 [Tolstoy_F wrote the d₁-long book]]~C] (cf. Sharvit, 2007: 344)
- a. $P = \lambda d. \text{Tolstoy wrote a/the}^8 \text{ d-long book}$
 - b. $Q = \{\lambda d. \text{Tolstoy wrote a/the d-long book}, \lambda d. \text{Dostoevsky wrote a/the d-long book}, \lambda d. \text{Shakespeare wrote a/the d-long book}, \dots\}$

According to Bhatt, the low reading is derived in a similar fashion, assuming that what is focused is the trace of the relative head (or more precisely, the embedded variable in the lowest copy of the head after trace conversion) as shown in (37).

- (37) [the 2 John said *est*-C [[1 [Tolstoy wrote (the) d₁-long book-[2]_F]]~C]
- a. $P = \lambda d. \text{Tolstoy wrote a/the d-long book}$
 - b. $Q = \{\lambda d. \text{Tolstoy wrote a/the d-long book A}, \lambda d. \text{Tolstoy wrote a/the d-long book B}, \lambda d. \text{Tolstoy wrote a/the d-long book C}, \dots\}$

This proposal correctly predicts the low reading, but as demonstrated by Sharvit, it overgenerates unless it is stipulated that focus must be placed as it is in (37). For example, the reading illustrated in (38), under which Tolstoy is focused (cf. (36)), is unattested.⁹

- (38) The longest book John said TOLSTOY wrote was *War and Peace*. (Sharvit, 2007: 343)
- a. [the 2 John said *est*-C [[1 [Tolstoy_F wrote (the) d₁-long book-[2]_F]]~C]
 - b. $Q = \{\lambda d. \text{Tolstoy wrote a/the d-long book A}, \lambda d. \text{Dostoevsky wrote a/the d-long book B}, \lambda d. \text{Shakespeare wrote a/the d-long book C}, \dots\}$

Sharvit further shows that Bhatt's reconstruction analysis also raises problems of interpretation if we adopt the other lexical entry for the superlative morpheme proposed in Heim (1995):

- (39) $\llbracket -est \rrbracket (C_{\langle et \rangle})(R_{\langle d, et \rangle})(y_e) = 1$ iff $\exists d \mid R(y)(d) = 1$ and $\forall z \in C \mid z \neq y, R(z)(d) = 0$
 $\llbracket -est \rrbracket$ is defined only if (a) $y \in C$; (b) $\forall x \in C, \exists d \mid R(x)(d) = 1$
 (cf. Heim, 1995: 3; Hulsey and Sauerland, 2006: 126; Sharvit, 2007: 340)

Under (39), *-est* takes three arguments: a contextually given comparison set C , a relation between individuals and degrees R (e.g. *long*), and an individual y . Like (34), this semantics is designed to capture comparative readings of superlatives (see (35b)), under the assumption that *-est* can move to a position between the subject and the verb. However, the low reading, according to this view, corresponds to an absolute reading, represented in (40).

⁸ This is Sharvit's notation. I similarly ignore the issue of definiteness throughout the paper. See e.g. Herdan and Sharvit (2006) for discussion.

⁹ Sharvit (2007) assumes without discussion that both Tolstoy and the trace are focused in that case.

(40) the 1 John said Tolstoy wrote the est-C long book-1

As Sharvit explains, the problem is that no value of the comparison set gives rise to the correct reading. If C is a set of relevant books (i.e. $\{x: \exists d \mid x \text{ is a relevant } d\text{-long book}\}$), we should expect a reading under which some of the books are by other authors than Tolstoy, which is in fact absent. If C is a set of relevant books written by Tolstoy (i.e. $\{x: \exists d \mid x \text{ is a relevant } d\text{-long book that Tolstoy wrote}\}$), this implies that John said something like “Tolstoy wrote the longest book that Tolstoy wrote”. In other words, this analysis seems to both over- and undergenerate.¹⁰

Instead, Sharvit suggests an alternative analysis under which only the noun and the adjective reconstruct, but the superlative morpheme *-est* must remain external to relative clause.¹¹

(41) the est-C 2 1 [John said-w₃ Tolstoy had written-w₃ (the) d₂-long-w₃ book₁]
(Sharvit, 2007: 346)

But as she acknowledges, Sharvit’s analysis does not provide a solution to the NPI facts observed by Bhatt (2002) or the intervention effects discussed by Heycock (2005). Heycock, however, claims that her neg-raising analysis derives these facts, as we saw in Sections 2.2.2 and 2.2.3. As we will see in the next section, Bhatt and Sharvit (2005) nevertheless show that Heycock’s neg-raising account faces problems of over- and undergeneration. Ultimately, my own proposal in Section 3 will therefore build on Sharvit’s (2007) idea of split scope between *-est* and the adjective, and motivate it by analyzing the embedded clause as a superlative clause.

2.3. For or against reconstruction: An open debate

While all arguments Bhatt provides for his reconstruction hypothesis have been questioned, Heycock’s neg-raising analysis seems to fare better and derive the specificity of intensional superlatives with respect to interpretation, NPI licensing and intervention effects. But the empirical basis for Heycock’s proposal is challenged by Bhatt and Sharvit (2005). First, they show that the neg-raising account undergenerates: some non-neg-raising predicates do support the low reading. This is the case of *say* (see (1)), as acknowledged by Heycock (2005), who circumvents the issue by proposing an evidential reading of *say* that can be paraphrased with ‘according to’ as in (42). But Bhatt and Sharvit (2005) object that the correct paraphrase should be (43), which does not allow a low reading.

(42) This is the only book that Tolstoy wrote, according to John. (Heycock, 2005: 372)

(43) This is the only book that, according to John, Tolstoy wrote.
(Bhatt and Sharvit, 2005: 71)

¹⁰ As mentioned in fn. 3, Hulse and Sauerland (2006) circumvent this issue by postulating intermediate traces.

¹¹ Sharvit (2007) thus assumes here that *-est* can separate at LF from the rest of the head (contra Sharvit and Stateva, 2002; Bhatt and Sharvit, 2005). Furthermore, Sharvit (2007: 347-49) adopts an intentionalized version of the lexical entry in (39) to account for cases like (i) in which John is not sure about which book is longest.

(i) The longest book John said Tolstoy had written is *War and Peace* or *Anna Karenina*. (Sharvit, 2007: 347)

Furthermore, the same problem arises with other verbs such as *agree*, *be certain* and *hope*,¹² as illustrated in (44), which cannot be read evidentially.

- (44) The longest book John hopes he will (ever) have to read is *Anna Karenina*.
Situation: John mistakenly believes that *Anna Karenina* is longer than *War and Peace*, he knows he will have to read them both, and hopes that at no time will the set of books he has to read include a book longer than *Anna Karenina*. (Bhatt and Sharvit, 2005: 70)

Conversely, Bhatt and Sharvit show that Heycock's neg-raising also overgenerates: some neg-raising predicates like *should* or *likely* do not give rise to the low reading. Heycock claims that such predicates do allow the low reading based on sentences such as (45). But Bhatt and Sharvit (2005) object that when the high reading is pragmatically excluded as in (46), where the superlative, unlike *only*, does not allow a singleton set as sister, the sentence is infelicitous.¹³

- (45) This is the only book that it's likely that he wrote. (Heycock, 2005: 370)
 (46) #The tallest man Mary is likely to meet is John. (Bhatt and Sharvit, 2005: 72)
Situation: the likelihood is that Mary meets John and some (unspecific) shorter men.

Given the problems faced by Heycock neg-raising account, Bhatt and Sharvit (2005) revive Bhatt's 2002 reconstruction account: to address the interpretation issue, they adopt Hulse and Sauerland's (2006: 128) hypothesis based on intermediate traces (see (ib) in fn. 3); to explain why a low NPI is incompatible with a high reading (see (7)), they capitalize on Kadmon and Landman's (1993) pragmatic theory of NPI licensing; and to account for Heycock's intervention effects (see Section 2.2.3), they propose that the low reading is rejected when it (Strawson-)entails the high reading. However, they do not address the issue of other adjectival modifiers, which Heycock shows do not pattern like superlatives (see Section 2.2.1). Furthermore, as discussed in Heycock (2019), their account of (8) (no low reading with a high NPI) relies on reconstruction, but reconstruction should induce Condition C effects in sentences like (47); in fact, Heycock (2019: 94) observes no contrast between (47) and (48).¹⁴

- (47) That is the best picture of Moss_i that she_i ever thought she would see.
 (48) That is the best picture of Moss_i that she_i thought she would ever see.
 Heycock (2019: 94)

In sum, the debate about the low reading of intensional superlatives has not been settled yet: neither a reconstruction account, nor a neg-raising account can provide a full explanation for all their properties, i.e. their interpretation, their specificity as compared to other adjectival modifiers, the interaction of their interpretation with the type of embedding verb and with NPI licensing. In the next section, I propose an alternative, new solution that reconciles both sides of the debate as it involves high interpretation of *-est*, but low interpretation of the adjective.

¹² This claim is questioned by Heycock (2019: fn. 1).

¹³ Bhatt and Sharvit (2005: 68) indeed argue that in order to show the unacceptability of the low reading, it is necessary to construct an example where the high reading is not possible either for independent reasons.

¹⁴ Conversely, cases where the low reading is blocked by an intervening negative element should preclude reconstruction effects under Bhatt (and Sharvit)'s approach. But Heycock (2019: 95) shows that this is not the case:

- (i) The picture of his_i mother that every boy_i denied even existed was always discovered eventually in some drawer.

3. A new solution: Superlative clauses

My hypothesis relies on the parallelism between sentences like (49) and (50), (cf. (1) and (3)).

- (49) the longest book that Tolstoy wrote
 (50) a longer book than Tolstoy wrote (in 1867)

In parallel with the comparative *than*-clause in (50), I propose that the *that*-clause in (49) can be construed as a superlative clause: just as the *than*-clause in (50) is an argument of the comparative morpheme *-er* and denotes the element of comparison (i.e. the maximal degree of length of the book by Tolstoy to be compared¹⁵), I assume that the *that*-clause in (49) can be the argument of the superlative morpheme *-est* and denote the comparison set (i.e. the set of maximal degrees of length of all the books by Tolstoy to be compared). As argued by Howard (2014) for independent reasons, such superlative clauses thus make explicit the domain of comparison *C* usually taken to be implicit and provided by context (and focus) in some proposed lexical entries of superlative morphemes (see e.g. (34) and (39)).

This analysis entails split scope of the superlative morpheme and the adjective, which provides a new way of addressing the various issues of intensional superlatives. First of all, it directly explains the specificity of superlatives as compared to other adjectival modifiers: only superlatives (or elements analyzable as superlatives¹⁶) can take superlative clauses. The other properties (interpretation, intervention effects, NPIs) can also be derived, as I now explain.

3.1. Interpretation

Under the superlative clause hypothesis, the *that*-clause in sentences like (51) involves abstraction over a degree variable, just like the *than*-clause in sentences like (52).¹⁷

- (51) This is the long-**est** book that **λd** John said Tolstoy had written a **d-long** book.
 (52) This is a long-**er** book than **λd** John said Tolstoy had written a **d-long** book in 1867.

This analysis implies that *d-long* is interpreted within the *that*-clause while the superlative morpheme *-est* is interpreted outside it. John must thus have an opinion about the lengths of the books he said Tolstoy wrote, although he need not have explicitly compared these lengths.

¹⁵ It is sometimes proposed that the comparative clause is a universal quantification structure rather than a definite description (see Kennedy 1997: 70 and references therein for discussion). I will not take a stand on that issue here.

¹⁶ Bhatt (2002) also includes ordinals, numerals and nominal *only* in intensional superlatives. As discussed by Heycock (2005: 378-380), only the ordinals *first* (which Bhatt actually uses as illustration) or *last*, which are both ordinals and superlatives (cf. Herdan and Sharvit, 2006), behave like intensional superlatives, not other ordinals like *second*. Although space limits prevent me from showing it here, I also assume that *only*, which takes a domain of comparison, can be assimilated to a superlative in the relevant way (cf. Sharvit, 2015), although it may not involve degrees (cf. *same/different* in e.g. Charnavel, 2015). As for numerals, which Bhatt claims exhibit the low reading in the presence of *the*, Heycock (2005: 377-378) argues that only *few* (vs. *two*) behaves like intensional superlatives. This is consistent with my proposal as *few* is compatible with amount relatives (see Section 3.2).

¹⁷ For *than*-clauses, it is debated whether the operator-variable relation is the result of actual movement or derived in some other way (see Kennedy, 1997 and references therein). I will here assume an analysis involving *wh*-movement. More generally, I will not go into the details of the syntactic analysis of comparative clauses, which remains highly debated, but note that the superlative clause hypothesis may have consequences for that debate.

I argue that this is the so-called low reading, in line with Sharvit (2007), as illustrated in (53).¹⁸ 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.

- (53) The longest book John said Tolstoy had written was *War and Peace*. (Sharvit 2007: 337)
- a. Plausible scenario for the high reading:
John said: “Tolstoy wrote *War and Peace*, *Anna Karenina*, and *Tom Sawyer*.”
 - b. Plausible scenario for the low reading:
John said: “Tolstoy wrote *War and Peace*, which is 2000 pages long; *Crime and Punishment*, which is 1500 pages long; and *Tom Sawyer*, which is 1000 pages long.”

Furthermore, the superlative clause analysis does not face the problems of interpretation detailed in Section 2.2.4. We saw that both lexical entries in (34) and (39) overgenerate because the comparison set is left implicit. This problem does not arise under our hypothesis, under which the *that*-clause explicitly expresses that set. For example, (51) roughly corresponds to (54) under the lexical entry in (34), where the value of the first argument is provided by the superlative clause instead of being determined via association with focus (cf. Howard, 2014).¹⁹

- (54) $\llbracket -est \rrbracket (\{\lambda d. \text{John said Tolstoy had written a } d\text{-long book}\})(\lambda d. \text{this is a } d\text{-long book})$

This correctly derives the low reading, i.e. that the book in question is the book of the highest length out of the lengths about which John said that they are the lengths of books written by Tolstoy. What remains to be determined is how the superlative clause can denote a set of properties of degrees, and not just a property of degrees like comparative clauses (combining with e.g. a covert maximality operator to derive the correct interpretation, see e.g. Kennedy 1997 for discussion). We will return to this issue in Section 3.3.

3.2. Intervention effects

We saw in Sections 2.2.3 and 2.3 that the low reading is blocked by some predicates such as negative verbs, and that there is disagreement about how to characterize this set of intervenors (negative islands for Bhatt (2002), as well as predicates implying entailment of the high reading by the low reading for Bhatt and Sharvit (2005); non neg-raising predicates for Heycock (2005)), thus motivating different types of analysis.

The superlative clause hypothesis, which implies degree relativization, straightforwardly predicts the same intervention effects as those triggered by degree quantification. First, it has been observed that comparative clauses are subject to the negative island effect (von Stechow, 1984; Rullmann, 1995). Second, degree questions behave like low reading amount questions as discussed by Heycock (1995), among others, and exemplified in (55).

¹⁸ The paraphrases or scenarios provided by Bhatt (2002) or Bhatt and Sharvit (2005) do not necessarily state that John indicated the specific length of each book he said Tolstoy wrote (see e.g. (1), (4)). Sharvit (2007: 348-49) addresses this issue by intensionalizing the superlative morpheme.

¹⁹ I here adopt the lexical entry in (34) for simplicity as it is directly applicable to the superlative clause hypothesis since the domain of comparison set is assumed to be a set of properties of degrees vs. a set of individuals in the lexical entry in (39). But a careful exploration of how to map the syntax and the semantics of superlative clauses (in parallel with comparative clauses), which I cannot undertake here, could lead to a revision of that lexical entry.

The latest take on intensional superlatives

- (55) a. *How intelligent did she wonder whether he was? (Heycock, 1995: 562)
b. How many books did she wonder whether to publish this year?
c. ?*How many books did Charles wonder whether Diana might write?

Wh-islands block the low reading in amount questions as shown by the contrast between (55b), which allows the high reading and is therefore acceptable, and (55c), which strongly favors the low reading due to the creation verb *write* and is thus unacceptable. The unacceptability of (55a) implies that degree questions only allow low readings. My analysis thus makes the same predictions as Bhatt (2002) and provides a full explanation. Recall that Bhatt – without providing a full account – suggests that intervention effects by negative elements support a reconstruction analysis. But Heycock objects that such effects are not observed in other cases of reconstruction (see (25)). The superlative clause analysis reconciles both points, as it predicts intervention effects of the kind triggered by amount quantification, but does not involve reconstruction in Bhatt's sense.

Heycock's (2005: 367-68, 371) second objection, however, also seems to apply to our hypothesis: according to her, some intervention effects for the low reading do not parallel those of amount quantification (e.g. VP-adverbs, weak/strong deontic operators vs. factives). For example, she claims that *need* blocks the low reading in (56), but not in (57).

- (56) That is the only offence that he needed to claim to have committed.
(57) How much do I need to (say that I) weigh in order to be allowed to compete?
(Heycock, 2005: 371)

But if we guarantee that *d-long book* is indeed interpreted below *need* in the superlative clause construal, the low reading is in fact acceptable with intensional superlatives just as in degree questions, amount questions or comparatives, as shown in (58).

- (58) a. The longest book that John needs to read to pass the exam need not exceed 200 pages.
b. How long a book does John need to read to pass the exam?
c. How many books does John need to read to pass the exam?
d. I have to study a longer book than John needs to read to pass the exam.

(58a) is for example felicitous in a scenario where John should read at least three novels for his French exam: two specific 50 page novels, and another longer one to be chosen on a list including novels that are all shorter than 200 pages. The sentence is thus crucially not about a specific book, but about a specific length, just like the degree question in (58b) in parallel with the low reading of the amount question in (58c). Note that the low reading in cases like (58a) requires a continuation that makes this possible (e.g. *need not exceed 200 pages* vs. *is Anna Karenina*²⁰). This example therefore challenges Heycock's objection and supports the parallel between amount quantification and intensional superlatives.²¹

²⁰ Otherwise, the low reading entails the high reading as shown by Bhatt and Sharvit (2005: 74-75). As they do not consider examples like (58a), they conclude from this that low readings are unacceptable when they (Strawson-)entail the high reading.

²¹ Space limits prevent me from going over each case discussed by Heycock, but as far as I can see, the point seems to be generalizable.

Furthermore, the superlative clause hypothesis makes another welcome prediction: it predicts that the low reading of intensional superlatives is subject to the same constraints as amount relatives such as (59), which are also standardly claimed to involve degree relativization (see Carlson, 1977; Heim, 1987; Grosu and Landmann, 1998; Herdan, 2008; i.a.).

- (59) It will take us the rest of our lives to drink the champagne **{that/#which}** they spilled at the party. (cf. Heim, 1987: 38)

In particular, amount relatives disallow *wh*-relativizers as shown in (59) where the amount reading is unavailable with *which*. Similarly, the low reading is absent in (60) where the intensional superlative combines with a *which*-clause.

- (60) the longest book which John said that Tolstoy wrote

3.3. NPI facts

Finally, the superlative clause hypothesis can also derive, I argue, the correlation between the position of *ever* and the type of readings (see (7), (8)) as long as the meaning contribution of *ever* is carefully taken into account (cf. Bhatt and Sharvit, 2005). Just like comparative clauses license NPIs (see von Stechow, 1984; Heim, 1985; i.a.) as illustrated in (61), superlative clauses are expected to license NPIs (cf. Howard, 2014²²).

- (61) a longer book than John (ever) said Tolstoy (ever) wrote

Given that I argued that the superlative clause construal triggers the low reading, this correctly predicts the acceptability of (7) (with low *ever*) under the low reading. However, this also seems to incorrectly predict that (8) (with high *ever*) can exhibit a low reading.

The solution to this apparent problem, I argue, lies in the contribution of *ever* to the interpretation of the comparison set denoted by the superlative clause. Recall that in Section 3.1, we did not specify how superlative clauses can denote a set of properties of degrees, and not just a property of degrees like comparative clauses. Inspired by 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 as shown in (62).

²² Howard's (2014) goal is to explain NPI licensing in clauses modifying superlatives under the comparative reading (e.g. *Mary sang the loudest that any soprano ever sang*). He shows that von Stechow's (1999) theory of NPI licensing by superlatives based on Strawson entailment (cf. Gajewski, 2010) does not extend to comparative readings of superlatives, where *-est* takes VP scope, unless the clause containing the NPI is taken to be the comparison set (i.e. a superlative clause). But he claims that his analysis cannot extend to absolute readings of superlatives under which *-est* takes NP scope. The examples we examine here, which involve absolute readings, should thus not fall under his analysis according to him (cf. Bumford and Sharvit, 2021). I here assume that they in fact can (i.e. superlatives can also take superlative clauses containing NPIs under absolute readings) as long as we assume that *-est* can also take propositional scope under absolute readings. I understand that Howard (2014) supposes this to be impossible because in his approach, the matrix clause and the superlative clause must match (motivated by contrasts such as *Mary sang the loudest that any {soprano/#baritone} ever sang*). But as he acknowledges, this is in fact not necessary (e.g. *Mary sang the loudest I have ever heard (anyone sing)*). Note though that this approach requires rethinking the presupposition $P \in C$ in (34), which I have to leave for further research.

- (62) the longest book that John (a. ever) said that Tolstoy had (b. ever) written
- a. $\{\lambda d. \text{John said at } t \text{ that Tolstoy had written a } d\text{-long book} \mid t \in D_i\}$
 - b. $\{\lambda d. \text{John said that Tolstoy had written a } d\text{-long book at } t \mid t \in D_i\}$

When *ever* occurs in the high position as in (62a), the degree properties in the set denoted by the superlative clause vary along the dimension of John's saying times: the comparison set includes lengths of books by Tolstoy mentioned by John at different times (e.g. in 1990, 2005 and 2021). But when *ever* is in the embedded clause as in (62b), the degree properties vary with respect to Tolstoy's writing times: the comparison set includes lengths of books that were written by Tolstoy at different times according to John (e.g. in 1867, 1877 and 1886).

This distinction, I assume, gives rise to a difference in interpretation that resembles the low vs. high reading distinction although it is not the same (both readings are so-called low readings). In the second case (62b), the default situation is that John talked about all book lengths on the same occasion; this implies that John (at least implicitly) compared book lengths as usually described under the low reading (but remember from section 3.1 that my analysis does not require an explicit comparison, but only an explicit opinion about lengths). However, in the first case (62a), John must have talked about the book lengths on different occasions; this implies that by default, he did not compare these lengths, which is thus compatible with the usual description of the high reading. In sum, I argue that there are more readings than is usually described: (i) a reading triggered by standard relative clause construal under which John only has an opinion about book authorship, not about book length (corresponding to the so-called high reading); (ii) a reading triggered by superlative clause construal and low *ever* under which John has an opinion about both book authorship and length, and it is implied that he compared the book lengths (corresponding to the so-called low reading);²³ (iii) a reading triggered by superlative clause construal and high *ever* under which John also has an opinion about both book authorship and length, but did not compare lengths (another version of the so-called high reading).²⁴ The fact that similar readings arise in the case of comparatives as shown in (63) (readings iii and ii) and (64) (reading i) corroborates this hypothesis.

- (63) a longer book than John (a. ever) said that Tolstoy had (b. ever) written
- (64) a longer book that John said that Tolstoy had written

²³ While Bhatt claims that low *ever* obligatorily triggers the low reading, Heycock only shows that low *ever* is compatible with this reading, thus suggesting that low *ever* is also compatible with the high reading (see fn. 6). This apparent empirical disagreement can be resolved if we assume that it results from the confusion between ascribing to John a mere judgment about book lengths or a judgment about comparing these lengths. Under my hypothesis, what low *ever* obligatorily implies is that John has an opinion about book lengths (as low *ever* is only predicted to be acceptable under the superlative clause construal, see fn. 24), but low *ever* does not require that John compare these lengths.

²⁴ Given that NPIs are licensed in any kind of modifiers of nouns combining with superlatives (e.g. *the longest book about any author*), NPIs are also predicted to be licensed in the *that*-clause construed as relative clause. A further question thus arises as to why low *ever* could not conversely trigger another version of the low reading in that case (e.g. *the longest book that/which John said Tolstoy had (#ever) written*). But in that case, the *that*-clause does not denote a set of properties of degrees, but a set of books, so that there can be no co-variation between books and times; low *ever* would thus imply that Tolstoy wrote all the books at the same time.

4. Conclusion

In sum, hypothesizing the existence of superlative counterparts to comparative clauses provides a new solution to the debate on intensional superlatives, which incorporates empirical arguments of both sides. Beyond this debate, this hypothesis opens new possibilities to unify the syntax and the semantics of superlatives and comparatives.

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