Appealing to superlative clauses
Or how to split the scope of superlative adjectives across intensional verbs
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1. Introduction: the superlative clause hypothesis

The general goal of this article is to defend the hypothesis that comparative clauses have superlative counterparts, which I will call the superlative clause hypothesis. While comparative clauses have been an extensive object of study, superlative clauses are only envisioned in highly restricted cases by a handful of studies. The present paper further argues for the existence of superlative clauses on the basis of cases involving an interaction between intensionality and superlatives. More generally, the argumentation is guided by the hypothesis that due to their morphosyntactic and semantic similarities, comparative and superlative constructions should be given more parallel treatments than they have been so far, as detailed below and previewed by Table 1 focusing on analyses of the comparandum in English.

Comparandum	Possible denotation		Possible structure	
	Degree(s)	**Individual(s)**	**Clause**	**Phrase**
Standard of comparison (comparatives)	Consensual	Controversial	Consensual (comparative clause)	Controversial
Domain of comparison (superlatives)	Controversial	Consensual	Controversial and scarcely studied (superlative clause)	Consensual

Table 1 – State of the art about the comparandum in comparative and superlative constructions

In languages like English, comparison constructions routinely involve comparative clauses, which can take different forms as illustrated in (1) (adapted from Kennedy & Merchant 2000 and Lechner 2020), which only includes clausal comparatives of superiority.

(1) a. Ann is taller <u>than Ben is</u>.
    b. The table is longer <u>than the door is large</u>.
    c. Sally worked more intensively <u>than Bill worked</u>.
    d. Ann visited Berlin more often <u>than Cleo did Dubai</u>.
    e. John read more books <u>than Mary did</u>.
    f. Pico wrote a more interesting novel <u>than Brio wrote</u>.

Comparative clauses are standardly treated as degree clauses expressing the so-called standard of comparison, that is, what is being compared to (see review in e.g. Lechner 2020). For example, the *than*-clause in (1)a is analyzed as denoting the extent, or degree, of Ben's tallness, which is compared to the extent, or degree, of Ann's tallness expressed by the matrix clause. More specifically, *than*-clauses are considered to involve implicit degree quantification, which allows them to complement the comparative degree head *-er/more* (whether it combines with predicative adjectives as in (1)a-b, adverbs as in (1)c-d, amount phrases as in (1)e or attributive adjectives as in (1)f). The gradable predicate (e.g. *tall*) can also be implicit in comparative deletion constructions such as (1)a (because of ellipsis or movement, depending on analyses), but must remain explicit in comparative subdeletion constructions such as (1)b. Like other elliptical constructions, comparative clauses can furthermore involve standard types of ellipsis such as gapping in (1)d or VP deletion in (1)e.

Descriptively, the standard of comparison can alternatively be expressed by a phrase in so-called phrasal comparatives exemplified in (2): all *than*-clauses in (1) can be expressed by *than*-phrases in (2) yielding identical meanings except in the cases of subcomparatives ((1)b) and comparatives with gapping ((1)d).

> (2) a. Ann is taller <u>than Ben</u>.
>   b. The table is longer <u>than the door</u>.
>   c. Sally worked more intensively <u>than Bill</u>.
>   d. Ann visited Berlin more often <u>than Cleo</u>.
>   e. John read more books <u>than Mary</u>.
>   f. Pico wrote a more interesting novel <u>than Brio</u>.

As reviewed in Lechner (2020), it remains debated whether such phrasal comparatives should be treated as (further) elided versions of clausal comparatives as under the reduced clause analysis (see Heim 1985, Lechner 2001, i.a.) or as simple DPs as under the direct analysis (see Hankamer 1973, Kennedy 2009, i.a.) as represented in (3).[1]

> (3) a. Ann is taller [$_{PP}$ than [$_{CP}$ ~~wh~~$_1$ Ben ~~is d$_1$-tall~~]].
>   b. Ann is taller [$_{PP}$ than [$_{DP}$ Ben]].

In the former case (e.g. (3)a), all *than*-complements uniformly denote degrees (sets of degrees or maximal degrees, depending on analyses) and complement the same degree head *-er* taking two degree arguments to be compared. In the latter case (e.g. (3)b), only *than*-clauses denote degrees; *than*-phrases denote individuals, which requires postulating a different, three-place *-er* taking two individual arguments to be compared with respect to a property.

Superlative constructions express comparison in a similar way to comparative constructions, to which they are clearly related morpho-syntactically. In fact, superlative counterparts of (1) can easily be constructed as shown in (4) – the specificity of superlatives being to establish a comparison within a *set* (the domain of comparison) while comparatives relate only two elements (a matrix element – the correlate, e.g. Ann in (2)a – and the standard of comparison, e.g. Ben in (2)a). For instance, the extent of Ann's tallness is evaluated with respect to the tallness of all relevant individuals in (4)a, while it is compared with only Ben's in (1)a.

> (4) a. Ann is (the) tallest (of all).
>   b. The table is (the) longest (of all tables).
>   c. Sally worked (the) most intensively (that anyone did).
>   d. Ann visited Berlin (the) most often (that anyone did).
>   e. John read the most books (that any student did).
>   f. Pico wrote the most interesting novel (that anyone did).

Despite their similarity, superlatives and comparatives are usually treated quite differently both syntactically and semantically. In particular, the comparandum is standardly considered to be a set of *individuals* in superlative constructions, while in comparative constructions, it is standardly assumed to denote a (set of) *degree(s),* and only assumed to denote an individual under some analyses (i.e. under versions of the direct analysis) or/and some languages (e.g. in Hindi or Japanese vs. English, see e.g. Bhatt & Takahashi 2011) as we mentioned above. For

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[1] The same holds of comparatives involving measure phrases, which will not be discussed in this article (see some discussion in e.g. Pancheva 2006).
> (i)   Ann is taller than 2m.

example, (5) is assumed to convey that the *mountain* climbed by John is compared with other *mountains* (with respect to their height).

(5) John climbed the highest mountain.

Under current analyses, this interpretation is achieved in two main ways. One type of analysis takes the noun phrase (e.g. *mountain*) to denote the domain of comparison (see von Fintel 1999, Farkas & Kiss 2000, Matushansky 2008, Krasikova 2012, Loccioni 2018, i.a.). Another type of analysis (Heim 1985, 1995/1999) treats the domain of comparison as an implicit variable whose value is determined by context or can be expressed by overt partitives (e.g. *of all mountains*). In both cases, the superlative morpheme *-est* takes three arguments – an individual (e.g. John's mountain), a domain of comparison (e.g. all contextually relevant mountains), and a gradable predicate (e.g. *high* or *high mountain* depending on analyses) – and is thus comparable to the controversial three-place *-er*.

This type of analysis is uncontroversial for so-called absolute readings of superlatives, that is, when the comparison (e.g. between John's and others' mountains in (5)) is absolute (e.g. John climbed the highest of all mountains, i.e. Mount Everest). The analysis of so-called relative (or comparative) readings is more debated. Under this reading, the comparison is made relatively (e.g. relative to other climbers in (5): John climbed a higher mountain than anyone else did). The *in situ* theory attributes the difference between absolute and relative readings to contextual dependency: in (5), for example, the type of interpretation depends on how the domain of comparison, i.e. the set of relevant mountains, is construed, e.g. as the set of all mountains on earth or as the set of mountains climbed by all contextually relevant people. The movement theory (Heim 1985, 1995/1999, Szabolsci 1986, i.a.), however, treats the difference between absolute and relative readings as a case of genuine ambiguity deriving from different scopal possibilities of the superlative morpheme *-est* (partly influenced by focus). In both cases though, illustrated in (6)a and in (6)b respectively, the domain of comparison C remains a set of individuals: a set of mountains in (6)a and a set of climbers in (6)b.

(6) a. John climbed the C-est high mountain.
    b. John C-est climbed a high mountain.
    c. C-est John climbed a high mountain.

But there is yet a third theory, illustrated in (6)c, which crucially impacts the standard view on domains of comparison. Under this hypothesis advanced by Heim (1995/1999) as a possible alternative to the hypothesis in (6)b, the comparandum C is not a set of individuals, but a set of (sets/properties of) degrees determined by focus (see details in section 2.1.4); under this view, (5) basically expresses a comparison between the maximal *degree of height* of the mountain climbed by John and that of mountains climbed by other relevant climbers. Importantly, this hypothesis thus brings the superlative morpheme *-est* closer to the standardly accepted, two-place comparative morpheme *-er*, since *-est* is here assumed to take two degree arguments (cf. Romero 2011).

Furthermore, two independent studies (Romero 2013, Howard 2014) propose that C as a set of sets or properties of degrees can be syntactically expressed as a clause in some restricted configurations such as (7)a and (7)b.

(7) a. Mary sang the loudest [that anyone in the group has <u>ever</u> sung].   (Howard 2014)
    b. John bought the largest [<u>possible</u> ~~for him to buy~~] present.   (Romero 2013)

Howard (2014) defends this hypothesis for cases in which a superlative seems to be modified by a relative clause matching the matrix clause and including a negative polarity item (NPI) as in (7)a. As Howard shows (see further details in section 2.2.4), standard theories of NPI licensing cannot explain why *ever* can be licensed here given that (7)a exhibits a relative reading; current theories can only explain why superlatives license NPIs in their scope under absolute readings (see von Fintel 1999, Herdan & Sharvit 2006, Gajewski 2010). To solve the problem, he argues that the embedded clause is in fact a superlative degree clause (specifying -*est*'s domain of comparison), which, like a comparative clause, can license NPIs.

Romero (2013) independently supports a similar hypothesis to account for modal superlative readings such as (7)b (i.e. John bought as large as possible a present for him to buy). To compositionally derive the specificity of this reading (John bought an actual present) as compared to readings involving *possible* as a noun modifier (a possible present need not be an actual present), she hypothesizes that *possible* is part of the domain of comparison C where it is complemented by a reduced amount relative. In short, she motivates the existence of partially elided superlative clauses (i.e. *possible* ~~for him to buy~~ in (7)b).

In sum, this brief review of the main analyses of the comparandum in comparative and superlative (English) constructions reveals that what is taken to be the most common case in comparative constructions in English-like languages – namely the case in which the comparandum is expressed by a degree clause – is considered to be (at best) exceptional in superlative constructions. Conversely, what remains (at best) controversial for English comparative constructions – namely the case in which the comparandum is of an individual type – is routinely treated as the standard case in superlative constructions. The many (morphosyntactic and semantic) parallels between comparative and superlative constructions beg the question whether this assumed asymmetry is warranted. There are certainly notable differences between comparative and superlative constructions. In particular, comparatives semantically establish a comparison between two *distinct* elements (the correlate and the standard of comparison) while superlatives establish a comparison *within* a set of elements (the domain of comparison *containing* the correlate) as emphasized by e.g. Loccioni (2019). Furthermore, the domain of comparison seems more commonly implicit in superlatives than in comparatives as noted by e.g. Heim (1985). But it is not clear why these differences would derive from the assumed degree/clause vs. individual/phrase type of asymmetry, and to my knowledge, no argument has been provided to that effect; arguments for the analyses of comparanda in comparative and superlative constructions are usually made independently.

The overarching research program underlying the present article is to instead test the default hypothesis that the comparandum should be of the same nature in comparative and superlative constructions. The specific goal will be more modest and consist in motivating the existence of superlative clauses in more constructions than previously proposed. Specifically, we will focus on two empirical cases involving superlatives and intensional predicates, namely so-called 'intensional superlatives' (Bhatt & Sharvit 2005) as in (8)a and 'upstairs *de dicto* readings' (Sharvit & Stateva 2002) as in (8)b, which remain poorly understood.

(8) a. the <u>longest</u> book that John <u>said</u> that Tolstoy had written   (Bhatt 2002)
    b. John <u>wanted</u> to climb the <u>highest</u> mountain.   (Heim 1995/1999)

As we will see, both cases present a reading that cannot be derived by standard theories of superlatives. These two puzzles are usually examined separately, and the various solutions that have been proposed for each do not usually extend to the other (see Bumford & Sharvit 2022 for a recent case). Instead, I will hypothesize that the two problems can be given the same solution because they are of the same nature: both cases require the intensional predicate (e.g. *said*, *wanted*) to scope between the superlative morpheme (-*est*) and the gradable predicate (e.g. *long*, *high*) as argued by Sharvit (2007) for intensional superlatives and Heim (1995/1999) for upstairs *de dicto* readings. Such split scope can be uniformly achieved in both cases under the hypothesis that they involve (elided) superlative clauses as roughly represented in (9), where the bracketed clauses stand for such clausal complements of -*est* and crossed out elements for elided elements.

(9) a. the long-**est** book **[λd** John **said** Tolstoy had written ~~**d-long** book~~**]**
b. John wanted to climb the high-**est** mountain **[λd** ~~anyone~~ **wanted** ~~to climb~~ ~~**d-high** mountain~~**]**

The outline of the rest of the article is as follows. Section 2 will concentrate on intensional superlatives like (9)a. We will review the problems raised by the so-called low reading and discuss the main solutions that have been proposed as well as their shortcomings. This will lead us to show that the superlative clause hypothesis provides a novel solution that overcomes the problems of existing approaches. Section 3 will focus on upstairs *de dicto* readings like (9)b. Although the specifics of the argumentation will be different, we will similarly see that assuming the existence of (elided) superlative clauses allows us to improve on previous analyses. Space limitations will only allow us to examine these two cases in detail, but in Section 4, we will conclude by briefly tackling other issues raised by the superlative clause hypothesis and outlining directions to take in future research to make a full case.

2. Intensional superlatives

Intensional superlatives (as dubbed by Bhatt & Sharvit 2005) are superlative adjectives such as *longest* in (10) (repeating (8)a) that seem to modify the head of a relative clause containing an intensional predicate such as *said* in (10).

(10) the <u>longest</u> book [that John <u>said</u> that Tolstoy had written]   (Bhatt 2002: 57)
a. *longest > said* (high reading: longest according to the speaker)
b. *said > longest* (low reading: longest according to John)

As first observed by Bhatt (2002), (10) seems to exhibit two readings depending on who is understood as evaluating the length of the book – John or the speaker. In the latter case (i.e. (10)a), John only expresses an opinion about the authorship of the book. Under this interpretation, (10) may for instance denote *War and Peace* if the speaker and John are not mistaken about book length and book authorship, respectively. This reading is called the high reading because the superlative adjective *longest* seems to be interpreted above the intensional predicate *said*. In the former case (i.e. (10)b), John further expresses an opinion about the length of the book, which is reported by the (possibly disagreeing) speaker. Under this construal, (10) may for example refer to *Anna Karenina* if John is mistaken about book length, but not about book authorship. This reading is called the low reading because *longest* seems to be interpreted below *said*.

According to Bhatt (2002), these two readings reveal two scopal possibilities, which provide a new argument for the raising analysis of relative clauses. Specifically, he argues that the low reading derives from reconstruction of the superlative adjective within the relative clause. Under the low reading, *longest book* in (10) must be interpreted within the relative clause, just like the part of the idiom *headway* in (11). This is only possible, so the argument goes, if the head of the relative clause originates internal to the relative clause.

(11) The headway that we made was satisfactory.

As we will see in Section 2.1, Bhatt's reconstruction hypothesis remains debated because it faces several challenges; but alternative existing hypotheses are not without their problems either. In Section 2.2, we will see that the superlative clause hypothesis provides a novel solution that reconciles both sides of the debate. The core idea consists in treating the bracketed clause in (10) under the low reading as a superlative clause, which parallels the comparative clause in (12).

(12) a long~~er~~ book [than John <u>said</u> that Tolstoy had written ~~a long book~~ (in 1867)]

This hypothesis entails split scope of the superlative morpheme *-est*, which, like *-er*, is interpreted outside the clause, and the gradable predicate *long*, which is interpreted within the clause (see (9)a). Such split scope, I will argue, is the key to reconciling the arguments for and against the reconstruction hypothesis.

2.1. The debate on superlative reconstruction

The controversy about Bhatt's reconstruction hypothesis is based on four main points previewed in Table 2, which we discuss in turn in Sections 2.1.1, 2.1.2, 2.1.3 and 2.1.4, respectively.

	For reconstruction (Bhatt 2002, Bhatt & Sharvit 2005, Hulsey & Sauerland 2006, i.a.)	**Against reconstruction** (Heycock 2005, Sharvit 2007, Heycock 2019, i.a.)
NPI licensing	Local licensor required for low NPI	Intervention effect for low NPI
Intervention effects	Due to A-bar movement	Due to neg-raising
Other modifiers	*De dicto* reading of other modifiers	Special properties of *de dicto* readings of other modifiers
Interpretation	*De dicto* reading of superlative	Overgeneration

Table 2 – The main points of the debate on intensional superlative reconstruction

2.1.1. NPI licensing

Bhatt (2002) argues that the constraints on NPI licensing in the clause modifying intensional superlatives support the reconstruction hypothesis. Specifically, he claims that in the presence of a NPI, the type of reading available depends on the position in which the NPI appears as illustrated in (13).

(13) a. the longest book that John <u>ever</u> said that Tolstoy had written   (Bhatt 2002: 60)
     b. the longest book that John said that Tolstoy had <u>ever</u> written

According to Bhatt (2002), (13)a involving *ever* in the higher clause only exhibits the high reading, and (13)b involving *ever* in the lower clause only exhibits the low reading. This

correlation, he claims, derives from locality constraints on NPI licensing (cf. Linebarger 1980): the superlative *longest* can only license the NPI *ever* if it is interpreted within the same clause as *ever*; in (13)b, this can only obtain under reconstruction.

But as pointed out by Heycock (2005), the assumption on which Bhatt's argument relies is incorrect: weak NPIs like *ever* do not require a clausemate licensor. As noted by Bhatt himself (2002: 60, fn. 9), the negation can for instance license a NPI across clauses as shown in (14).

(14) Mary did<u>n't</u> say that Mina had <u>ever</u> been to Boston.   (Bhatt 2002: 60, fn. 9)

Crucially, Heycock (2005) demonstrates that the same holds of superlatives by using noun complement clauses as in (15) instead of relative clauses as in (13) to circumvent the possibility of reconstruction.

(15) a. This is the <u>best</u> indication that he was <u>ever</u> here.   (Heycock 2005: 375)
     b. This was the <u>first</u> indication that they thought she would <u>ever</u> succeed.

Therefore, sentences like (13)b do not constitute evidence for reconstruction, after all.

Bhatt & Sharvit (2005), however, offer another explanation for the non-ambiguity of (13)b that supports reconstruction. This explanation relies on Kadmon & Landman's (1993) pragmatic theory of NPI licensing, according to which the role of a NPI is to widen the domain restriction of the indefinite it combines with and the NPI is licensed only when it yields a stronger statement. Thus, *ever* in (13) can only be licensed in contexts where it is not established that the time stretch concerning Tolstoy's writing exhaustively covers his productive years. This is possible in (13)b with low *ever*, Bhatt & Sharvit argue, only if *longest book* is in the scope of *said* (i.e. if it has reconstructed); in that case, *ever* is licensed if it is not already established that John believes the time stretch concerning Tolstoy's writing to exhaustively cover his productive years as a book writer. However, if *longest book* is not interpreted below *said*, strengthening only obtains if according to John, the time stretch does not necessarily cover Tolstoy's productive years as a writer of things that are in fact books – a hard constraint for speakers to place on the context, which Bhatt & Sharvit claim accounts for the unavailability of this reading. On Bhatt & Sharvit's account, the absence of the low reading in (13)a with high *ever* also derives from reconstruction of *longest book*: high *ever* cannot be licensed by *longest book* from the reconstructed position below *said* where *longest book* must be interpreted to trigger the low reading, since *ever* would no longer be in the scope of *longest*.

But as discussed in Heycock (2019: 94), this hypothesis predicts a correlation between the low reading and binding conditions, which is not borne out. In particular, intensional superlatives involving a low NPI should be ungrammatical if they contain material that would induce a Condition C violation in the reconstructed position as is the case in (16)a.

(16) a. This is the <u>best</u> picture of Moss_i that she_i thought she would <u>ever</u> see.
     b. This is the <u>best</u> picture of Moss_i that she_i <u>ever</u> thought she would see.
                                                                    (Heycock 2019: 94)

But in fact, Heycock observes no contrast between (16)a and (16)b where high *ever* is predicted to be incompatible with reconstruction.

Perhaps even more problematically for Bhatt's account, Heycock (2005) shows that intervention effects for NPI licensing provide direct evidence against reconstruction.

(17) a. *I did<u>n't</u> think that <u>everyone</u> had <u>ever</u> been there.

b. *This is the <u>longest</u> book that <u>everyone</u> thinks John has <u>ever</u> read.

<div align="right">(Heycock 2005: 376)</div>

Universal quantifiers like *everyone* are known to intervene for NPI licensing as illustrated in (17)a involving a negation as licensor. Crucially, the same intervention effect arises with intensional superlatives as in (17)b. But *everyone* could not intervene if *longest* had reconstructed below *thinks* as hypothesized by Bhatt. In the end, the NPI facts thus seem to argue against Bhatt's reconstruction account.

2.1.2.   Intervention effects

Given such evidence against reconstruction, Heycock (2005, 2019) proposes an alternative account on the basis of another type of intervention effects: as illustrated in (18), the low reading is blocked by intervening elements such as negation in (a) (or negative verbs, as already noticed by Bhatt 2002: 62), adverbs like *mistakenly* in (b), or various predicates including implicatives like *manage*, weak and strong (vs. midscalar) deontic or epistemic operators like *need* or *be possible*, or factives like *know* in (c).

(18) a. # the longest book that John did<u>n't</u> say that Tolstoy had written.
b. # the longest book that John <u>mistakenly</u> thought that Tolstoy had written
c. # the longest book that John <u>knows</u> that Tolstoy had written

According to Heycock, these facts can be characterized by the following generalization: all and only neg-raising predicates support the low reading; elements such as *mistakenly* or *know* that block neg-raising also block the low reading. She proposes to derive this generalization from the negative entailment that she assumes superlatives generate (cf. Giannakidou 1997).

(19) a. *Anna Karenina* is the longest book that Jennifer thinks Tolstoy wrote
b. ¬ **[**Jennifer thinks Tolstoy wrote a book other than *Anna Karenina* d long]
c. Jennifer thinks ¬ [Tolstoy wrote a book other than *Anna Karenina* d long]

<div align="right">(Heycock 2005: 369)</div>

Due to the meaning of the superlative *longest*, sentence (19)a is assumed to generate the negative entailment in (19)b, which is compatible with the high reading. Assuming a semantic (vs. syntactic) analysis of neg-raising, Heycock further hypothesizes that due to the neg-raising property of *think*, the negation can be interpreted lower as in (19)c, thus triggering the low reading. That's why low readings are unavailable with predicates disallowing neg-raising. For instance, (20)a only gives rise to the entailment in (20)b because *know* disallows neg-raising as in (20)c.

(20) a. *War and Peace* is the longest book that Jennifer knows Tolstoy wrote
b. ¬ **[**Jennifer knows Tolstoy wrote a book other than *War and Peace* d long]
c. *Jennifer knows ¬ [Tolstoy wrote a book other than *War and Peace* d long]

Incidentally, Heycock shows that this hypothesis also provides an explanation for the absence of low readings with high NPIs as in (13)b above: like other adverbs, *ever* blocks neg-raising, and thus the low reading.

Heycock (2005, 2019) does not fully spell out her account. In particular, she does not detail the analysis of neg-raising (cf. Horn 1989 in Heycock 2005, Gajewski 2005 in Heycock 2019) or

the negative semantics of superlatives (cf. Giannakidou 1997) she adopts. As suggested by Bhatt & Sharvit (2005), her account can be specified using Heim's (2000) semantics of neg-raising verb (cf. Hulsey & Sauerland 2006) and Heim's (1995/1999) semantics of superlatives (see section 2.1.4). But even so, several points remain unclear or problematic. For instance, it is not always obvious how the negative entailment can be compatible with the high reading in the case of non neg-raising predicates; for example, (20)b is not straightforwardly consistent with the high reading due to the factivity of *know* (cf. Bhatt & Sharvit 2005: fn. 7). More problematically, the predictions in the case of intervening negation, which are not spelled out, seem incorrect. Following the logic in (18), (21)a should generate the entailment in (21)b, which can either entail (21)c (with neg-lowering of one negation, as seems allowed) or (21)d (without or with double neg-lowering).

(21) a. *Anna Karenina* is the longest book that Jennifer does not think Tolstoy wrote.
b. ¬ **[**Jennifer does not think Tolstoy wrote a book other than *Anna Karenina* d long**]**
c. ¬ **[**Jennifer thinks Tolstoy did not write a book other than *Anna Karenina* d long**]**
d. Jennifer thinks Tolstoy wrote a book other than *Anna Karenina* d long

While (21)c, which is a very weak assertion, seems compatible with the high reading, (21)d is problematic: it entails that *Anna Karenina* is not the longest book that Jennifer thinks Tolstoy wrote, which is not an available reading for (21)a. These problems are related to a more general issue regarding the assumed scope of the gradable predicate: since the superlative does not reconstruct, it remains unclear how *d-long* (vs. the negation entailed by the superlative) can be interpreted in the scope of the intensional verb under Heycock's analysis.[2] In section 2.2, we will in fact see that understanding this point will turn out to be the key to solving the problems of both Bhatt's and Heycock's accounts.

But even if we grant that Heycock's neg-raising account could be specified in a satisfactory way, the main problem, as pointed out by Bhatt & Sharvit (2005), is that the generalization it relies upon is incorrect. First, Heycock's hypothesis undergenerates because the low reading is in fact available with some predicates blocking neg-raising. This is strikingly the case of *say* included in Bhatt's original examples (e.g. (10)). Heycock, who is aware of the problem, proposes to treat *say* in such cases as an evidential that can be paraphrased as in (22).

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

However, Bhatt & Sharvit (2005) object that the correct paraphrase should be (23), where *according to John* unambiguously modifies the embedded clause; but (23) does not allow a low reading.

(23) This is the longest book that, according to John, Tolstoy wrote.

(Bhatt & Sharvit 2005: 71)

Furthermore, Bhatt & Sharvit (2005) argue that this explanation could not carry over to other non neg-raising predicates that can also trigger the low reading, such as *agree*, *be certain* or *hope* as illustrated in (24) (although Heycock 2019: fn.1 questions this claim and begs for more thorough empirical investigations).

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[2] This issue does not stand out in Heycock's articles because most of her examples illustrating the correlation between low reading and neg-raising predicates include *only* rather than superlatives. (19) nevertheless suffices to raise the issue. See further discussion about the difference between *only* and superlatives in section 2.2.2.

(24) The longest book John <u>hopes</u> he will (ever) have to read is *Anna Karenina*.

For instance, (24) is acceptable in a scenario where John mistakenly believes that *Anna Karenina* is longer than *War and Peace*, he knows that 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 & Sharvit 2005: 70).

Conversely and even more problematically, Bhatt & Sharvit (2005) argue that Heycock's neg-raising account overgenerates because the low reading is unavailable with some neg-raising predicates such as *be likely* or *should*. Heycock (2005: 370) claims that such predicates do trigger the low reading on the basis of examples like (25)a-b involving *only*, which both Bhatt (2002) and Heycock (2005) take to behave like superlatives.

(25) a. This is the <u>only</u> book that it's <u>likely</u> that he wrote.
    b. That is the <u>only</u> offence that he <u>should</u> claim to have committed.

As acknowledged by Bhatt & Sharvit (2005) too, (25)a is indeed acceptable in a situation where the likelihood is that he wrote only this book, and (25)b in a situation where the requirements are that he claim to have committed only that offence. But Bhatt & Sharvit (2005: 72) argue that these interpretations can also correspond to high readings given that *only* can take a singleton set as sister. A better test should thus include superlative like *tallest* in (26), which is pragmatically incompatible with a singleton set of comparison.

(26) a. The <u>tallest</u> man Mary is <u>likely</u> to meet is John.
    b. The <u>tallest</u> man Mary <u>should</u> meet is John.

Such sentences do not trigger the low reading, according to Bhatt & Sharvit (2005). For example, (26)a is infelicitous in a situation where the likelihood is that Mary meets John and some unspecific shorter men. In this situation, the low reading is predicted to be acceptable, but the high reading infelicitous because there is only one specific man (i.e. John) that Mary is likely to meet.

Thus, the generalization motivating Heycock's neg-raising account seems incorrect, after all. But Bhatt's (2002) analysis does not predict the right generalization either. Observing intervention effects by negation and negative verbs, Bhatt (2002) suggests that they can support the reconstruction hypothesis because some kinds of A-bar movement, such as amount questions, are subject to the negative island effect as illustrated in (27).[3]

(27) a. <u>How many</u> articles does the editor want to have in this volume?
    b. <u>How many</u> articles does the editor <u>not</u> want to have in this volume?

(Heycock 2005: 364)

In (27)a, the amount can be interpreted in the scope of *want*, as can be clearly seen in scenarios in which the editor has not considered any particular articles yet. But this low reading is unavailable in the presence of negation as in (27)b. However, Bhatt (2002) acknowledges that it remains unclear why reconstruction of superlative would involve the kind of A-bar movement subject to negative island effects.

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[3] Bhatt's (2002) original example to illustrate the point is (ii). But the ambiguity is here unclear since the verb *feed* is not intensional.
    (ii)   How many dogs did John not feed?

In fact, Heycock (2005) shows that other phenomena requiring reconstruction within a relative clauses, such as idioms, are not subject to negative island effects as exemplified in (28).

(28) This is the kind of <u>headway</u> that <u>few</u> people can <u>make</u>.   (Heycock 2005: 365)

Furthermore, Heycock demonstrates that the low reading of intensional superlatives is blocked in a wider range of environment than those blocking amount quantification. For instance, the adverb *mistakenly* blocks the low reading in (29)a, but not in (29)b.

(29) a. # This is the <u>first</u> book that we <u>mistakenly</u> thought that Antonia had written.
    b. <u>How many</u> books did you <u>mistakenly</u> think that Antonia had written?
                                                                  (Heycock 2005: 367)

Bhatt & Sharvit (2005), however, propose another way to account for intervention effects that is compatible with the reconstruction hypothesis. According to them, the low reading is rejected when it (Strawson-)entails the high reading (ignoring cases involving negation or negative verbs). For instance, they argue that examples like (20) involving factive *know*, the high reading is necessarily true when the low reading is true.

In sum, both the empirical generalization about the set of interveners for the low reading and the analysis of such intervention effects remain debated. Neither Bhatt's (2002) reconstruction account nor Heycock's neg-raising account seem to make the right predictions for all cases. Strikingly, the case that is provided in both cases as most illustrative of intervention effects, namely negation, ends up being explained by neither analysis.

2.1.3.   Other modifiers

Bhatt (2002) restricts his investigation of low readings to superlative adjectives, ordinals *first* and *last*, and nominal *only*. Nevertheless, his reconstruction account predicts that any modifier should be subject to the same ambiguity since there is no reason why reconstruction would target some modifiers rather than others.

This is precisely one of the further arguments for the reconstruction account provided by Hulsey & Sauerland (2006). They argue that adjectives like *wonderful* in (30) behave like superlatives in their ability to be read *de dicto* (e.g. with respect to the embedded verb *said*).

(30) The <u>wonderful</u> books that Siouxsie <u>said</u> that Lydia had written
                                                        (Hulsey & Sauerland 2006: 125)

(30) can indeed refer to books judged to be wonderful by Siouxsie, but not by the speaker. Both Bhatt (2002: 73, fn.18) and Heycock (2005: 362) also observe this fact, but consider it as a case different from intensional superlatives because, under this reading, the adjective exhibits a scare quote intonation and does not require any intensional predicate in its sentence as shown in (31).

(31) Siouxie was always going on about the books that Lydia had written. But I've read those <u>wonderful</u> books and they are complete rubbish.   (Heycock 2005: 362)

Hulsey & Sauerland reply to this objection that the special intonation often used in (30) is due to the fact that scenarios proposed to highlight the *de dicto* reading usually require evaluating *wonderful* and *books* in different worlds. The scare quote intonation is not observed when the noun *books* is forced to be interpreted in the scope of *say* as in (32).

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

Furthermore, they show that superlatives can also trigger a *de dicto* reading in the absence of an intensional predicate as in (33).

(33) Siouxie was always going on about the new Tolstoy book she bought and that it's the longest by Tolstoy. But I've read that <u>longest</u> book and it's a lot shorter than *War and Peace*. (Hulsey & Sauerland 2006: 125)

But Heycock argues that cases like (33) require a special intonation showing that they should be classified in the same category as (30)-(31). Moreover, she shows that other modifiers than superlatives are not subject to the intervention effects discussed in Section 2.1.2 as illustrated in (34), which displays a *de dicto* reading despite the presence of the intervening negation.

(34) The <u>expensive</u> car that his wife did<u>n't</u> think he should buy was actually a Ford Mondeo. (Heycock 2005: 363)

Finally, note that in example (32) the absence of special intonation seems to be due to the semantics of the verb *turn out*, which presupposes a different judgment for its subject and its object (cf. Bhatt 2002: fn.18, ex. (iv)); and under Hulsey & Sauerland's reasoning, it remains unclear why the noun would be forced to reconstruct with superlatives, but not with other modifiers.

In sum, there are at least three properties that distinguish the *de dicto* reading of other modifiers from that of intensional superlatives, suggesting that this reading is derived in a different way (which is also applicable to superlatives in some cases like (33)). This is unexpected under Bhatt's reconstruction account, but compatible with Heycock's neg-raising account, under which only modifiers with a negative entailment can trigger a low reading.

2.1.4. Interpretation

The fourth and last main argument invoked in the debate on the reconstruction of intensional superlatives is their interpretation. As we saw at the outset, the ambiguous interpretation of intensional superlatives in phrases like (35) (repeating (10)) is the very source of the debate: it is because the superlative *longest* seems to be interpretable in the scope of the intensional predicate *said* that Bhatt (2002) hypothesizes that it can reconstruct.

(35) the <u>longest</u> book [that John <u>said</u> that Tolstoy had written]

But as shown by Sharvit (2007), assuming reconstruction of the superlative is problematic under any semantics of the superlative morpheme *-est*. As mentioned in the introduction, one type of lexical entry for *-est* assumes that the domain of comparison is a set of individuals.

(36) $[\![\textit{-est}]\!](C_{<et>})(R_{<d,et>})(y_e) = 1$ iff $\exists d \mid R(y)(d)=1$ and $\forall z \in C \mid z \neq y, R(z)(d)=0$
    $[\![\textit{-est}]\!]$ is defined only if (a) $y \in C$; (b) $\forall x \in C, \exists d \mid R(x)(d)=1$ (cf. Heim 1995/1999: 3)

In (36), *-est* takes three arguments: an implicit, individual-based domain argument C contextually determined (e.g. a set of relevant books), a gradable predicate R (e.g. *long book*, where *long* is a relation between individuals and degrees) and an individual argument y (e.g. *War and Peace*). Assuming a downward monotonic meaning for gradable adjectives, *War and Peace is the longest book* is true if and only if there is a degree such that *War and Peace* is a

book long to that degree, and no other book in the comparison set is long to that degree. If we adopt this lexical entry to derive the low reading of (35) as represented in (37), Sharvit (2007) explains that no value of the comparison set can give rise to the correct interpretation, but (37) both over- and undergenerates.[4]

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

If C is construed as a set of relevant books, we should expect a reading under which some of these books can be by other authors than Tolstoy, which is in fact absent. If C is restricted to a set of relevant books by Tolstoy, (37) implies that John said something like "Tolstoy wrote the longest book that Tolstoy wrote", which is odd.

The second type of lexical entry for *-est* we evoked in the introduction involves a degree-based comparison set.

(38) $[\![$ *-est* $]\!](C_{<dt,t>})(P_{<dt>}) = 1$ iff $\exists d \mid P(d)=1$ and $\forall Q \mid C(Q)=1$ and $Q \neq P$, $Q(d)=0$
$[\![$ *-est* $]\!](C)(P)$ 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 1995/1999: 18)

This lexical entry, which requires *-est* movement, takes two arguments: an implicit, focus-based domain argument C consisting of a set of degree properties determined via association with focus (Rooth 1992), and a property of degrees P. Heim (1995/1999) specifically designs it to capture relative readings of superlatives as illustrated in (39) (cf. (6)c).

(39) a. TOLSTOY wrote the longest book.
b. *est*-C [[1 [Tolstoy$_F$ wrote the d_1-long book]]~c]
P = λd. Tolstoy wrote a/the[5] d-long book
C = {λd. Tolstoy wrote a/the d-long book, λd. Dostoevsky wrote a/the d-long book,
λd. Shakespeare wrote a/the d-long book, …}. (Sharvit 2007: 343-344)

The relative reading of (39), which is favored by focusing *Tolstoy*, implies a comparison between book authors. This is derived under (39) by making *-est* focus sensitive: *-est* moves to a propositional level and takes as first (implicit) argument (C) the focus value of its complement P. (39)b thus predicts (39)a to be true if and only if there is a degree such that Tolstoy wrote a book long to that degree, and no other relevant author wrote a book to that degree.

Bhatt (2002) uses this lexical entry to derive the low reading as shown in (40), where *longest* reconstructs in the relative clause, moves to the edge of the embedded clause and focus-associates with the trace of the relative head (or more precisely, with the embedded variable in the lowest copy of the head after trace conversion à la Fox 2002).

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

This proposal correctly derives the low reading. But as demonstrated by Sharvit (2007), it overgenerates unless it is stipulated that only the variable inside the trace in the scope of *-est* can be focused. In particular, the interpretation under which John said (39) is unavailable even

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[4] Hulsey & Sauerland (2006: 128, (53d)) propose another representation shown in (iii), in which the superlative is interpreted at an intermediate position at the edge of the embedded clause. But as far as I can see, the same problems arise under this representation as well. They also propose a second possible representation discussed later in the main text.

(iii) λw… the λx John believes(w) λw' x –est($C_{w'}$) λd [long(d)(w') & λx Tolstoy wrote the$_x$ book(w')]

[5] This is Sharvit's 2007 notation. See sections 3.1.2 and 3.2.2 for discussion about the issue of definiteness.

with focus on *Tolstoy* as in (41) (in this case, Tolstoy is contrasted with other individuals as authors mentioned by John, not as authors of the longest book). But Bhatt's derivation predicts it to be available as long as *-est* focus-associates with *Tolstoy* as is the case in (41).

(41) a. The longest book John said TOLSTOY wrote was *War and Peace*. (cf. Sharvit 2007: 343)
  b. [the 2 John said est-C [[1 [Tolstoy$_F$ wrote a d_1-long book-2]]~C]

In sum, the two main lexical entries for *-est* that have been proposed overgenerate interpretations under Bhatt's reconstruction account. In particular, both incorrectly predict the existence of a reading implying a comparison between books by Tolstoy and books by other contextually relevant authors. As for Heycock's neg-raising account, it is not explicit about the detailed derivation of the interpretation as we mentioned above.

To solve the problem, Sharvit (2007) proposes an alternative derivation based on the lexical entry in (36), where *-est* remains interpreted external to the clause while the rest of the relative head reconstructs as represented in (42) (cf. Hulsey & Sauerland 2006: (53)d).

(42) the est-C 2 1 [John said-w 3 Tolstoy had written-w_3 (the) d_2-long-w_3 book$_1$]
                       (Sharvit 2007: 346)

According to (36), (42) refers to the book satisfying the following conditions: there is a degree such that according to John, the book is long to that degree and Tolstoy wrote it; and for all alternative books, it is not the case that according to John, they are long to that degree and Tolstoy wrote them. This derives the correct interpretation if two assumptions are made. First, the set of alternative books must be restricted to books that John said Tolstoy wrote, as specified by Sharvit (2007). Second, it must be ensured that (42) is not referring if John is not sure about which book is the longest. To this end, Sharvit (2007) proposes to intensionalize *-est*. Instead, Hulsey & Sauerland (2006) propose to add Heim's (2000) uniformity presupposition to the lexical entry of *believe*, which derives the neg-raising property of *believe*; John must thus be opinionated about which one is the longest book for (42) to be felicitous. Note that this proposal can be seen as a possible explicitation of Heycock's neg-raising account, thus sharing with it its advantages and problems regarding the explanation of NPI constraints and intervention effects, as well as the motivation for splitting the scope of *-est* and the adjective.

Overall, no existing account can thus straightforwardly derive the correct interpretation for the low reading. Whether the whole head or only part of the head is assumed to reconstruct, some stipulations are required to avoid overgeneration (at best).

2.2. The superlative clause hypothesis: a novel solution to the debate

This review of the main arguments of the debate has revealed that the various properties of intensional superlatives under the low reading cannot be satisfactorily explained under any existing analysis. To summarize the main outcomes, Bhatt's reconstruction account overgenerates low readings for other modifiers than superlatives, as well as other low (e.g. relative) interpretations of superlatives; furthermore, it does not derive the intervention effects observed for the low reading as well as those for NPI licensing. Heycock's neg-raising account seems to fare better with respect to the NPI facts and the other modifiers; but it both over- and under-generates intervention effects, and it can only precisely derive the interpretation under some stipulations regarding the domain of comparison and the split scope of the superlative.

The superlative clause hypothesis, I propose, can settle the debate. The core idea is to treat the purported relative clause under the low reading as a superlative clause, that is, as a degree clause complementing the superlative morpheme and denoting the domain of comparison, as shown in (43)a. This construction is thus the counterpart of the comparative construction in (43)b.

(43) a. the long*est* book [that John said that Tolstoy had written ~~a long book~~]
b. a long*er* book [than John <u>said</u> that Tolstoy had written ~~a long book~~ (in 1867)]

As we will detail below, this hypothesis straightforwardly incorporates the improvements of the neg-raising account on the reconstruction account. Since it crucially entails that the superlative morpheme -*est* remains external to the clause, it makes the same correct predictions regarding intervention effects for NPI and avoids the overgeneration of other low (e.g. relative) readings. Since it is intrinsically tied to the presence of a superlative, it avoids the overgeneration of low readings for other modifiers than superlatives. Furthermore, it overcomes the problems faced by the neg-raising account. The nature of the superlative clause (a degree clause) suggests a natural explanation for intervention effects that does not suffer over- and undergeneration. Moreover, this proposal motivates the need for split scope (argued for explicitly by Sharvit and implicitly by Heycock) to derive the correct interpretation without requiring any additional stipulation regarding the domain of comparison, which is explicitly expressed by the clause.

In the next sections we review in turn (going in the reverse order) how each issue is treated under the superlative clause hypothesis as previewed in Table 3.

	The superlative clause hypothesis
NPI licensing	NPIs licensed in superlative clauses and affecting construal of comparison class
Intervention effects	Intervention effects for degree quantification
Other modifiers	Restriction of low readings to modifiers taking domain-denoting degree clauses
Interpretation	Split scope of -*est* (outside the clause) and adjective (inside the clause)

Table 3 – Solutions to the main points of the debate under the superlative clause hypothesis

2.2.1. Interpretation

We saw that the interpretation of intensional superlatives under the low reading gives rise to a conundrum: on the one hand, the superlative (e.g. *longest*) seems to be interpreted in the scope of the intensional predicate (e.g. *said*); on the other hand, interpreting the superlative morpheme -*est* within the embedded clause generates semantic problems. As suggested by Sharvit (2007) (and implied by Heycock's analysis), split scope solves the problem: while the gradable predicate is interpreted within the clause, -*est* is only interpreted outside the clause. But we also saw that under Sharvit's hypothesis, it remains to motivate such obligatory split scope as well as the obligatory restriction of the domain of comparison.

Crucially, the superlative clause hypothesis naturally motivates both points. First, the superlative clause hypothesis does not require stipulating a restriction of the domain of comparison to avoid overgeneration of interpretations where books by Tolstoy are compared to books by other authors: the core feature of this hypothesis is that the clause explicitly expresses the domain of comparison C, which is left implicit in previous analyses (whether it is contextually determined by context in (36) or by focus in (38)). In (43)a repeated below, the

comparison can thus only concern books by Tolstoy according to John, since the clause explicitly restricts the domain of comparison to those.

(44) the long**est** book [**that John said that Tolstoy had written** ~~a long book~~]

Second, the superlative morpheme *-est* must be interpreted external to the clause since the clause in (45)a is construed as an argument of the superlative morpheme *-est*, just as in (45)b, the comparative clause is an argument of the comparative morpheme *-er*. Note that (45)b shows a simplified representation of the comparative clause under the standard hypothesis that comparative clauses involve abstraction over degrees due to covert operator movement and binding of the degree variable d (see e.g. Lechner & Corver 2017, Lechner 2020 for a review).

(45) a. the long**est** book [that λ**d** John said Tolstoy had written ~~a **d-long** book~~]
     b. a long**er** book [than λ**d** John said Tolstoy had written ~~a **d-long** book~~ (in 1867)]

As for the gradable predicate *d-long book*, it must be interpreted both in the embedded clause and in the matrix clause as is the case in comparative clauses (however this is derived[6]). The superlative clause hypothesis therefore entails split scope of *-est* and *d-long*, thus overcoming the aforementioned problems of scoping *-est* within the clause.

Note that this hypothesis implies a reevaluation of how the low reading is described. Bhatt (2002: 57) characterizes the low reading as follows: we can paraphrase what John said as 'X is the longest book that Tolstoy wrote'; the high reading, however, picks out the longest book out of the books about which John said that Tolstoy wrote them. To clearly distinguish between the two readings, Bhatt & Sharvit (2005) provide an example of scenario where the high reading is true and the low reading is false (in (46)a) and an example of scenario where the high reading is false and the low reading is true (in (46)b).

(46) 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 these scenarios, John explicitly expresses an opinion about which book is the longest. Whether he is right or not about it distinguishes between the low and the high readings.

Sharvit (2007), however, does not attribute to John a superlative judgment under any reading as shown in (47).

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[6] The mechanism for recovering the adjective (*long*) and the noun (*book*) in the comparative clause is debated. In predicative comparative constructions, which have been more extensively discussed, the adjective is often assumed to be recovered by ellipsis (comparative deletion as in e.g. Kennedy 2002) or sometimes by movement (head raising as in e.g. Lechner 2004). The few analyses of attributive comparative constructions (e.g. Kennedy & Merchant 2000, Lechner 2004) also assume movement or/and ellipsis of the adjective and the noun under some additional assumptions about the structure that cannot be detailed here.
Note that another important topic for debate in the comparative literature, which won't be addressed here either, is the way the adjective, the noun and the comparative clause combine (see review in e.g. Lechner & Corver 2017, Lechner 2020). Heimian analyses, which underlie most hypotheses mentioned in the main text, rely on the hypothesis that the comparative morpheme forms a constituent with the comparative clause.

(47) The longest book John said Tolstoy had written was *War and Peace*.
    a. Scenario A (high reading true)
    John said: "Tolstoy wrote *War and Peace*, *Anna Karenina* and *Tom Sawyer*."
    b. Scenario B (low reading true)
    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."

According to Sharvit, John expresses an opinion about who wrote the books under both readings, but he only has to express an opinion about the length of the books under the low reading; and unlike in (46)b, he does not have to make an explicit comparison. Here, the distinction between the high and the low readings thus depends on whether it is the speaker or John that is responsible for the judgment about book lengths.

It seems that the goals in (46) and (47) are different. In (46), Bhatt & Sharvit propose cases where the low and the high readings yield different truth values; they thus imagine scenarios where John explicitly expresses a different judgment than the speaker about which book is longest. In (47), Sharvit provides the most minimal information that is required to trigger each reading. Under the high reading, John only needs to be opinionated about book authorship; it does not matter whether he has an opinion about book length, and if he has one, it does not matter whether it is correct or not. Under the low reading, John must be opinionated about both book authorship and length, but need not explicitly compare the books; note though that under a scenario like (47)b, it is implied that according to John, the longest book by Tolstoy is *War and Peace*, since possible worlds are assumed to obey logical rules (so that John can't both believe (47)b and e.g. that *Crime and Punishment* is the longest of the three books).

There is thus no disagreement between (46) and (47), but their differences have important analytical consequences: what (47) reveals is that for the low reading to arise, it is sufficient to scope *d-long* under *said*, the superlative morpheme *-est* need not.[7] This point is exploited by our superlative clause hypothesis. Just like the comparative clause in (45)b, the superlative clause in (45)a only expresses that John has an opinion about book lengths, not that he has a comparative opinion, which is only pragmatically implied.

It remains to explain in further detail how the superlative clause hypothesis can compositionally derive the low reading of a sentence like (46). As we mentioned in the introduction, most analyses of comparative clauses agree on treating them as degree clauses complementing a 2-place degree-based comparative morpheme. A reasonable hypothesis is to treat clausal superlatives in a parallel fashion by adopting the treatment of *-est* in (38) (repeated below in (48)) as a 2-place degree-based superlative morpheme, as proposed by Romero (2013) and Howard (2014) (the only two previous proponents of the superlative clause hypothesis).

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[7] At first glance, it could seem that with some verbs like *hope* in (24), the low reading requires an explicit comparison (the content of John's hope is not about *Anna Karenina*'s specific length, but about it being the longest in its reading list). But the comparative component here comes from the meaning of the verb *hope*: *hope* belongs to the class of preferential predicates, which are focus sensitive and have a preference-based semantics (see e.g. Uegaki & Sudo 2019).

Further note that as mentioned above and specified in Hulsey & Sauerland (2006: 130), the exact derivation of cases where John is unsure about the precise length of some book (which entails that he is unsure about which one is the longest book) also depends on the lexical semantics adopted for the intensional predicate. For instance, the right result (i.e. infelicity) can be obtained with *believe* if we incorporate the uniformity presupposition in its semantics.

(48) $[\![\textit{-est}]\!](C_{<dt,t>})(P_{<dt>}) = 1$ iff $\exists d \mid P(d)=1$ and $\forall Q \mid C(Q)=1$ and $Q \neq P$, $Q(d)=0$

$[\![\textit{-est}]\!](C)(P)$ 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 1995/1999: 18)

Under this hypothesis, the superlative clause explicitly expresses the domain of comparison C (a set of sets of degree[8]), which was originally conceived under this hypothesis as corresponding to the implicit focus value of P. This is illustrated in (49) based on Howard's 2014 example and representations.

(49) a. Mary sang the loudest **she has ever sung at eleven am**.
b. [[est [**she has ever sung** d̶-̶l̶o̶u̶d̶]] [Mary sang d-loud]]
c. est $(\{\lambda d. \lambda w.$ **Mary sing d-loud at t in w** $\mid t \in D_i\})(\lambda d. \lambda w.$ Mary sing d-loud at 11am in w)

(cf. Howard 2014)

As we can see in (49)c, the superlative clause here corresponds to the first argument of *-est* (after *-est* covert movement to the propositional level) and denotes the set of degree properties – varying along the dimension of singing times – such that Mary sung to those degrees. It is similar to the comparative clause in (50).

(50) a. Mary sang louder at eleven am **than (she sang) at ten am**.
b. [[er [**she sang** d̶-̶l̶o̶u̶d̶ **at ten am**]] [Mary sang d-loud]]
c. er $(\lambda d. \lambda w.$ **Mary sing d-loud at ten am in w**$)(\lambda d. \lambda w.$ Mary sing d-loud at 11am in w)

The two main differences between the superlative and the comparative clauses are as follows. First, the comparative denotes a set of degrees,[9] while the superlative denotes a set of such sets (or intensions thereof, see fn. 8) as we will further discuss in section 2.2.4: while *-er* relates two elements, *-est* makes a universal claim (see Heim 1985, 1995/1999). Second, Howard claims mismatches between the matrix and the superlative clauses to be impossible while this is routinely observed in comparatives as exemplified in (51).

(51) a. Bill wrote the most poems that anyone ever {wrote/*published}. (Howard 2014: 13)
b. Bill wrote more poems that Paul ever {did/published}.

According to Howard (2014), these mismatch effects in superlative clauses derive from the definiteness condition in (48) ($P \in C$). Due to the definition of focus values (e.g. in Rooth 1992), this condition is necessarily satisfied (and thus redundant[10]) under the original hypothesis where

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[8] This is the treatment of C in Romero (2013), but following Heim (1995/1999), Howard (2014) does not treat C as a set of degree sets, but a set of intensions thereof, i.e. a set of degree properties:

(iv) $[\![\textit{-est}]\!](C_{<d<st>,t>})(P_{<d, st>}) = 1$ iff $\exists d \mid P(d)$ and $\forall Q \mid C(Q)$ and $Q \neq P$, $Q(d)=0$

$[\![\textit{-est}]\!](C)(P)$ is defined only if $P \in C$, $\exists Q \in C \mid Q \neq P$, and $\forall P' \in C$, $\exists d \mid P'(d)=1$

This difference makes different predictions in cases involving ties. For instance, Howard (2014: 24) claims that *Mary sung the loudest* is not judged true if Mary and Lee sang at exactly the same intensity; this is only captured under the degree properties hypothesis: under the degree sets hypothesis, the set of degrees such that Mary sung to those degrees is indistinguishable from the set of degrees such that Lee sung to those degrees. Conversely, Romero (2013) adopts degree sets because modal superlatives allow, in fact require, the possibility of ties between possible worlds: *Mary is the prettiest possible* does not preclude Mary to be as pretty in some possible worlds as she is in the actual world (see discussion in Loccioni 2018: 86-87).

[9] Under the Heimian approach discussed here, the comparative is thus analyzed as a generalized quantifier of degrees (Heim 2000, i.a.). Under an alternative approach (Rullmann 1995, i.a.), this set is nominalized through maximization (see e.g. Lechner 2000 for a review).

[10] According to Howard (2014) based on Heim (p.c.), there are nevertheless cases such as (v) that independently justify specifying this condition in the lexical entry of *est*.

(v) All the sopranos that auditioned were impressive. But Mary sang the LOUDest at 11am.

C corresponds to the focus value of P. Under Howard's hypothesis that C can be explicitly expressed by a superlative clause, this condition entails a match between the matrix clause and the superlative clause.

This matching condition seems to raise a problem for applying Howard's hypothesis to our intensional superlatives, where the matrix clause does never match the subordinate clause. But matching effects are in fact not robust, even if we restrict ourselves to cases of relative readings involving NPIs (the cases requiring a superlative clause under Howard's hypothesis) as acknowledged by Howard (2014) himself and observed by Bumford & Sharvit (2022):

> (52) a. Out of all of us, MARY has written the longest paper containing any claim from
> her dissertation. (Bumford & Sharvit 2022: 290)
> b. Mary sang the loudest I've ever heard (anyone sing). (Howard 2014: 55)

Furthermore, the problem arises due to the specific assumption that superlative clauses express degree properties and not degree sets as in Romero (2013).[11] For example in (51)a, the set of degrees d such that Bill wrote d-many poems can perfectly belong to the set of sets (vs. properties) of degrees d such that anyone published d-many poems, since in this case we are only comparing sets not relativized to possible worlds. As mentioned in fn. 8, this assumption is motivated by judgments about scenarios involving ties, which are in fact not robust, and is not adopted by Romero (2013) to derive modal superlatives. It thus seems reasonable to hypothesize that our intensional superlatives can be construed as in (53) based on (48) using degree sets instead of degree properties.[12]

> (53) a. *Anna Karenina* is the longest book **John said Tolstoy wrote**.
> b. [[-est [**John said Tolstoy wrote** ~~a d-long book~~]] [*Anna Karenina* is a d-long book]]
> c. -est ({λd. **John said Tolstoy wrote a d-long book at t | t $\in$ D$_i$**})(λd. *Anna Karenina* is a d-long book)

But this hypothesis raises a crucial problem specifically tied to the case of intensional superlatives: the lexical entry in (48) entails that John and the speaker agree on the length of *Anna Karenina*. Specifically, (48) commits us to there being a degree d such that *Anna Karenina* is a d-long book in the actual world, John said that Tolstoy wrote a d-long book and for all other books, it is not the case that John said that Tolstoy wrote a d-long book. But (53)a does not require John to have the same opinion as the speaker about the length of Tolstoy's books; in fact, this is precisely the point of the low reading.

This incorrect prediction derives from the double interpretation of *long book* within and outside the clause, and thus above and below the intensional predicate. But under the low reading, only

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Here, the inference about Mary being a soprano is presuppositional and cannot derive from focus.

[11] Bumford & Sharvit's (2022) argument against extending Howard's superlative clause hypothesis to absolute readings also depends on these two assumptions. They claim that this hypothesis wrongly predicts that (vi) entails that there is a single person who saw a mountain higher than any mountain seen by anyone else. But this entailment derives from their assumption that -*est* scopes within the DP where they postulate the presence of elided *pro saw*; and as far as I can see, this assumption is due to the need to satisfy the definiteness condition discussed in the main text under a lexical entry of -*est* based on degree properties.

> (vi) John climbed the highest mountain that anyone saw. (Bumford & Sharvit 2022: 268)

Because of this issue and some other facts (discussed in section 4), Bumford & Sharvit (2022) develop an alternative relying on a dynamic take on superlative semantics. But as they acknowledge, their hypothesis cannot derive upstairs *de dicto* readings discussed in section 3. That's why I won't further comment on their analysis.

[12] The relevant set is here assumed to be created through quantification over times as will be discussed in detail in section 2.2.4.

John's opinion about the length of the book matters. Recall that to solve the problem, Sharvit (2007) proposes in (42) that *-est* remains interpreted external to the clause while the rest of the relative head reconstructs; furthermore, the set of alternative books must be restricted to books that John said Tolstoy wrote. We have motivated the latter aspect of her analysis by construing the clause as a superlative clause. To motivate the former aspect of her analysis, I propose that (53)a can involve ellipsis of a relative clause (under identity with the superlative clause) as shown in (54).[13]

> (54) a. the longest book John said Tolstoy wrote ~~John said Tolstoy wrote~~
> b. the 2 [-est [John said that Tolstoy wrote] 1[t_2 t_1-long book ~~John said Tolstoy wrote~~]
> c. -est ({λd. John said Tolstoy wrote a d-long book at t | t ∈ D_i})(λd. g(2) is a ~~d-long~~ book John said Tolstoy wrote a d-long book)

Assuming *-est* takes NP scope and the head of the elided relative clause reconstructs, (54) thus refers to the book[14] satisfying the following conditions: there is a degree such that according to John, the book is long to that degree and Tolstoy wrote it; and for all alternative books, it is not the case that according to John, they are long to that degree and Tolstoy wrote them. This derives the correct interpretation.

In sum, instead of building the domain of comparison C based on context or focus, which we saw overgenerates readings and does not account for the specific properties of intensional superlatives, we have built it in the syntactic representation as is the case in comparative constructions. Moreover, the ellipsis process we hypothesize, which we independently know is subject to identity conditions, guarantees that the partitive nature of superlatives is satisfied (i.e. unlike comparatives that relate two distinct elements, superlatives relate a set and an element belonging to that set).

2.2.2.   Other modifiers

Moreover, the superlative clause hypothesis straightforwardly solves the problematic point of the debate concerning other modifiers. Recall that Heycock (2005) shows that the *de dicto* readings of superlatives and other modifiers do not exhibit the same properties, leading her to conclude that they are not derived in the same way. This undermines Bhatt's reconstruction account and supports her neg-raising account according to which only modifiers generating a negative entailment are predicted to give rise to low readings.

The predictions of the superlative clause hypothesis are similar to Heycock's hypothesis: it correctly predicts that only a specific class of modifiers can trigger the low reading (i.e. the *de dicto* reading associated with neutral intonation, obligatory intensional predicate and intervention effects). Specifically, only modifiers compatible with superlative clauses (vs.

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[13] Interestingly, some languages like French can double the article in superlative constructions and thus more easily license a construction with both an overt relative clause and an overt superlative clause as in e.g. *le livre que Jean a dit que Tolstoy avait écrit le plus long que Jean ait dit que Tolstoy ait écrit.* (lit. 'the book that John said that Tolstoy had written the longest that John said that Tolstoy had written').

[14] I here assume that the head *book* can be interpreted both within and outside the relative clause, in which case the speaker and John agree that it is a book, but nothing here hinges on this hypothesis. What matters is that *book* is interpreted at least low, *-est* is interpreted only high, and *d-long* only low. See e.g. Sportiche (2016) for reconstruction effects and their derivation in relative clauses. Further note that I do not here detail the syntactic structure, esp. the highly debated structure of the degree head projection (see fn. 6).

modifiers generating a negative entailment under Heycock's analysis) are predicted to give rise to the low reading. This straightforwardly makes the correct predictions for our main cases involving superlative adjectives like *longest*.

What about the other cases discussed by Bhatt (2002) and Heycock (2005)? Even if they disagree on the analysis, Bhatt (2002) and Heycock (2005) agree on including not only superlatives like *longest*, but also nominal *only*, ordinals like *first* and numeral-like modifiers like *few* in the descriptive class of intensional superlatives (i.e. modifiers yielding a low reading), and on excluding evaluative adjectives from it; Heycock (2005) further shows that all adjectives (e.g. *expensive* in (34)) behave like evaluative adjectives in this respect.

(55) a. the <u>longest</u> book John said Tolstoy wrote.
   b. the <u>only</u> book John said Tolstoy wrote.
   c. the <u>first</u> book John said Tolstoy wrote.
   d. the <u>few</u> books John said Tolstoy wrote.
   e. #the <u>wonderful</u> books John said Tolstoy wrote.
   d. #the <u>expensive</u> books John said Tolstoy wrote.

But Bhatt and Heycock disagree on the empirical details, i.e. on how to characterize the low reading in some cases and what elements to include from the class of ordinals and numerals. Regarding ordinals, Bhatt explicitly mentions only *first*, and distinguishes the low and the high readings (in e.g. (55)c) based on whether the ordering implied by *first* is determined by the low verb or the high verb: the low reading of (55)c can be paraphrased as the book John said Tolstoy wrote first (where the order of writing matters), and the high reading as the book John first said Tolstoy wrote (where the order of saying matters). But Heycock demonstrates based on the case of *second* in (56) that the type of ordering and the rank induced by ordinals are not always evaluated with respect to the same element.

(56) The <u>second</u> mammal that we know <u>emerged</u> from the water.   (Heycock 2005: 379)

Under the most salient reading of (56), it is the order of emerging (vs. order of knowing) that matters. Nevertheless, (56) cannot be paraphrased as the mammal that we know emerged second from the water: the rank (second) should not be interpreted in the scope of *know*, even if the type of ordering is determined by the embedded verb *emerge*.

As for numerals, Bhatt includes in intensional superlatives both standard numerals like *two* and numeral-like modifiers like *many* or *few* when they occur with the definite determiner. But Heycock questions the claim that standard numerals like *two* in (57) exhibit a low reading.

(57) a. <u>The two</u> books that John said that Tolstoy had finished.
   b. <u>Two</u> books that John said that Tolstoy had finished.

According to Heycock, the difference between (57)a (which is supposed to exhibit the low reading) and (57)b (which is supposed not to exhibit it) should not be described in terms of scope with respect to *said*, but in terms of familiarity and salience (required by *the*): (57)a favors the reading under which the number of books was specified by John because such mention by John makes this number of books familiar and salient, thus favoring the presence of *the*.

As shown by Heycock, the cases of ordinals and numerals thus further argue against Bhatt's reconstruction account: reconstructing *second* predicts an incorrect reading; reconstructing *two* is not necessary to obtain the correct reading. But as she acknowledges, ordinals and numerals also challenge her own neg-raising account, which depends on the ability of the modifier to

generate a negative entailment. While *first* and *last* can be assumed to behave like superlatives in this respect since they correspond to the end of a scale, other ordinals like *second* or *twentieth*, which refer to any point on a scale and are thus more similar to comparatives, are not obviously amenable to such an analysis. Furthermore, while Heycock questions the existence of a low reading with numerals like *two*, she admits it with numeral-like modifiers like *few* or *many* in (58), but she does not spell out how this fact can be captured under her neg-raising account.

(58) the <u>few/many</u> books that John said that Tolstoy had written

In sum, while Bhatt's accounts massively overgenerates (any modifier should trigger the low reading), Heycock's account (at least[15]) undergenerates: some modifiers (e.g. *twentieth*, *many*) give rise to the low reading even if they do not seem to intrinsically generate negative entailments.

Our superlative clause hypothesis instead provides a solution as to the relevant class of modifiers that can trigger the low reading: superlatives, *only*, ordinals and numerals are all compatible with a degree-based domain argument or comparison class, which, I hypothesize, can be explicitly expressed by the clause containing the intensional predicate. This is evidenced by the striking fact that they all (and only they) can take non-modal subject infinitival clauses (cf. Bhatt 2006), which have been argued to denote comparison classes (Bylinina et al. 2015).

(59) a. the <u>longest</u> book **to appear here this year**.
b. the <u>first</u> book **to appear here this year**.
c. the <u>second</u> book **to appear here this year**.
d. the <u>only</u> book **to appear here this year**.
e. the <u>few</u> books **to appear here this year**.
f. the <u>two</u> books **to appear here this year**.

All elements are also compatible with *of*-partitives:

(60) a. the longest (one) **of these books**.
b. the first (one) **of these books**.
c. the second (one) **of these books**.
d. the only *(one) **of these books**.
e. (*the) few **of these books**.
f. (*the) two **of these books**.

I thus propose that all and only modifiers triggering the low reading are modifiers that can take a domain argument, and the low reading arises when the clause is construed as a degree-based comparison class. Below, I only sketch how this analysis can apply to each case. A more detailed analysis of ordinals, *only* and numerals will have to await further research.

At first glance, ordinals seem most similar to superlatives since they involve ranking on a scale, although they do not lexically specify the type of ranking, which is usually some spatial or temporal ordering induced by pragmatically or syntactically determined context. As noticed by e.g. Bhatt (2006) or Bylinina et al. (2015), ordinals furthermore exhibit several properties characteristic of superlatives: they give rise to absolute and relative readings, their truth

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[15] Heycock's account may also overgenerate as it is not clear that all elements with negative entailments trigger the low reading. Note in this respect that Heycock (2005: 368) mentions an imperfect correlation between NPI licensing, negative entailments and low readings: while superlatives or *only* exhibit all three properties, *almost* only exhibits the second one, and *barely* only the first one.

conditions can be influenced by focus, and they can take non-modal subject infinitival clauses (as in (59)b-c). A reasonable analysis is thus to analyze the low reading of *first* just like *longest* in (45), assuming – based on etymology – decomposition of *first* into a superlative morpheme and *fore*:

(61) a. the long**est** book [that λ**d** John said Tolstoy had written ~~a **d-long** book~~]
b. the fore-**est** book [that λ**d** John said Tolstoy had written ~~a **d-fore** book~~]

Just as in (61)a, the clause in (61)b is construed as the domain of comparison complementing *-est*. Unlike in (61)a, however, something must be said about how exactly ordering of writing is here interpreted as the only relevant ordering. As noted by Heycock (2005), it seems that *fore* requires an argument specifying the type of degree property (fore with respect to what?). And as Sharvit (2010) shows, the ordering can in principle be contextually determined (by the way the books are stacked, for example). What will need to be spelled out for (61)b in further research is thus why and how the local verb *write* must play a crucial role in this specification.[16] This point will also be crucially relevant to how to derive the high reading, where ordering seems to also be determined by material in the clause (the higher verb); in this respect, note that we will discuss the hypothesis that some of the so-called high readings are subclasses of the low reading in section 2.2.4. The other point to specify in future research will concern the extension of the analysis of *first* (or *last* similarly roughly decomposable as *late-est*) to non-extreme ordinals like *second* where an ordinal morpheme (*n-th*) must stand for *-est* in (61)b.

Numeral-like modifiers such as *many* or *few* and numerals like *two* have been the subject of many studies, which cannot be reviewed or evaluated within the scope of this article (see e.g. Rett 2018 for a review about the semantics of quantity words). But at least some parts of this literature reveal that they can also be conceived as similar to superlatives both in taking a domain argument and in being treatable in degree-based accounts. Specifically, the relevant quantity (its cardinality in the case of numerals like *two*, or its position with respect to some standard of quantity in the case of *many* or *few*) needs to be determined based on a set; in recent analyses, this set is a set of degrees denoted by the argument of quantity words (see references in Rett 2018). In our cases, we can thus assume that under the low reading, this set is explicitly expressed by the clause as roughly represented in (62).

(62) a. the **many** books [that λ**d** John said Tolstoy had written **d-numbered** ~~books~~]

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[16] Bylinina et al. (2015) propose that non-modal subject infinitival clauses, which denote the comparison class, are responsible for fixing the relevant ordering through a temporal ranking function, which seems to be induced by the verb of the clause and temporal modifiers. But they do not discuss cases involving embedding where the clause denoting the comparison class contains more than one verb.

Further note that Bylinina et al. (2015) observe that ordinals do not seem to trigger upstairs *de dicto* readings (see details about such readings in section 3), which seems to argue against our hypothesis involving split scope. They claim that unlike (vii)b, (vii)a is not felicitous in the following scenario: John wants to take a train departing between 3pm and 4pm; Bill and Steve want to take a train departing between 5pm and 6pm, and 7pm and 8pm, respectively.

(vii)   a. John wants to take the <u>first</u> train.
b. John wants to take the <u>earliest</u> train.

But this difference arguably derives from the difference between ordinals and superlatives discussed in the main text regarding the (non)specification of the ordering: the fact that the type of ordering is left unspecified with *first* (vs. *early*) makes the upstairs *de dicto* reading hard to access. The difference between *first* and *early* seems in fact diminished with an explicit superlative clause:

(viii)   a. John wants to take the <u>first</u> train that anyone in the group wants to take.
b. John wants to take the <u>earliest</u> train that anyone in the group wants to take.

b. the **two** books [that λ**d** John said Tolstoy had written ~~**d-numbered** books~~]

In other words, the low reading of numerals can be assumed to derive from the construal of the clause as an amount relative. Amount relatives have also been the subject of numerous studies that go beyond the scope of this article (see Grosu & Landmann 2017 for a review), but many agree on treating them as degree clauses, which support the idea that our superlative clause hypothesis naturally extends to clauses modifying numerals.

Finally, what about *only*? *Only* is perhaps the topic of even more studies, which cannot be done justice here. But again, several properties liken *only* to superlatives. [17] In fact, Heim's (1995/1999) lexical entry in (48) is explicitly based on the semantics of *only* because both *only* and superlatives require a set of alternatives as argument, which can be determined by focus. Furthermore, although this point remains debated, an important group of studies treats *only* as a scalar element, whose semantic contribution is not just to exclude some alternatives, but to exclude alternatives that are higher on a scale; recently, Greenberg (2022) even treats *only* as the superlative antonym of *even*, in the sense that *only* presupposes that its prejacent is the weakest alternative in the relevant domain, while *even* presupposes that its prejacent is the strongest alternative. For our purposes, all this means that just as in the case of *longest*, the clause under the low reading can arguably be treated as explicitly denoting the set of alternatives C taken as argument by *only*. Under a scalar, superlative analysis of *only*, the role of *only* is to pick an endpoint of a scale in this set. Continuing the analogy, it is reasonable to further assume that the clause is also a degree clause, as the relevant scale in the case of the low reading is a quantitative one (i.e. John said that Tolstoy wrote one book, no more – vs. John said Tolstoy wrote a book of mediocre quality, not a better one):

(63) the **only** book [that λ**d** John said Tolstoy had written ~~**d-numbered** books~~]

Unlike Heycock's account that only relies on the exclusive component of *only* (negating alternatives), this sketched proposal thus also builds on the scalar component of *only*.[18] As in the case of ordinals and numerals, this suggestion would of course require much more investigation both for the cases at hand and for its consequences on the various existing debates about *only* in the literature. The goal of this discussion was limited to providing some concrete suggestions as to how the superlative clause hypothesis could reasonably extend to the few other modifiers displaying low readings (and only to those) and why this may be so.

2.2.3.   Intervention effects

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[17] Based on gender mismatch agreement facts also observed with superlatives, Sleeman & Ihsane (2016) suggest that French *seul* (cf. 'only') has to be analyzed as a superlative (vs. a quantifier).

(ix)   la   seule   de mes gentils   professeurs qui est malade
        the.F.SG only.F.SG of my.PL kind.M.PL professors.PL that is sick.SG
        'the only one of my kind professors who is sick'

(x)   la   plus intelligente de mes gentils professeurs
        the.F.SG most intelligent.F.SG of my.PL kind.M.PL professors.PL
        'the most intelligent of my kind professors'

[18] This explains some differences in how the low reading is described. See discussion in section 2.2.3. Further note that this hypothesis predicts that any other nominal scalar and superlative particle can trigger low readings as long as it is compatible with quantitative scales; the latter point may explain why this is not the case of *mere*.

We saw in section 2.1.2 that both Bhatt and Heycock agree on the fact that low readings are subject to intervention effects. But they disagree on how to characterize the set of interveners: while Heycock takes them to be non neg-raising predicates, Bhatt (& Sharvit) argue that intervention effects arise in the case of negative islands as well as with predicates implying entailment of the high reading by the low reading. Furthermore, both accounts face problems to derive the empirical generalization they argue for: in particular, the facts involving negation do not straightforwardly follow under neither Heycock's nor Bhatt's account.

Instead, the superlative clause hypothesis directly accounts for the non-controversial cases of intervention effects such as negation, and provides an explanation as to why some cases remain empirically debated. Under our hypothesis, intervention effects are reduced to those observed with degree quantification: since the superlative clause is treated as a degree clause, it is predicted to be subject to the same intervention effects as degree questions or comparatives as illustrated in (64) with negation.

(64) a. # the longest book that John did<u>n't</u> say that Tolstoy had written.
 b. * a longer book than John did<u>n't</u> say that Tolstoy had written (in 1867).
 c. * how long a book did John <u>not</u> say that Tolstoy had written?

In other words, the superlative clause hypothesis straightforwardly derives the negative island effects that Bhatt (2002) mentions without being able to explain. It's been noticed since at least Ross (1984) that negative elements interfere with some types of wh-movement. Although both the exact empirical generalization and the analysis remain debated (see Rizzi 1990, Szabolcsi & Zwarts 1993, Rullmann 1995, Abrusán & Spector 2011, i.a.), it is uncontroversial that intervention effects with the negation itself or negative verbs such as *deny* arise both with degree and amount quantification. While intervention effects yield ungrammaticality in the former case, they constrain the interpretation to referential readings in the latter case as in (27) above or (65):

(65) How many books did John <u>not</u> say that Tolstoy had written?

For our purposes, we do not need to take a stand on how to analyze negative islands: it suffices to observe that the same intervention effects arise for the low reading of intensional superlatives and for other well-known cases of negative islands. For example, it has been observed that negative islands can be obviated by some properly placed modals (Fox & Hackl 2007):

(66) a. How fast did Jack drive? (Abrusán & Spector 2011: 108)
 b. * How fast did<u>n't</u> Jack drive?
 c. * How fast are we allowed <u>not</u> to drive?
 d. How fast are we <u>not</u> allowed to drive?

Strikingly, the same holds with our low readings:

(67) a. the fastest (car) that Jack drove
 b. # the fastest (car) that Jack did<u>n't</u> drive
 c. # the fastest (car) that we are allowed <u>not</u> to drive
 d. the fastest (car) that we are <u>not</u> allowed to drive

However, recall that Heycock explicitly points out some cases of intervention that seem to arise with our low readings, but not with amount quantification (see e.g. (29)). Bhatt & Sharvit (2005) also implicitly mention such cases (e.g. (26)) when they argue against Heycock's generalization that *should* or *be likely* do not trigger low readings (such predicates do not give rise to negative

islands). Such intervention effects, I argue, are artefacts of the way Bhatt (& Sharvit) and Heycock describe the low readings.

First, note that Heycock makes her point using *only* and *first* (vs. run-of-the-mill superlatives like *longest*). As mentioned by Bhatt & Sharvit, this is problematic in cases in which the high reading includes the low reading, which often happens with *only* (see e.g. (26)). Furthermore, note that the paraphrases used by both Bhatt and Heycock for *only* and *first* usually amount to interpreting the whole modifier within the clause, which, as we discussed in section 2.2.2, is arguably not the correct way to derive the low readings. In the absence of a fully spelled out analysis for *first* and *only*, it thus seems safer at this point to reason on intervention effects based on standard superlatives like *longest* (as also argued by Bhatt & Sharvit 2005).

Bhatt (& Sharvit) and Heycock's reasoning about them is confounded, I argue, by their never considering non-referential readings. For lack of space, I will illustrate this point using only one example that both Bhatt & Sharvit and Heycock treat as a case of intervention effect (although they explain it differently); but as far as I can see, the point extends to all other cases. Specifically, Bhatt & Sharvit (2005: 74) and Heycock (2005: 371) claim that the strong deontic operator *need* intervenes for the low reading.

(68) That is the <u>only</u> offence that he <u>needed</u> to claim to have committed.
   ✓ That is the offence such that he did not need to claim that he committed an offence other than that.
   ✗ That is the offence such that he needed to claim not to have committed an offence other than that. (Heycock 2005: 371)

(69) The <u>longest</u> book John <u>needs</u> to read is *Anna Karenina*.
   ✓ The requirements for passing Comp Lit I are: reading *Tom Sawyer*, *Huckleberry Finn*, and *Anna Karenina*. If John doesn't pass Comp Lit I, he will be kicked out.
   ✗ The requirements for passing Comp Lit II are: reading *Anna Karenina* and no book that is longer than *Anna Karenina*. If John doesn't pass Comp Lit II, he will be kicked out. (Bhatt & Sharvit 2005: 74)

Heycock claims that the meaning indicated by the second paraphrase in (68) is unavailable because *need* blocks neg-raising, and Bhatt & Sharvit claim that the second scenario in (69) is inappropriate because the low reading here entails the high reading. But both (68) and (69) crucially exhibit a referential reading of *the only/longest book*, unlike corresponding low readings of amount or degree questions (to which both Bhatt and Heycock compare low readings); under their low reading, both (70) and (71) only require numbers (of offences or pages, respectively) as answer, not specific entities (offences or books).

(70) <u>How many</u> offences did he <u>need</u> to claim to have committed (to be credible)?

(71) <u>How long</u> a book does John <u>need</u> to read (to pass Comp Lit I)?

The same holds of degree or amount comparatives:

(72) I committed <u>more</u> offences than he <u>needed</u> to claim to have committed (to be credible).

(73) I read a <u>longer</u> book than John <u>needs</u> to read (to pass Comp Lit I).

Crucially, the low reading becomes similarly available if we modify (68) and (69) accordingly:

(74) The <u>only</u> offence that John <u>needed</u> to claim to have committed needed not be important.

(75) The <u>longest</u> book John <u>needs</u> to read to pass Comp Lit I need not be in a foreign language.

Because they do not involve an identificational construction (e.g. *that is X*, *X is Anna Karenina*) (74) and (75) are compatible with a non-referential reading that highlights the low reading. Recall that under our hypothesis, only *d-long* (not *-est*) is interpreted in the scope of the intensional predicate under the low reading. Accordingly, (75) is felicitous in scenarios in which only a certain length of book (vs. a specific book) defines the requirements, e.g. if to pass Comp Lit I, John must read two specific French and German 50-page novels as well as any 500-page novel (e.g. taken from a list); in those cases, the book in question is not specific (unlike in (69) where the longest book is specific although the shorter books are not). Similarly, (74) favors an interpretation where no specific offence is in question: the crucial point is that John had to claim to have committed only *one* offence (vs. only *that* offence in (68)[19]).

The hypothesis that the intervention effects for our low readings can be reduced to intervention effects for degree quantification is further supported by the behavior of intensional superlatives in the presence of *which* (vs. *that*) relativizers, which parallels the behavior of so-called amount relatives such as (76).

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

(77) the longest book {<u>that</u> /% <u>which</u>} John said that Tolstoy had written.

Amount relatives, which are standardly argued to involve degree relativization (see Carlson 1977, Heim 1987, Grosu & Landmann 1998, Herdan 2008, i.a.) are claimed to disallow *wh*-relativizers (at least for a significant portion of speakers). For instance in (76), the amount reading, under which it is the amount of champagne (vs. the actual champagne) spilled that is under discussion, is unavailable with *which* (vs. *that*). Similarly, the low reading is absent (at least for a large number of speakers) in (77) when it involves a *which*-(vs. *that*-)clause.

In sum, the superlative clause hypothesis provides a straightforward solution to the problem of intervention effects: because it involves degree relativization, it predicts negative islands effects (and any other intervention effect observed with degree quantification); other purported intervention effects are illusory and due to the interpretive constraints derived from split scope.

2.2.4.   NPI licensing

Finally, the superlative clause hypothesis also derives the NPI facts as long as the relevant readings are reexamined and the meaning contribution of *ever* is carefully taken into account. Recall from section 2.1.1 that according to Bhatt (& Sharvit), the correlation between the position of *ever* and the type of reading supports a reconstruction account.

(78) a. the longest book that John <u>ever</u> said that Tolstoy had written
       b. the longest book that John said that Tolstoy had <u>ever</u> written (Bhatt 2002: 60)

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[19] Under such referential readings of *only* discussed by Heycock, it may well be the case that the availability of apparent low readings depends on the availability of neg raising as she argues (which will affect the interpretation of how the alternatives are excluded). But these readings (and the intervention effects they are subject to) should not be treated on a par with low readings of superlatives like *longest*: under our hypothesis, the clause could also be taken to denote the domain of comparison in these cases, but there would be no degree quantification or split scope. See discussion in section 2.2.2.

According to Bhatt (& Sharvit), high *ever* in (78)a is only compatible with the high reading because under the low reading, *longest* cannot license *ever* from its reconstructed position; low *ever* in (78)b is only compatible with the low reading because the domain widening contributed by *ever* in that case yields a felicitous reading only if the superlative is interpreted in the scope of *said*.[20] Under Heycock's approach, however, it is because it blocks neg-raising that high *ever* obligatorily triggers the high reading; and intervention effects by universal quantifiers imply that low *ever* should be licensed by high *longest* and thus (although Heycock does not specify this), low *ever* should be compatible with either reading in the presence of a neg raising predicate and only with the high reading with a non neg raising predicate. Thus, NPI facts again give rise to both empirical and analytical disagreement.

As we detail below, the split scope implied by the superlative clause hypothesis provides a way to settle the debate: the low reading (in the sense of scoping *d-long* – vs. *longest* – low), and crucially only this reading, is in fact compatible with both low and high *ever* (as implied by Heycock's hypothesis), but the meaning contribution of *ever* gives the illusion that high *ever* triggers a high reading (in the sense of scoping the whole superlative *longest* high).

It is well-known that comparative clauses license NPIs (von Stechow 1984, Heim 1985, i.a.).

(79) a. a <u>longer</u> book than John <u>ever</u> said that Tolstoy had written
    b. a <u>longer</u> book than John said that Tolstoy had <u>ever</u> written

Under the superlative clause hypothesis, it is thus predicted that just as in (79), *ever* can be similarly licensed both in high and low positions when the clause is construed as a superlative clause.

Note that as mentioned in the introduction, NPI licensing is the argument motivating Howard's (2014) hypothesis that some apparent relative clauses are in fact superlative degree clauses. Howard shows that standard theories of NPI licensing based on Strawson-Downward entailment can predict that superlatives license NPIs only under absolute readings (cf. von Fintel 1999, Herdan & Sharvit 2006, Gajewski 2010); under relative readings, which imply VP scope of *-est*, Strawson downward entailing inferences are invalidated as illustrated in (80).

(80) a. John read <u>the most</u> books that <u>anyone</u> in the class has <u>ever</u> read.
    b. John read <u>the most</u> books.
    c. John read <u>the most</u> travel books.   (Howard 2014: 11-12)

The superlative *the most*, which only triggers relative readings and must thus take VP scope under a Heimian hypothesis, licenses the NPIs *ever* or *anyone* as shown in (80)a. Yet, (80)b does not Strawson entail (80)c: just because John read more books than anyone else, it does not follow that he read more books of a particular type than anyone else; *-est* does not create a downward entailing environment in its VP complement.

As Howard argues (cf. Bumford & Sharvit 2022), treating the clause in (80)a as a superlative degree clause solves the conundrum: just like e.g. *every*, *-est* is not downward entailing with respect to its scope, but it is with respect to its restrictor; in other words, *-est* creates a downward

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[20] In languages like French, the subjunctive gives rise to the same kind of contrast (see e.g. Sleeman 2010 about superlatives taking subjunctive clauses):

(xi)   a. le   plus long   livre que Jean <u>ait</u>   (jamais) dit que Tolstoï avait écrit
            the.M.SG most long.M.SG book that John has.SUBJ ever   said that Tolstoy had   written
        b. le   plus long   livre que Jean a   dit que Tolstoï <u>ait</u>   (jamais) écrit
            the.M.SG most long.M.SG book that John has said that Tolstoy has.SUBJ ever   written

entailing environment in C, but not in P under Heim's lexical entry in (48). Under the hypothesis that the clause explicitly denotes C, it follows that it is Strawson downward entailing and thus licenses NPIs. In fact, (81)a does entail (81)b provided that John is a syntactician.

(81) a. John has published <u>the most</u> papers <u>any linguist</u> has published.
 b. John has published <u>the most</u> papers <u>any syntactician</u> has published.

<div align="right">(Howard 2014: 38)</div>

But Howard (cf. Bumford & Sharvit 2022) only applies this explanation to relative readings: under absolute readings, so the argument goes, clauses like the bracketed one in (82) cannot be treated as superlative clauses because under this construal, the correct truth conditions cannot obtain under Heim's lexical entry in (48) as discussed in section 2.2.1.

(82) *War and Peace* is <u>the longest</u> book [Tolstoy <u>ever</u> wrote]. (Howard 2014: 50)

The point of the present article is instead to argue that such bracketed clauses can in fact also be treated as superlative clauses; and in section 2.2.1, we discussed ways to overcome the semantic problems raised by this construction, which we argue are dependent on the specific lexical entry adopted by Howard which requires VP scope of *-est*.[21] In fact, Howard's theory-independent argument in (81) carries over to (82): (83)a entails (83)b provided that Tolstoy wrote *War and Peace* in the 1860s.

(83) a. *War and Peace* is <u>the longest</u> book Tolstoy (<u>ever</u>) wrote in the nineteenth century.
 b. *War and Peace* is <u>the longest</u> book Tolstoy (<u>ever</u>) wrote in the 1860s.

In sum, our superlative clause hypothesis predicts that NPIs like *ever* can be licensed in any position in the clause construed as a superlative clause.

Given that the low reading derives from the superlative clause construal, the low reading should thus be compatible with both *low* and high *ever*. But this seems to go against Bhatt and Heycock's converging claim that high *ever* only triggers the high reading. This apparent problem, I claim, is resolved by the split scope hypothesis implying that high *ever* triggers a low reading – in the sense that book lengths are evaluated by John – that resembles the high reading – in the sense that the superlative comparison is done by the speaker.

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[21] As we saw in section 2.2.1 (see also Romero 2011, 2013, i.a.), relative readings can also be derived appealing to NP scope of *-est*. In fact, note that the valid inference in (81) holds whether *-est* takes NP or VP scope. The problem of NPI licensing with relative readings identified by Howard can thus be solved without having to postulate homonymy between *-est* for relative readings (Heim's lexical entry in (xii)) and *-est* for absolute readings (von Fintel's lexical entry in (xiii)) as in Howard (2014) (and without failing to derive the upstairs *de dicto* reading as in Bumford & Sharvit 2022 that propose a dynamic take on superlative semantics to solve the NPI licensing problem with relative superlatives).

(xii) $[\![\textit{-est}]\!](C_{<dt,t>})(P_{<dt>}) = 1$ iff $\exists d \mid P(d)=1$ and $\forall Q \mid C(Q)=1$ and $Q \neq P, Q(d)=0$. (Heim 1995/1999)

(xiii) $[\![\textit{-est}]\!](P_{<d,et>})(Q_{<et>})(\alpha_e)= 1$ iff $\exists d \mid P(d)(\alpha)=1$ and $\forall y \mid Q(y)=1$ and $y \neq x, P(d)(y)=0$

<div align="right">(cf. von Fintel 1999 as translated by Howard 2014: 53)</div>

All cases can be captured using (xii), where the environment licensing NPIs is the domain argument (the superlative clause C (cf. the NP Q in (xiii)) because it is Strawson downward entailing.

It remains to be seen if a full unification is possible, namely if (xii) can apply to cases where the domain argument does not seem straightforwardly amenable to a degree clause analysis as in (xiv).

(xiv) The highest mountain of any island

Promisingly, this question amounts to applying to the superlative domain the debate between individual- and degree-based analyses of comparatives for phrasal comparatives (see introduction). A positive answer would lead us to analyze (xiv) roughly as *the highest mountain that λd there is ~~a d high mountain~~ in any island.*

More specifically, the NPI *ever*, which quantifies over time, affects the interpretation of the comparison set under our hypothesis, since it is part of the superlative clause as represented in (84).

(84) a. the longest book that λd John <u>ever</u> said that Tolstoy had written a̶ d̶-̶l̶o̶n̶g̶ b̶o̶o̶k̶
    b. the longest book that λd John said that Tolstoy had <u>ever</u> written a̶ d̶-̶l̶o̶n̶g̶ b̶o̶o̶k̶

Recall from our discussion in section 2.2.1 that one crucial difference between comparatives and superlatives is that the former are relational while the latter are partitive, so that comparative clauses must denote a single element (e.g. a maximal degree under many analyses), while superlative clauses must denote a set thereof. As argued by Howard (2014), NPI indefinites can crucially contribute to the creation of this set in a way similar to wh-words or focused elements by specifying the parameter through which the set is determined (see details in Howard 2014: 41-45). For example, *ever* can contribute to creating the comparison set C through quantification over times as exemplified in (85).

(85) a. C={λd. John said **at t** that Tolstoy had written a d-long book | **t ∈ D$_i$**}
    Example: C={λd. John said **in 2015** that Tolstoy had written a d-long book, λd. John said **in 2020** that Tolstoy had written a d-long book, λd. John said **in 2022** that Tolstoy had written a d-long book}
    b. C={λd. John said that Tolstoy had written a d-long book **at t** | **t ∈ D$_i$**}
    Example: C={λd. John said that Tolstoy had written a d-long book **in 1867**, λd. John said that Tolstoy had written a d-long book **in 1877**, λd. John said that Tolstoy had written a d-long book **in 1886**}

High *ever* in (84)a thus induces the comparison set in (85)a, where the degree sets forming 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 that were mentioned by John at different times (e.g. in 2015, 2020, 2022). Low *ever* in (84)b, however, induces the comparison set in (85)a, where the degree sets forming the comparison set vary along the dimension of Tolstoy's writing times according to John: the comparison set includes lengths of books that were written by Tolstoy at different times according to John (e.g. in 1867, 1877, 1886).

This distinction gives rise to a difference of interpretation that resembles that invoked for distinguishing between the low and the high readings, although both interpretations correspond to variants of the low reading under my hypothesis (in the sense that *d-long* is interpreted low). Recall that one way used by Bhatt (2002) to paraphrase the low vs. high readings in the case of *first* is to specify whether it is the order of saying or the order of writing that matters. In the case of *longest*, the difference focuses on whether the comparison is made between lengths of books mentioned at different times ((85)a) or written at different times ((85)b). In both cases, the comparison is explicitly expressed to be made by the speaker (*-est* scopes over *said*). In (85)b, it is implied that John also made the comparison at least implicitly, since he expressed an opinion about all relevant book lengths (presumably at the same time in the absence of indication to the contrary), under the assumption that his thinking obeys logical rules (as mentioned in section 2.2.1). But in (88)a where John expressed opinions about book lengths at different times, this implication does not necessarily hold: making a length comparison requires not only knowing the lengths of the elements to be compared and the logical ordering rule, but also holding all lengths simultaneously in memory. This consideration explains how the other

common paraphrase used for the high vs. low readings, namely "longest according to the speaker vs. John" can correspond to our two variants of the low reading.

Our hypothesis thus implies that the so-called high reading corresponds to two possible logical forms, and some confusion in the literature comes from the near equivalence of these LFs under some circumstances, which can be described using various (potentially misleading) paraphrases.

(86) a. the longest book (that/which) John said that Tolstoy had written ~~a book~~
b. the longest book (that) λd John (ever) said that Tolstoy had written ~~a d-long book~~

Specifically, the first LF (that assumed by all the previous literature for the high reading) involves high scope of the whole superlative. Under my hypothesis, this is the LF in (86)a under which the clause is interpreted as a standard relative clause (vs. a superlative clause); for a subset of speakers, this construal is forced by the use of *which* (vs. *that*) relativizers (cf. (77)). Under this LF, John need not be opinionated about book lengths and the comparison is done by the speaker among books by Tolstoy according to John. The second LF is the same LF I assume for the low reading, namely the one in (86)b where the clause is construed as a degree superlative clause and *d-long* (vs. *-est*) is interpreted low. Under this LF, John is opinionated about book lengths and the speaker is responsible for making the comparison between these lengths assumed by John; by default, John's opinion about book lengths implies a comparative judgment by John (which thus amounts to Bhatt's low reading), but this is not necessarily the case if these opinions are spread over times as is forced by the modification of the intensional predicate by *ever* (which thus amounts to Bhatt's high reading). In sum, both low and high *ever* can be associated with a superlative clause construal, and the difference of reading does not derive from a scopal difference of (part of) the superlative adjective, but from the difference of interpretation of the comparison class induced by the placement of *ever*.[22]

This hypothesis is further supported by Heycock's (2019) observation that the placement of *ever* does not correlate with binding conditions C (as we saw in (16)) or A as shown in (87).

(87) That is the only/first picture of himself$_i$ that I ever thought Freud$_i$ might sell.

(Heycock 2019: 96)

Contrary to Bhatt's predictions and in support of ours, *himself* can be bound in the low clause by *Freud* (which is not construed as a logophoric center here) in (87) involving high *ever*.[23]

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[22] The superlative clause hypothesis also straightforwardly derives the readings observed with other NPIs: for example, the comparison set in (xv) involving *anyone* is created through quantification over individuals as shown in (xvi).

(xv) a. The <u>longest</u> book that <u>anyone</u> said that Tolstoy wrote.
b. The <u>longest</u> book that John said that <u>anyone</u> wrote.

(xvi) a. C={λd. **x** said that Tolstoy wrote a d-long book | **x** ∈ **D$_e$**}
Example: C={λd. **John** said that Tolstoy had written a d-long book, λd. **Antonia** said that Tolstoy had written a d-long book, λd. **Siouxsie** said that Tolstoy had written a d-long book}
b. C={λd. John said that **x** wrote a d-long book | **x** ∈ **D$_e$**}
Example: C={λd. John said that **Tolstoy** had written a d-long book, λd. John said that **Balzac** had written a d-long book, λd. John said that **Joyce** had written a d-long book}

Multiple NPIs are also correctly predicted to create sets through multiple quantification (e.g. over times and individuals in the presence of both *ever* and *anyone*; see Howard 2014; see also section 4). Furthermore, it can be assumed that in the absence of any NPI, the default quantification is over times.

[23] Heycock (2019) also shows that the contrast reported by Hulsey & Sauerland (2006: 116) in (xvii) regarding extraposition cannot be used as reliable evidence. According to Hulsey & Sauerland, extraposition, which excludes a raising analysis of relative clauses, is incompatible with low *ever* as predicted by Bhatt. But the small-scale

Yet further corroboration of our hypothesis comes from the fact that negative islands are not just observed with low *ever*, but also with high *ever*:

> (88) a. *It is the longest book that John <u>ever</u> <u>denied</u> that Tolstoy wrote.
>   b. *It is the longest book that John <u>denied</u> that Tolstoy <u>ever</u> wrote.

Conversely, subject non-modal infinitive clauses (which denote the domain of comparison as discussed in section 2.2.2) do not only license low *ever*, but also high *ever*:

> (89) a. The longest book to have <u>ever</u> been said to have been written by Tolstoy
>   b. The longest book to have been said to have <u>ever</u> been written by Tolstoy

Moreover, non-referential readings (see (75)) are available with high *ever*:

> (90) The <u>longest</u> book John will <u>ever</u> <u>need</u> to read to pass his classes should not exceed 1000 pages.

To complete the argument, we must clarify how NPI licensing works under relative clause construals. So far, we have explained why both high and low *ever* are compatible with a superlative clause construal, and why under this construal, high *ever* can be described as entailing a high reading, and low *ever* a low reading. But our hypothesis does not exclude a relative clause construal, which induces a high reading. How does it interact with NPI licensing? Given the monotonicity profile of *-est* we discussed above, our hypothesis implies that NPIs can only be licensed if they occur in the domain of comparison (i.e. in C). If the clause is construed as a relative clause outside the domain of comparison, it is correctly predicted not to license NPIs. This reading can be facilitated if we add another possible explicit domain of comparison as in (91).

> (91) the longest book in the list (that/which) John said that Tolstoy had (#ever) written ~~a book~~

If the comparison is established among books on the list (of reading assignments, for example), the clause must be construed as a relative clause whose semantic contribution is to restrict the reference of the longest book of the list to be a book by Tolstoy according to John; under that reading, *ever* is unacceptable.[24]

The last issue bears on whether relative clauses can be construed as individual-based domains of comparison, under the assumption that there are two possible superlative morphemes, i.e. one degree-based and one individual-based as debated in the literature on comparatives (cf. introduction and fn. 21). If so, such relative clauses are predicted to license NPIs. Note that this is also von Fintel's 1999 prediction since under his hypothesis, NPIs can be licensed under absolute readings as long as they appear in the NP argument of the superlative (see fn. 21). Furthermore, this hypothesis does not impose any restriction on the position of NPIs within the clause, so that both low and high *ever* are predicted to be acceptable in such clauses. Low *ever* is therefore predicted to be compatible with a high reading (i.e. *ever* should be able to modify *wrote* in (84)b even when *d-long* is not interpreted low). This means that (84)b should be

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questionnaire presented by Heycock (2019: 103-106) casts doubt on this contrast as it does not reveal the contrasts predicted by Hulsey & Sauerland (2006) regarding extraposition.

> (xvii)   a. *I read the first novel last week that John said that Tolstoy had ever written.
>   b. I read the first novel last week that John ever said that Tolstoy had written.

[24] The other (less accessible) reading is a reading under which the clause denotes the domain of comparison (and thus licenses *ever*) and is extraposed, while *in the list* modifies book. See fn. 23 on extraposition.

accepted to refer to Tolstoy's longest book according to the speaker in a scenario where the speaker and John disagree about the lengths (especially the highest one) of Tolstoy's books (but not about authorship).[25] This is precisely what is claimed not to be the case by the previous literature: low *ever* forces the ascription of the length judgment to John (vs. the speaker). This judgment seems to be supported by the contrast between (92)a and (92)b: the high reading with low *ever* seems clearly less available in (92)b than in (92)a when the relative clause appears in a partitive construction (and is thus forced to be both individual-based and within the domain of comparison).[26]

(92) a. the longest of the books that John said that Tolstoy had ever written
      b. the longest book that John said that Tolstoy had (#ever) written

This observation suggests that relative clauses cannot be construed as individual-based domains of comparison. Why this would be so remains to be further investigated.[27] For our present purposes, what crucially matters is that apparent relative clauses can be construed as degree-based domains of comparison, and as we saw in this section, this construal can explain all the properties of the so-called low reading of intensional superlatives. The goal of the next section is to show that similarly, the superlative clause hypothesis can derive all the properties of upstairs *de dicto* readings – the mirror case of intensional superlatives, which involves scopal interaction between superlatives and intensional predicates in the other direction.

3. Upstairs *de dicto* readings

Upstairs *de dicto* readings (as dubbed by Sharvit & Stateva 2002) have been identified by Heim (1995/1999) as a fifth possible reading of sentences like (93) involving an intensional predicate and a superlative.

(93) John <u>wants</u> to climb the <u>highest</u> mountain.

As observed by Heim (1995/1999), (93) is descriptively multiply ambiguous. First, the superlative induces an ambiguity between an absolute reading and a relative reading, depending on whether the comparison set includes all relevant mountains or all relevant climbers (see discussion of (5)). Second, the intensional predicate triggers an ambiguity between *de re* and *de dicto* readings depending on who the judgment about the highest mountain is ascribed to – the speaker or John. The combination of these two sources of ambiguities gives rise to four possible readings: absolute *de re* (the mountain that John wants to climb is actually higher than all other (relevant) mountains, i.e. Mount Everest), absolute *de dicto* (John wants to climb a mountain he thinks to be higher than all other (relevant) mountains, e.g. K2 or some imaginary

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[25] Furthermore, note that Bhatt & Sharvit's strategy to rule out the high reading with low *ever* is not satisfactory because it relies on the assumption that under the high reading, *book* must be interpreted only high; but relative clauses routinely involve interpretation of the head both low and high, so that the hypothesis that *longest* is interpreted only high does not imply that *book* must also be interpreted only high (see e.g. Sportiche 2016).

[26] Under the hypothesis discussed in section 2.2.2, this suggests that low *ever* in (xviii) should be compatible with *only* only under a quantitative interpretation of the scale. That is, (xviii) entails that John said that in all his life, Tolstoy has only written one book (vs. only some specific book).

    (xviii)   the only book John said Tolstoy had ever written

[27] This may provide an argument for the hypothesis that superlatives only have degree-based domains of comparison (vs. individual-based domains of comparison, cf. debate on phrasal comparatives). Further arguments should bear on whether *of*-phrases can be interpreted as sets of degree (see fn. 21).

mountain that he thinks is the highest of all mountains), relative *de re* (the mountain that John wants to climb is actually higher than the mountains that all other (relevant) people want to climb, e.g. Montagne Sainte-Victoire), relative *de dicto* (John wants to climb a higher mountain than all other (relevant) people, it does not matter which one). These readings can be derived if we standardly assume different scope options for the DP *the highest mountain* (below or above *want*) and different choices for the implicit domain of comparison of *-est*.

But Heim (1995/1999) shows that there is yet another, more problematic reading under which the mountain height seems to be determined *de dicto*, but the relative comparison seems to be made *de re*. This reading is salient in a scenario in which the speaker conducts a survey about various people's athletic ambitions, which reveals, for instance, that John wants to climb a 6000m high mountain, Mary wants to climb a 4000m high mountain, and Bill wants to climb a 1000m high mountain. This reading is relative because the comparison is made between aspirant climbers (vs. mountains). But it is not a relative *de dicto* reading because John does not have any comparative desire (so that *the highest mountain* cannot scope below *want*), and it is not a relative *de re* reading either because there isn't any specific mountain that John wants to climb (so that *the highest mountain* cannot scope above *want*).

This observation leads Heim to motivate an analysis (which I will henceforth refer to as the movement theory) under which *-est* moves above *want* (i.e. upstairs) while *d-high mountain* remains below it (i.e. *de dicto*). Strikingly, this hypothesis is the mirror image of the superlative clause hypothesis we have discussed in the previous section regarding intensional superlatives: in the case of intensional superlatives, the superlative surfaces higher than the intensional verb even if the judgment of measure (e.g. book length) can be made *de dicto*; in the case of upstairs *de dicto* readings, the superlative surfaces lower than the intensional verb even if the comparative judgment can be made *de re*. The conundrum can be solved in both cases by splitting the scope of *-est* and the gradable predicate across the intensional predicate.

As Heim herself details, the movement theory is however not without problems; in fact, upstairs *de dicto* readings may be the only strong argument for this theory against the so-called in situ theory (under which *-est* remains within the DP). The goal of this section is to argue that the superlative clause hypothesis provides an improvement on the movement theory that retains its crucial advantages over the in situ theory (i.e. split scope) while avoiding its shortcomings; furthermore, we will see that it also makes better empirical predictions than the movement and the in situ theories that both undergenerate. This solution relies on the hypothesis that superlative clauses, just like comparative clauses, can be fully elided as shown in (94).

(94) a. John wants to climb the high-**est** mountain **[**that λ**d** ~~anyone~~ **wants** ~~to climb~~ **d-high mountain]**.

　　b. John wants to climb a higher mountain **[**than λ**d** ~~someone~~ **wants** ~~to climb~~ **d-high mountain]**.

We'll start by reviewing to what extent upstairs *de dicto* readings support the movement theory against the in situ theory (in section 3.1) before examining how the superlative clause hypothesis improves on them (in section 3.2).

3.1. The movement theory vs. the in situ theory
3.1.1.　　Arguments for the movement theory

The derivation of upstairs *de dicto* reading is the clearest advantage of the movement theory over the in situ theory. Heim (1995/1999) shows that this reading cannot be derived if the domain of comparison is construed in situ, i.e. within the DP as in (95).

(95) John wants λw [PRO to climb$_w$ [the C/f(w)-est [high$_w$ mountain$_w$]]][28]

Whether the domain argument is assumed to vary with the desire worlds (using f(w)) or not (using C), no value can be found that can express the relevant reading (see details in Heim 1995/1999: 8-9), unless some machinery specific to relative readings is postulated: Farkas & Kiss (2000) propose that the noun (e.g. *mountain*) can be interpreted in relation to a correlate (e.g. *John*) and a predicate (e.g. *want to climb*) through some kind of e-type binding; Sharvit & Stateva (2002) propose that the DP (e.g. *the highest mountain*) can be interpreted as a property. These mechanisms mimic split scope without assuming movement.

Instead, the movement theory straightforwardly derives the upstairs *de dicto* reading because it licenses split scope of *-est* (above the intensional predicate) and the gradable nominal (below the intensional predicate). This can be done in two variants represented in (96) and (97).

(96) a. John [C -est] λd [want$_{w0}$ λw[PRO to climb$_w$ a d-high$_w$ mountain$_w$]]
   b. $\exists$d | John wants to climb a d-high mountain and $\forall$y $\in$ C | y $\neq$ John, $\neg$ y wants to climb a d-high mountain
(97) a. [C -est] λd [John want$_{w0}$ λw[PRO to climb$_w$ a d-high$_w$ mountain$_w$]]
   b. $\exists$d | John wants to climb a d-high mountain and $\forall$Q | C(Q)=1 and Q $\neq$ λd λw John wants to climb a d-high mountain in w, $\neg$ Q(d) = 1 (i.e. $\neg$ x wants to climb a d-high mountain, x $\in$ D$_e$ & x $\neq$ John)

(96) is based on the three-place lexical entry of *-est* (see (36)) and involves covert movement of *-est* to the position between the subject *John* and the VP, which yields 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); the domain of comparison consists in a set of contextually determined individuals that are relevant aspirant climbers. (97) relies on the two-place lexical entry of *-est* (see (38)) and involves covert movement of *-est* to the propositional level; the domain of comparison consists in a set of degree properties corresponding to the focus value of the complement of *-est* (i.e. in case *John* is focused, the set of properties of degrees d such that x – John or any relevant alternative individual – wants to climb a d-high mountain). Due to split scope of *-est* and *d-high mountain*, it is correctly predicted in both cases that a specific desire of climbing achievement is attributed to John which does not involve any particular mountain, while the comparison between climbing desires is made by the speaker.

The core ingredient of the movement theory, namely covert movement of *-est*, is independently motivated by island effects.

(98) # John admires everyone who climbed the highest mountain. (Heim 1995/1999: 15)

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[28] Heim (1995/1999) considers an alternative to this LF (see (xix)) 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.

(xix) 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$_1$)]]]

For example, (98) does not exhibit a relative reading under which John is compared to other admirers of climbers and identified as the most demanding one (i.e. the climbers admired by John climbed a higher mountain than the climbers admired by the other (relevant) people); this fact follows from the movement theory since this reading would require moving *-est* out of a complex DP island.

This type of explanation has already been proposed for comparatives, which exhibit the same kind of effects as illustrated in (99).

> (99) John admires everyone who climbed a higher mountain than Mary {*does (admire)/did (climb)}.

The unacceptability of the reading under which Mary is compared to John as an admirer has been claimed to derive from the constraints on movement of *-er* (Heim 1985, Heim 2001; cf. Charnavel 2015, i.a., about similar facts with *same/different*).[29] Under the movement theory, this explanation directly carries over to superlatives. On the contrary, such effects cannot (straightforwardly) be explained by the in situ theory.

Finally, Heim notes that the movement theory can account for relative readings involving arguments of transitive adjectives.

> (100) a. John is angriest at Mary.
> b. Mary [C -est] λd λx[John is d angry at x]
> c. [C -est] λd John is d angry at MARY]

The reading under which John is angrier at Mary than he is at anyone else can be captured by assuming *-est* movement as in (100)b (Heim 1995/1999: 11) or (100)c depending on the lexical entry adopted. It is not obvious how to derive this reading under the in situ theory.

3.1.2.   Arguments against the movement theory

It thus seems that the movement theory fares better than the in situ theory to predict the distribution of relative readings in a principled way. But as acknowledged by Heim (1995/1999), the movement theory also faces some problems.

First, the movement theory requires interpreting the determiner as an indefinite determiner in LFs involving *-est* movement. This is the case for both semantic and syntactic reasons. Semantically, upstairs *de dicto* readings, for instance, require an indefinite interpretation of the gradable nominal: in the scenario discussed in (93), John wants to climb any 6000m high mountain; his desire does not imply that there is only one such mountain. Syntactically, moving *-est* out of a definite DP would violate island constraints.

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[29] Heim (1985) is not definitive about the exact type of constraints *-er* and *-est* are subject to. Indeed, the generalization proposed by Szabolcsi (1986) implies tighter restrictions on relative readings than island restrictions. For example, Szabolsci (1986) claims that (xx) does not exhibit a relative reading where the comparison is made with respect to the subject of *say* (i.e. 'who claimed for a smaller n than anyone else did that you got n letters?', Heim 1995/1999: fn. 26).

> (xx)   Who said that you got the fewest letters?

The judgments about this type of sentences seem to me to be less clear than about sentences like (98)-(99) involving islands. This is consistent with the hypothesis that movement of *-er* and *-est* is similar to Quantifier Raising (Heim 2001) where clausemateness restrictions are debated (see e.g. Farkas 1981 vs. Fox 2000). See further discussion in section 3.2.1.

As Szabolcsi (1986) observes, indefiniteness effects are independently supported: superlatives can appear in environments licensing only indefinites such as existential constructions in (101) only under relative (vs. absolute) readings (in b vs. a).

(101) a. *Yesterday, there were the fewest guests.   (Szabolcsi 1986: 10)
         b.   There were the fewest guests YESTERDAY.

These effects, which cannot be explained under the in situ theory[30], are thus consistent with the movement theory. But it remains to explain why *-est* movement turns the definite determiner into an indefinite instead of yielding ungrammaticality.

Second, the movement theory implies some redundancy. For instance, the relative reading in (102) can be derived by construing *-est* in situ (as in (102)a, assuming that C is contextually restricted to mountains climbed by relevant climbers) or by moving it (as in e.g. (102)b based on 3-place *-est*).

(102) 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]]

Worse, Sharvit & Stateva (2002) show that (102)b is empirically not supported. As already mentioned by Heim (1995/1999: 13-14), (102)a and (102)b do not have identical truth conditions in scenarios involving ties. One type of scenario involves ties between climbers. For example, let's imagine that John and Bill climbed the same mountain, which is higher than mountains climbed by other people. Under such a scenario, (102)a is predicted to be true, but (102)b is predicted to be false.[31] Both Heim and Sharvit & Stateva agree that the judgments are not clear in such cases. But Sharvit & Stateva argue that (102) is not false, but at best misleading, which can only be explained under the in situ theory, if it is assumed that focus on John induces a (cancellable) implicature that the alternatives are false.

Another type of scenario involves ties between mountains. For example, let's consider a scenario where John climbed two 4000m mountains, while the other climbers reached lower summits. In this scenario, (102)a is predicted to be neither true nor false (because there is no mountain that is highest), and (102)b is predicted to be true. According to Sharvit & Stateva (2002), many speakers hesitate when judging (102), thus corroborating the in-situ analysis; for speakers who judge (102) true, it can be assumed that one of John's mountains can be ignored in the comparison set.

There is yet another case that is empirically problematic for the movement theory according to Sharvit & Stateva (2002), which they refer to as sandwich scenarios.[32] It involves negative superlatives as in (103).

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[30] In fact, Sharvit & Stateva (2002: 486), which argue for an in situ theory, also assume that the definite determiner can be replaced by the indefinite determiner.

[31] Under the LF based on 2-place *-est* in (xxi), the prediction depends on whether the lexical entry involves degree sets or degree properties (see fn. 8). In the latter case, we predict falsity as in (102)b, but in the former case, we predict truth as the set of degrees d such that John climbed a d-high mountain is indistinguishable from the set of degrees d such that Bill climbed a d-high mountain.

   (xxi)   [C -est] λd John climbed a d-high mountain

[32] Sharvit & Stateva (2002) (cf. Farkas & Kiss 2000) consider (xxii) as a further argument against the movement analysis. According to them, (xxii) does not yield a relative reading; this is expected under the in situ theory because the PP directly constrains the choice of the comparison set; but this does not (straightforwardly at least)

(103) John climbed <u>the least high</u> mountain.
    a. John climbed [the [C-least] λd [d-high mountain]]
    b. John [C-least] λd[climbed [a d-high mountain]]
    c. John [C-est] λd[climbed [a not d-high mountain]]

Consider a situation where John climbed a 3000m high mountain, Bill climbed a 4000m high mountain, and Mary climbed both a 2500m high mountain and a 3500m high mountain. Here, John's mountain is 'sandwiched' between Mary's mountains so that the person who climbed the lowest mountain (i.e. Mary) also climbed a higher mountain than another climber (i.e. John). According to Sharvit & Stateva (2002: 473), speakers judge (103) as false in this scenario (provided that the context makes clear that no mountain can be ignored). But the movement theory implemented as in (104)b incorrectly predicts the sentence to be true: (104)b implies that there is a degree d such that everybody but John climbed a d-high mountain, which is the case of degrees between 3001 and 3500. The in situ theory, however, does not run into this problem because it implies comparison between mountains.

Under the assumption that *least* is decomposable into the superlative morpheme *-est* and a negation (see Rullmann 1995, Stateva 2000, Heim 2006), note that the movement theory can correctly predict the sentence to be false under the LF in (104)c as mentioned by Sharvit & Stateva (2002: 477): this LF implies that only John climbed a mountain that does not reach some degree of height; Mary's lower mountain makes it impossible to satisfy. The problem nevertheless remains that nothing seems to be able to block the alternative LF in (104)b where *-est* and the negation move simultaneously. In fact, both LFs are needed to explain the two types of upstairs *de dicto* readings with negative superlatives (Stateva 2000, Sharvit & Stateva 2002):

(104) John wants to climb <u>the least high</u> mountain.
    a. John [C-least] λd[want to climb [a d-high mountain]]
    b. John [C-est] λd[climbed [a not d-high mountain]]

(104)a captures the 'at least' upstairs *de dicto* reading: (104) is true under this reading e.g. in a scenario where to improve their ranking, John wants to climb a 3000m high mountain (or higher), Mary wants to climb a 4000m high mountain (or higher), and Bill wants to climb a 5000m high mountain (or higher). (104)b captures the 'at most' upstairs *de dicto* reading: (104) is true under this reading e.g. in a scenario where to remain safe, John wants to climb a mountain that is no higher than 3000m, Mary wants to climb a mountain that is no higher than 4000m, and Bill wants to climb a mountain that is no higher than 5000m.

Instead, Sharvit & Stateva (2002) propose an in situ theory that can derive all readings with negative superlatives. But it relies on treating DPs in a non-standard way (i.e. as properties) in intensional environments, thus requiring ad hoc type shifters, and complex contextual restrictions of comparison sets. Specifically, (104) is derived using the LF in (105) including the type-shifter IDENT-W* and a crosscategorial definite article (coming with a variable J

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follow from the movement theory. I agree that the PP is indeed preferably construed as the comparison set, thus yielding an absolute reading; but a relative reading seems in fact available if the context favors a construal where *in Europe* is not interpreted as the comparison set, e.g. because the common ground entails that only European cities are under discussion, or because they are contrasted with other cities; such interpretations can be favored by continuations such as "his friends only visited small cities in Europe", or "Mary visited the largest city in Asia".

    (xxii)   John visited the largest city in Europe.

restricting its domain as is standard), in which the DP is interpreted as a property and the verb must thus type-shift to combine with it.

(105)   John wants-@ [1 [PRO to climb-w_1 [the-J [IDENT-W* [2 [least [high mountain-w_2]]]]]-w_1]]

To obtain the 'at least' reading, W* has to be contextually restricted to the set {w : for all x in {John, Bill, Mary}, x climbs the lowest mountain allowed by x's actual needs, and the mountains that John, Bill and Mary climb in w are the only mountains in w}. To obtain the 'at most' reading, W* must be contextually restricted to the set of worlds which contain three mountains only: one mountain climbed by John which is at most 3000 ft high, one mountain climbed by Mary which is above 3000 ft and at most 4000ft high, and one mountain climbed by Bill which is above 3000 ft and at most 5000 ft.

Furthermore, Sharvit & Stateva (2002) acknowledge that their arguments against the movement theory (even the one based on sandwich scenarios) does not extend to comparatives (see Büring 2007 for further discussion).

In sum, both the movement theory and the in situ theories face problems. The movement theory seems redundant and makes incorrect empirical prediction in some subtle cases involving ties or sandwich scenarios. We'll further see in section 3.2.1 that it also undergenerates some previously unnoticed readings. Sharvit & Stateva's version of the in situ theory seems to overcome the former problems, but at a high cost: extra and ad hoc machinery is required in intensional environments, and superlatives are not treated like comparatives. In the next section, I'll argue that the superlative clause hypothesis provides a solution that will allow us to tie up the loose ends of the movement theory without compromising on parsimony by incorporating some aspects of the in situ theory.

3.2. The elided superlative clause hypothesis

The superlative clause hypothesis implies that the domain of comparison in (93) can be expressed by an elided degree clause, in parallel to comparative clauses.

(106)   a. John wants to climb the high-**est** mountain (**that anyone wants to climb**).
        b. John wants to climb a high-**er** mountain (**than Mary wants to climb**).

It is well-known that comparative clauses can involve multiple types of ellipsis (see e.g. Lechner 2020 for a review). Although this case is hardly studied, it is also possible for the comparative clause to be fully elided. As discussed in e.g. Charnavel (2015) for the case of comparatives and adjectives like *same/different*, sentences involving a bare comparative (e.g. *John wanted to climb a higher mountain*) are multiply ambiguous, and this can be explained by assuming different elided types of complements involving covert deictic, anaphoric or reflexive elements (e.g. *than this one, than her, than himself before*); at least some of these complements arguably correspond to fully elided clauses. The superlative clause hypothesis implies that superlatives can involve similar types of ellipsis, including full elision of the clause (see section 4 for discussion of other types of ellipsis). The specificity of superlatives as compared to comparatives implies that the covert deictic, anaphoric or reflexive element denotes a set. In (106)a, the correlate of *John* must thus correspond to a set (expressible as *anyone*, cf. Howard 2014). This set, I hypothesize, is created through focus on *John*, which evokes all relevant alternatives to *John*; in fact, this reading is favored by focal stress on *John*, just like the

corresponding reading in the comparative (in (106)b), which implies contrastive focus between *John* and *Mary*.

The uniformity assumed between comparatives and superlatives thus implies that the derivation of upstairs *de dicto* readings relies on ellipsis of a clause like the bolded one in (106)a, just as the equivalent reading in comparatives relies on ellipsis of the bolded clause in (106)b. This hypothesis amounts to unpacking the lexical entry of *-est*, which in Heim's (2001: 234) terms, involves 'semantic ellipsis', and moving some of its ingredients to the syntactic representation. Beyond simplifying the lexical entry of *-est* and bringing it closer to that of *-er*, we will see that this hypothesis makes better empirical predictions due to the interaction it implies between ellipsis and movement.

3.2.1. Further motivating movement

Although – to my knowledge – its relevance to upstairs *de dicto* readings has not been exploited, the interaction between comparatives and intensional predicates has been much studied (see esp. Heim 2001, Bhatt & Pancheva 2004). In fact, the upstairs *de dicto* reading corresponds to one of the three readings that have been identified in comparative constructions involving intensional predicates such as (107) (see Williams 1974, Sag 1976, Heim 2000, 2001, Bhatt & Pancheva 2004, i.a.).

(107) Mary$_i$'s father <u>tells</u> her$_i$ to work <u>harder</u> 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".

(Bhatt & Pancheva 2004: 30)

Here, different readings result from different possible choices of ellipsis and covert movement of the degree quantifier, which are partially interrelated. When only the lower VP is elided as in (107)a, the comparative morpheme *-er* can be interpreted above *tell*, in which case the *than*-clause must be read *de re* (see (107)a-i), or below *tell*, in which case the *than*-clause can be read *de dicto* (see (107)a-ii). When the higher VP is elided as in (107)b, *-er* must scope over *tell* to resolve antecedent containment deletion and license ellipsis (see (108)) so that the *than*-clause must be read *de re* as in (107)b-i (Sag-Williams Ellipsis-Scope generalization).

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

The *de dicto* reading is unavailable in (107)b-ii and can only be triggered by the less elliptical structure in (109).

(109) Mary$_i$'s father <u>tells</u> her$_i$ to work <u>harder</u> than her$_i$ boss tells her to.

Crucially for our purposes, the reading in (107)b-i is the comparative counterpart of the upstairs *de dicto* reading: the measure judgment (about how hard Mary should work) is ascribed to the attitude holders (Mary's father, Mary's boss) while the comparison is made by the speaker. Similarly, the comparative counterpart of (106) in (110) exhibits a reading where only the comparison (vs. the measure judgment) is made *de re*.

(110) John wants to climb a higher mountain than Mary does.

Furthermore, Heim (2001) observes that the *de dicto* reading (as in (107)a-ii) and the *de re* reading (as in (107)b-i) of comparatives extend to superlatives.

(111) Mary$_i$'s father <u>tells</u> her$_i$ to work (the) <u>hardest</u>.

For example, (111) can either express that Mary's father's order is comparative (what Mary is ordered to do is to work harder than others work) or that it is quantitative (what Mary is ordered to do by her father is to work a certain amount; it turns out that this amount exceeds other amounts recommended to her by other people). Heim (2001) takes this observation as further evidence for the possibility of DegP movement above intensional predicates. According to her, the argument is clearer in the case of superlatives because they do not involve syntactic ellipsis and the argument is thus not contingent on assumptions about ellipsis licensing. But the argument can be reversed: the fact that similar readings occur with comparatives and superlatives arguably provides evidence for the hypothesis that they are derived in a similar fashion. This is our superlative clause hypothesis according to which superlatives do in fact involve (covert) syntactic ellipsis as represented in (112).

(112) a. Mary$_i$'s father <u>tells</u> her$_i$ to work (the) <u>hardest</u> (~~that anyone works~~).
       b. Mary$_i$'s father <u>tells</u> her$_i$ to work (the) <u>hardest</u> (~~that anyone tells her to work~~).

The relative *de dicto* reading is derived by ellipsis of the lower VP as in (112)a (cf. (107)a-ii), while the upstairs *de dicto* reading is derived by ellipsis of the higher VP as in (112)b (cf. (107)b), which requires scoping *-est* above the intensional predicate
Furthermore, the facts motivating the Sag-Williams Ellipsis-Scope generalization in the case of comparatives are also observed with superlatives. Specifically, (111) does not exhibit the reading in (113), just like we saw that (107) does not display the reading in (109).

(113) Mary$_i$'s father <u>tells</u> her$_i$ to work (the) <u>hardest</u> that anyone tells her to.

Under Heim's (1995/1999) analysis, the absence of this reading derives from the hypothesis that the type of comparison depends on the shape of the sister of *-est*.

(114) a. Mary$_i$'s father <u>tells</u> her$_i$ [C-est] PRO λd[to work d-<u>hard</u>].
       b. Mary$_i$'s father <u>tells</u> her$_i$ PRO [C-est] λd[to work d-<u>hard</u>].

In (114)a based on two-place *-est* (see (38)), it is the case because C corresponds to the focus value of the sister of *-est*. In (114)b based on three-place *-est* in (36), it is the case because the relation used for comparison is created through movement of *-est* (cf. (96)a). If the comparison is *de dicto* as in (113), *-est* must thus remain below the intensional predicate, which implies that the domain of comparison cannot involve the intensional predicate.
Under our superlative hypothesis, the absence of the same reading as (113) in (111) derives from the same constraints on ellipsis licensing discussed for comparatives.

(115) a. Mary$_i$'s father <u>tells</u> her$_i$ [-est ~~that anyone works t hard~~] to work t hard.
       b. [-est ~~that anyone tells her$_i$ to work t hard~~] Mary$_i$'s father tells her$_i$ to work t hard.
       c. *Mary$_i$'s father tells her$_i$ [-est ~~that anyone tells her$_i$ to work t hard~~] to work t hard.

When the higher VP is elided as in (115)b-c, only a *de re* reading obtains (i.e. the upstairs *de dicto* reading in (115)b) because *-est* must scope above *tell* to resolve antecedent containment deletion). The *de dicto* reading is only possible with lower VP ellipsis as in (115)a. Thus, the

prediction of our superlative clause hypothesis is here identical to that of Heim's movement theory. But the superlative clause hypothesis has two advantages: it simply extends to superlatives the explanation already needed for comparatives based on the independently motivated interaction between scope and ellipsis, instead of building into the lexical entry of -*est* the correlation between the scope of -*est* and the type of comparison; it provides additional motivation for -*est* movement, which is thereby not only required for interpretive reasons, but also for reasons of ellipsis licensing. The superlative clause hypothesis thereby incorporates the advantages of the movement theory regarding island effects discussed in section 3.1.1; in fact, it doubly predicts island effects because under this hypothesis, not only is -*est* movement subject to island effects, but also the movement of the degree operator in the elided superlative clause (just as in comparative clauses, see e.g. Kennedy 2002; cf. also Charnavel 2015 on *same/different*).

Furthermore, the superlative clause hypothesis is even more clearly supported by the fact that it correctly predicts an additional, previously unnoticed reading for sentences involving a superlative and an intensional predicate, which cannot be derived from the movement theory. While Heim (2001) only discusses two readings with comparatives (the *de re* reading with higher VP ellipsis as in (107)b-i, and the *de dicto* reading with lower VP ellipsis as in (107)a-ii), Bhatt & Pancheva (2004) mention a third reading indicated in (107)a-i above: the *de re* reading with lower VP ellipsis, which can obtain if -*er* scopes over the intensional predicate as noted in (107)a-i (or also if -*er* scopes below the intensional predicate under the assumption that *de re* readings are obtained by binding by the utterance world as explained in Heim 2001). Under our superlative clause hypothesis, this LF applies to superlatives as in (116).

(116) [-est ~~that anyone works t hard~~] Mary$_i$'s father <u>tells</u> her$_i$ to work t hard.

To my knowledge, this LF deriving a *de re* reading with lower VP ellipsis has never been discussed, because Heim (2001), which discusses superlatives, does not consider this reading with comparatives, and Bhatt & Pancheva (2004), which consider this reading with comparatives, do not discuss superlatives. But crucially, this LF uniquely derives an existing, distinct reading. This reading is distinct from the *de dicto* reading with lower VP ellipsis represented in (115)a, which corresponds to the relative *de dicto* reading: Mary's father order is comparative in (115)a, but not in (116). The reading derived by (116) is also distinct from the upstairs *de dicto* reading represented in (115)b with ellipsis of the higher VP. In both readings, the comparative judgment is made *de re*, but the content of the comparison is different: under the upstairs *de dicto* reading in (115)b, the comparison bears on types of order (e.g. the amount of work ordered by Mary's father vs. the amount of work ordered by others), while it bears on types of work under the reading in (116)a (e.g. the amount of work achieved by Mary vs. the amount of work achieved by others). Both readings have different truth conditions. Let's imagine a scenario where Mary's father tells her to work 60 hours a week, while her teachers tell her to work 50 hours a week, and some of her fellow students work 70 hours a week. Under that scenario, the sentence is true under the upstairs *de dicto* reading in (115)b, but false under the reading in (116). The reverse situation obtains under a scenario where Mary's father tells her to work 60 hours a week, while her teachers tell her to work 70 hours a week, and some of her fellow students work 50 hours a week.

Crucially, this reading (which I will henceforth call the low relative upstairs *de dicto* reading, in contrast to the high relative upstairs *de dicto* reading referring to the standard upstairs *de dicto* reading) cannot be derived by the movement theory. As we saw above in (114), this theory predicts a strict correlation between the scope of *-est* and the type of comparison that can be made. If *-est* moves above the intensional predicate, the domain of comparison must thus involve the intensional predicate as shown in (117).

(117) a. [C-est] λd[Mary$_i$'s father <u>tells</u> her$_i$ to work d-<u>hard</u>].
       b. Mary$_i$'s father [C-est] λd[<u>tells</u> her$_i$ to work d-<u>hard</u>].

Thus, the low relative upstairs *de dicto* reading cannot be derived under the movement theory and provides a strong argument for the superlative clause hypothesis.

In sum, a comparison between the various readings obtained in the presence of an intensional predicate reveals that comparatives and superlatives exhibit exactly the same readings. This observation can only derive from our superlative clause hypothesis because it implies the same possibilities on ellipsis licensing as with comparatives. As now represented with our original example in (118), superlatives display a high relative upstairs *de dicto* reading in (a) (corresponding to the *de re* reading of comparatives with high ellipsis[33]), a low relative upstairs *de dicto* reading in (b) (corresponding to the *de re* reading of comparatives with low ellipsis), a low relative downstairs *de dicto* reading in (c) (corresponding to the *de dicto* reading of comparatives with low ellipsis), but cannot trigger a high relative downstairs *de dicto* reading in (d) (corresponding to the *de dicto* reading of comparatives with high ellipsis); this last reading only obtains when the intensional predicate is not elided as in (119).

(118) a. [-est ~~that anyone wants to climb a d-high mountain~~] John wants to climb a d-high mountain.
       b. [-est ~~that anyone climbs a d-high mountain~~] John wants to climb a d-high mountain.
       c. John wants [-est ~~that anyone climbs a d-high mountain~~] to climb a d-high mountain.
       d. *John wants [-est ~~that anyone wants to climb a d-high mountain~~] to climb a d-high mountain.

(119) John wants to climb the highest mountain that anyone wants to climb.

Now recall that we originally identified five readings in sentences involving a superlative and an intensional predicate; not just the upstairs *de dicto* and relative *de dicto* readings as in (118)a and (118)c above, but also relative *de re*, absolute *de dicto* and absolute *de re* readings. We originally saw in (93) that these different readings could be assumed to derive from different scopes of the superlative (e.g. *the highest mountain*) with respect to the intensional predicate (e.g. above or below *want*) and different choices of comparison set (e.g. all relevant mountains vs. all relevant aspirant climbers). Our comparison with comparatives has added more possibilities by supporting the hypothesis of split scope of *-est* and *d-high mountain* across *want* (already supported by upstairs *de dicto* readings), as well as more comparison options: the

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[33] The terminology usually used for comparatives and superlatives is different because *de re* and *de dicto* qualifications do not target the same elements: *de dicto* (vs. *de re*) is intended to characterize the NP (e.g. *d-high mountain*) in the superlative literature, but the DegP in the comparative literature (*-er than…*); in the superlative literature, the scope of the DegP with respect to the intensional predicate is indicated using the term *upstairs* (vs. *downstairs*). I will henceforth stick to the superlative terminology (complementing it with the *low* vs. *high* contrast to capture differences in ellipsis size).

possibility of low VP ellipsis amounts to adding all (relevant) actual climbers as another possible comparison set – since under our hypothesis, it is the (elided) superlative clause that determines the content of the comparison set.

At the same time, comparatives did not seem to exhibit the counterparts of relative *de re*, absolute *de dicto* and absolute *de re* readings. But as detailed below, this is due to the orthogonal fact that comparatives examined in the previous literature like (107) involve adverbial comparatives (e.g. *work harder*) instead of nominal comparatives (e.g. *a higher mountain*) and partially elided comparative clauses instead of phrases (descriptively speaking and disregarding the debate on the derivation of phrasal comparatives). First, the use of adverbial comparatives makes the counterpart of the relative *de re* reading hardly distinguishable from the counterpart of the upstairs *de dicto* reading. The former represented in (120) requires scoping the whole comparative DP (e.g. *a higher mountain than Mary does*) above the intensional predicate (*want*) instead of just DegP (*-er than Mary does*) as in the counterpart of the (high) upstairs *de dicto* reading in (107)b-i.

(120) [a higher mountain than Mary does] John wants to climb t.

This reading is revealed by scenarios in which John wants to climb a specific mountain, e.g. Mont Blanc, and it turns out that this mountain is higher than the mountain Mary wants to climb. The distinction between the (high) upstairs *de dicto* reading and the relative *de re* reading in (93) thus depends on whether it is a specific height or a specific mountain that John wants to climb. What is the counterpart of this reading with adverbial comparatives? It seems that there are two conceivable LFs: one involving scoping just the adverbial and one scoping the whole VP (to mimic scoping the whole DP instead of just the adjective) over *tell* as represented in (121).

(121) a. [harder than her$_i$ boss does] Mary$_i$'s father tells her$_i$ to work t.
        b. *[work harder than her$_i$ boss does] Mary$_i$'s father tells her$_i$ to t.

But (121)a seems indistinguishable from the LF yielding the upstairs *de dicto* reading in (108), and (121)b with high interpretation of the VP is independently ruled out as we know that unlike arguments, predicates obligatorily reconstruct, arguably because they cannot be referentially read (Heycock 1995).[34]

Second, both the use of adverbial comparatives and that of partially elided comparative clauses including a remnant subject (*her boss*) in (107) precludes absolute readings. In superlatives, absolute readings descriptively derive from restricting the comparison set to relevant entities that can be referred to by the noun (e.g. *mountain*). The equivalent readings in comparatives thus require the comparative adjective to be attributive as in (122).

(122) John wants to climb a higher mountain (than Mont Blanc).

If the intended complement of the comparative is here a phrase denoting a mountain (e.g. Mont Blanc), the equivalents of both an absolute *de re* reading and a relative *de dicto* readings are available.

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[34] The scenario closest to a scenario revealing the intended reading of (121) is one where Mary's father Stakhanovizes Mary, i.e. tells her to work like a Stakhanovist. But note that even this VP is not really referential and is intrinsically comparative.

In sum, if we combine the possible readings described by the literature on comparatives and those described by the literature on superlatives, we obtain a total of six readings for degree heads surfacing in the scope of an intensional predicate; they are summarized in Table 4 based on the superlative case.

	Basis for comparison set	Scope
Absolute *de re*	NP	DP > V
Absolute *de dicto*	NP	V > DP
High upstairs *de dicto*	high VP	*-est* > V > NP
Relative *de re*	high VP	DP > V
Low upstairs *de dicto*	low VP	*-est* > V > NP
Relative *de dicto*	low VP	V > DP

Table 4. Total of readings triggered by superlatives complementing intensional predicates taking into account the literature on both comparatives and superlatives

We observe that these readings derive from the possible combination of three types of comparison set and three types of scope (the fourth logical possible scope NP > V > *-est* being independently excluded by the meaning of *-est*). But note that only two possible scopes (out of the three available ones) are indicated for each choice of comparison set; it thus seems that three more options are missing. We have already excluded one of them because of the Williams-Sag Ellipsis-Scope generalization: the whole superlative DP cannot scope below the intensional verb (*V > DP) when this verb is taken into account in the comparison set (high VP). But the last two possible readings, I argue, are actual readings, which have also been previously overlooked. The goal of the end of this section is to show it.

The first additional reading is a third type of absolute reading, which involves split scope of *-est* and the gradable predicate. Just like under upstairs *de dicto* readings, the comparison judgment is ascribed to the speaker, but the measure judgment to the attitude holder; just like under other absolute readings, the comparison set is only built on the NP (e.g. mountains). For instance, this implies for our original sentence (93) that John's desire consists in climbing any mountain of a specific height (e.g. a mountain higher than 8700m and crucially, he may not know that only Mount Everest qualifies), and it turns out that this height exceeds that of all (relevant) mountains. This is not an absolute *de re* reading because John does not have any particular mountain in mind; this is not an absolute *de dicto* reading because John's desire is not comparative; this is not a relative reading because it is not (aspirant) climbers that are compared, but mountains. This reading can be captured under our superlative clause hypothesis assuming DP ellipsis (cf. Charnavel 2015: 160) as shown in (123)a; this is corroborated by the fact that this reading is more salient with an overt existential complement as in (123)b; a similar reading is obtained with a similar comparative clause in (123)c (modulo the difference between comparatives and superlatives with respect to partitivity discussed above).

(123) a. [-est ~~that a d-high mountain (is)~~] John wants to climb a d-high mountain.
       b. John wants to climb the highest mountain that there is.
       c. John wants to climb a higher mountain than there is.

Note that this reading requires John to have a climbing achievement desire that can be satisfied by an actual mountain. This follows from our hypothesis that implies that the comparison set is established among mountains in the actual world. However, the movement theory cannot derive

this absolute upstairs *de dicto* reading because as we saw above (in e.g. (114)), the computation of the comparison set must rely on the sister of *-est*.

The second additional reading is a third type of low relative reading, where the DP is read *de re*. Just like other low relative readings, the comparison set involves the low VP (e.g. actual climbers); just like other *de re* readings, the superlative DP is evaluated in the actual world. For our sentence (93), this implies that the mountain that John wants to climb is higher than the mountains climbed (vs. wanted to be climbed) by other climbers. This is not a high relative *de re* reading because the comparison set involves actual climbers instead of aspirant climbers; this is not a low relative downstairs or upstairs *de dicto* reading because John's desire is neither comparative nor quantitative but about a specific mountain. This reading seems easier to access in the past (because of constraints on matching aspect/tense in the ellipsis site and in the matrix clause) as in (124).

(124) a. Saussure wanted to climb the highest mountain (that anyone climbed).
b. [the highest mountain ~~that anyone climbed~~] Saussure wanted to climb t.
c. Saussure wanted to climb a higher mountain than Balmat and Paccard did (climb).

Consider the fact that Horace-Benedikt de Saussure had attempted to reach Mont Blanc several times since the 1760s and that Balmat and Paccard finally made it to the summit in 1786. Before he reached it himself in 1787, we can imagine relating Saussure's desire in 1786-87 as in (124)a. The corresponding reading in comparatives is available in (124)c; note that like in (122) or (123)c, the comparative and the superlative do not have the same truth conditions because of their relational vs. partitive difference. Again, the movement theory cannot capture this reading for the aforementioned reasons.

In sum, our superlative clause hypothesis correctly predicts the availability of eight readings for superlatives complementing intensional predicates, out of the twelve logical possibilities based on scope and ellipsis options; all and only these readings also apply to comparatives (modulo the intrinsic differences between superlatives and comparatives).[35] The superlative readings are summarized in Table 5 based on Heim's original sentence (ignoring the independently excluded scopal option NP > V > *-est*). The new readings uniquely derived by our superlative clause hypothesis are indicated in bold.

	Example	Scope	Ellipsis
absolute (upstairs) *de re*	(93)	DP > V	DP
absolute (downstairs) *de dicto*	(94)	V > DP	(e.g. that there is a d-high mountain)
absolute upstairs *de dicto*	(123)	*-est* > V > NP	
(high) relative (upstairs) *de re*	(94)	DP > V	high VP
*(high) relative (downstairs) *de dicto*	#(94), *(115)c	V > DP	(e.g. that anyone wants to climb a d-high mountain)
(high relative) upstairs *de dicto*	(118)a, (115)b	*-est* > V > NP	
low relative upstairs *de re*	(125)	DP > V	low VP

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[35] There may be even more readings if we take into account the distinction between *de dicto* and *de credito* readings (see e.g. Yanovitch 2011). While attitudes *de dicto* are about some entity present in the attitude holder's doxastic alternatives, attitudes *de credito* can be about entities that do not exist in the attitude holder's doxastic alternatives. For instance, the absolute *de credito* reading in (93) does not imply that John believes that the mountain he wants to climb exists; it can be what he wants to be the highest of all mountains, e.g. an imaginary 10000m mountain. while the *de dicto* absolute reading implies that the mountain John wants to climb is the mountain that he believes is actually the highest of all mountains (e.g. K2 if he is mistaken about the actual highest mountain). As we focus on superlatives, we will ignore this distinction that bears on the semantics of the attitude verb *want* (see also fn. 7 about the influence of the semantics of attitude verbs on readings triggered by superlatives).

(low) relative (downstairs) *de dicto*	(118)c, (115)a	V > DP	(e.g. that anyone climbs a
low (relative) upstairs *de dicto*	(118)b, (116)	*-est* > V > NP	d-high mountain)

Table 5. Total of readings triggered by superlatives complementing intensional predicates under the superlative clause hypothesis

The readings indicated in bold thus provide a strong argument for our superlative clause hypothesis against previous theories, which undergenerate them. In the next section, we further show that the superlative clause hypothesis does not face the same problems as the movement theory regarding definiteness.

3.2.2.   The definiteness issues

Recall that the movement theory requires interpreting the article as an indefinite when (and arguably only when) *-est* moves out of the DP. Beyond redundancy, this makes incorrect empirical predictions in some subtle cases involving ties or sandwich scenarios. Our superlative clause analysis fares better because it licenses QR of the whole superlative DP instead of just *-est* (cf. fn. 28) as shown in (125) (cf. (102)), thus further aligning superlatives with quantifiers in the nominal domain (cf. Heim 2001).

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

Our superlative clause hypothesis, unlike the movement theory, thus licenses the presence of a definite article in relative readings. Crucially, the LF in (125) thus makes the same correct predictions as the in situ theory in scenarios involving ties. Unlike the movement theory, it first correctly predicts the sentence to be true when both John and Bill climbed the same mountain, which is higher than the mountains climbed by other people. Like Sharvit & Stateva (2002), we can furthermore assume that the judgments are not fully clear because the focus on *John* induced by the relative reading (which, under our hypothesis, creates the relevant set of alternative climbers in the ellipsis site expressible as *anyone*) induces a (cancellable) implicature that the alternatives are false (just like questions such as *who climbed the highest mountain?* favor an exhaustive answer).

Second, the LF in (125), like the in situ theory and unlike the movement theory, correctly predicts the truth value of the sentence to be undefined in a scenario where John climbed two 4000m mountains, while the other climbers reached lower summits. And again like Sharvit & Stateva (2002), we can assume that speakers who judge the sentence true ignore one of John's mountains.

Finally, the LF in (125) provides a solution to the problem of negative superlatives like (103) in sandwich scenarios as shown in (126).

(126) a. John climbed the [[-least ~~that anyone climbed a d-high mountain~~] d-high mountain].
      b. John climbed the [[-est ~~that anyone climbed a not d-high mountain~~] not d-high mountain].

Assuming nominal scope of *-est* and decomposition of *least* into negation and *-est* as discussed in (103), (126)b correctly the sentence to be false. Furthermore, (126)a (involving high scope of both *-est* and negation) predicts presupposition failure because there is no unique mountain (but two: John's 3000m and Mary's 2500m mountains) such that its height does not reach a height reached by at least one mountain climbed by others. This arguably provides an

explanation for why this scopal possibility is blocked here assuming that if they have a choice, speakers disregard a LF involving presupposition failure; the movement theory, however, did not provide any way to block this LF (see section 3.1.2.).

Thus, the superlative clause hypothesis can overcome the problems of definiteness faced by the movement theory even if it also involves movement, because due to the presence of the superlative clause, relative readings do not depend on -*est* movement out of the DP and are thus compatible with the presence of a definite article.

Crucially though, the superlative clause hypothesis does not require movement of the whole DP (at least in the sense of interpreting the whole DP high). Recall that the main argument for the movement theory consists in deriving the upstairs *de dicto* readings by splitting the scope of -*est* and the NP across the intensional predicate. The superlative clause hypothesis certainly needs to retain this aspect of the movement theory as in (118). Similarly, the two variants of upstairs *de dicto* readings with negative superlatives ('at least' and 'at most' readings) can be captured by the superlative clause hypothesis using decomposition of *least* into -*est* and negation as proposed by Stateva (2000) (cf. (104)).

(127) a. [-least ~~that anyone wants to climb a d-high mountain~~] John wants to climb a d-high mountain.
    b. [-est ~~that anyone wants to climb a not d-high mountain~~] John wants to climb a not d-high mountain.

It nevertheless remains to explain why upstairs *de dicto* readings also include a definite article. A possible solution to be further investigated in future research is to hypothesize that the definite article in superlative constructions need not mark definiteness of individuals, but can also mark definiteness of degree (see Krasikova 2012, Loccioni 2018, i.a.).[36] A full exploration of this hypothesis is nevertheless beyond the scope of this article. It was here sufficient for our purposes to show that relative readings do not require indefiniteness, so that correct truth predictions can be made in tie and sandwich scenarios.

In sum, the superlative clause hypothesis builds on the movement theory, thus incorporating all its advantages as compared to the in situ theory. But the superlative clause hypothesis improves on the movement theory because it does not require building the comparison set on the scope of -*est*, thus correcting the wrong empirical predictions made by the movement theory.

4. Conclusion and prospects for further research

To conclude, both the case of intensional superlatives and that of upstairs *de dicto* readings provide empirical support for the superlative clause analysis. The hypothesis that the domain of comparison can be syntactically represented by a degree clause derives the correct range of readings and the properties associated with them in both cases. In particular, it crucially entails the possibility of splitting the scope of the superlative morpheme and the measuring relation across intensional predicates, as well as the possibility of dissociating the construal of the comparison domain from the scope of the superlative morpheme, thus overcoming

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[36] Empirical support for this hypothesis comes from languages like French that can exhibit two definite articles (e.g. *la montagne la plus haute,* lit. 'the mountain the highest') and that can show mismatch in agreement between the definite article and the superlative adjective (e.g. *c'est parmi ses compagnes d'enfance qu'elle est le plus heureuse* 'it is among her childhood friends that she is the_MASC most happy_FEM', Silberlight 1965).

undergeneration problems of previous theories. At the same time, it implies specific constraints on the construal of the comparison domain due to degree quantification, which also avoids their overgeneration problems. Furthermore, the superlative clause hypothesis exclusively relies on independently motivated ingredients drawing from the theories of degree quantification, ellipsis and scope.

One conspicuous argument has nevertheless recently been provided which could potentially challenge the empirical adequacy of the superlative clause hypothesis. Bumford & Sharvit (2022) observe that NPIs can be licensed outside superlative noun phrases as illustrated in (128).

(128) a. The judge who gave the highest score to <u>any</u> rookie later regretted it.
b. Economics is the field in which the fewest women have <u>ever</u> won a Nobel Prize.
c. John has donated the most money to <u>any</u> third-party candidate.

In these sentences, the NPIs are available only in the presence of a superlative and only under relative readings. Nevertheless, they do not occur in the restrictor of *-est*, even assuming ellipsis of the superlative clause.

(129) a. The judge who gave the highest score [~~that any judge gave to any rookie~~] to <u>any</u> rookie later regretted it.
b. Economics is the field in which the fewest women [~~that have ever won a Nobel Prize in any field~~] have <u>ever</u> won a Nobel Prize.
c. John has donated the most money [~~that anyone has donated to any third party candidate~~] to <u>any</u> third-party candidate.

Contrary to what Bumford & Sharvit (2022: 270) claim, these NPIs are part of the comparison class: for example, the comparison in (129)a is not just between judges, but between pairs of judges and rookies; in fact, the NPIs do appear in the elided superlative clauses in (129). But their point remains that the overt NPIs occur outside it,[37] which seems to challenge the predictions of our theory.

But there is an alternative hypothesis consistent with the superlative hypothesis, which consists in assuming the presence of a higher implicit operator licensing NPIs in the presence of the superlatives. Several observations motivate this hypothesis. First, in all examples mentioned by Bumford & Sharvit (2022), the main variable element in the comparison class (e.g. the judge in (129)a) is expressed as the definite head of a relative clause (as in (129)a,c), as focused (as in (129)b) or as questioned (see Bumford & Sharvit 2022: 270); this is expected under the assumption that they are associated with a focus operator. Second, there is a rich literature independently demonstrating the need for covert focus operators (i.e. *only* and *even*, see e.g. Krifka 1995, Chierchia 2013) to license NPIs. Third, all examples not only require the superlative, but also a specific choice of predicates to license NPIs as we will see. All this suggests that the NPIs in examples (129) are licensed by a covert *even* E (also associating with

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[37] In (129)a,c, we may assume right node raising just as can be the case in comparative clauses. Under Lechner's (2004: 143) analysis combining right node raising with gapping, the overt NPI would be in the comparative clause, thus in the restrictor of the comparative morpheme as shown in (xxiii).

(xxiii) John has donated more money ~~to any third party candidate~~ [than you ~~have donated~~ to any third party candidate].

But this implies for (129)a,c the availability of gapping with superlative clauses, which is argued against later on in the main text. Furthermore, this analysis is unapplicable to example (129)b.

the main element of comparison) as illustrated in (130); the superlative does not directly license them, although it plays a crucial role.

(130) **E** [**JOHN**$_F$ has donated the *(most) money to **any**$_F$ third-party candidate]

Specifically, the superlative changes the monotonicity of the environment hosting the NPI: while it is upward entailing in its absence ((131)b entails (131)a), it becomes non-monotone in its presence, crucially only under a relative reading ((132)b does not entail (132)a, nor does (132)a entail (132)b).

(131) a. John has donated the money to a third-party candidate.
       b. John has donated the money to a reasonable third-party candidate.

(132) a. John has donated the most money (that anyone gave) to a third-party candidate.
       b. John has donated the most money (that anyone gave) to a reasonable third-party candidate.

As has been shown by e.g. Crnič (2014), NPIs can be licensed in non-monotone environments as long as the context of the sentence allows the presence of covert *even*, namely if alternatives are construed as more likely or expected, as required by *even*. The superlative also plays a crucial role in this respect by evoking the end of a scale, which interacts with the rest of the sentence to yield unexpectedness or scandalous effects (cf. Charnavel 2016). This point is easier to see in (129)b than (129)c where John's characteristics are unspecified in the lack of context. In (129)b (repeated below as (133)a), the unexpectedness arises from the combination of a low point induced by the superlative and the rest of the sentence creating an appropriate context (i.e. yielding the underlying message that women are wronged because it would be expected that they benefit from the same prestige as men – e.g. by winning a prestigious Nobel Prize); this is evidenced by the contrast with (133)b and (133)c where either the superlative or the predicate have been changed, thus yielding infelicity.

(133) a. Economics is the field in which the fewest women have <u>ever</u> won a Nobel Prize.
       b. Economics is the field in which the <u>most</u> women have (#<u>ever</u>) won a Nobel Prize.
       c. Economics is the field in which the fewest women have (#<u>ever</u>) <u>been harassed</u>.

Further work is required to explain in detail all cases of NPIs appearing to arise outside the restriction of the superlative morpheme. But this preliminary investigation suggests that after all, such data do not necessarily challenge the empirical adequacy of the superlative clause hypothesis.[38]

Furthermore, it is not only in terms of empirical predictions, but also in terms of parsimony that the superlative clause hypothesis compares favorably to previous analyses by bringing closer the analyses of comparative and superlative constructions, which usually remain largely disconnected despite clear morphosyntactic similarities. Specifically, the hypothesis that comparative clauses have superlative counterparts opens the possibility of a unified theory of comparandum construal relying on degree clauses elidable to various extents. In this article, we have only argued that superlative clauses are attested at least in some cases. A stronger case for unification would require a systematic comparison of all possible types of comparandum in comparative and superlative constructions, which goes beyond the scope of this article. But I

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[38] Furthermore, note that the alternative theory advocated by Bumford & Sharvit (2022) to derive these facts does not derive upstairs *de dicto* readings, which is a clear lack of empirical adequacy. See also fn. 11 and 21.

would like to conclude on a promising note in this respect by sketching how two conspicuous cases of apparent discrepancies between comparative and superlative clauses can in fact be derived from independent differences between comparatives and superlatives.

We started by mentioning in (1) that comparative clauses can take different forms. In particular, two cases remain notoriously debated in the literature on comparatives: comparative subdeletion as in (134)a (repeating (1)b) and comparative ellipsis as in (134)b (repeating (2)a).

> (134) a. The table is longer <u>than the door is large</u>.
> b. Ann is taller <u>than Ben</u>.

In comparative subdeletion (vs. comparative deletion), only the degree variable is covert, the degree predicate (e.g. *large* in (134)a) remains overt (see Lechner & Corver 2017 for a review). In comparative ellipsis (cf. phrasal comparatives), the comparative clause contains only a remnant (e.g. *Ben* in (134)b), which contrasts with a correlate in the matrix clause (e.g. *Ann* in (134)b) (see Lechner 2020 for a review). Strikingly, neither case seems to have a superlative counterpart as shown in (135).

> (135) a. This table is the longest <u>that any table is (*large)</u>.
> b. Ann is the tallest <u>that anybody *(is)</u>.

At first glance, this observation seems to challenge the superlative clause hypothesis under which we expect comparative and superlative clauses to be subject to the same types of ellipsis processes. But on closer scrutiny, this discrepancy between comparatives and superlatives – I'd like to suggest – derives from their intrinsic differences. As detailed below, it has been shown that both comparative subdeletion and comparative ellipsis obligatorily exhibit coordinate-like properties, unlike other types of comparatives that only optionally do so (Corver 1993, Lechner 2001, i.a.). The exact reason why these structures require a coordinate parse remains debated, but at least, it seems reasonable to tie this possibility to the relational nature of comparatives, i.e. comparatives relate two distinct elements. On the contrary, superlatives, as already mentioned, are partitive: they relate a set and an element not distinct from, but crucially belonging to this set (cf. discussion in Loccioni 2019: 50). This fact, I hypothesize, can explain why superlatives cannot have a coordinate parse, and thus why subsuperlatives and superlative ellipsis are unavailable.[39]

Specifically, Lechner (2001, 2004, 2020) provides several arguments showing that comparative ellipsis is not a specific ellipsis process, but results from the combination of comparative deletion (which he analyzes as head raising) and gapping, which crucially requires a coordinate

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[39] Alternative hypotheses could also seem to derive the absence of subsuperlatives. First, subdeletion seems to impose odd truth conditions on superlatives: given the partitive nature of superlatives, it seems that (135)a (with *large*) should imply that this table is as long as it (or another table, depending on the lexical entry adopted) is wide. Second, comparative subdeletion seems to be precluded with attributive (vs. predicative) comparatives as illustrated in (xxiv) (cf. Grimshaw 1987, Izvorski 1995).

> (xxiv) *Bill is a more successful actor than he is a talented director.

The unavailability of subsuperlatives could thus be argued to follow from the attributive nature of superlatives. But Loccioni (2019) (*pace* Matushansky 2008, i.a.) argues that superlatives can in fact be predicative (i.e. not embed a nominal projection) based on interpretive effects such as (xxv) in English and agreement facts in Romance languages (see fn. 36).

> (xxv) Mary was the prettiest (#one) yesterday.
> i.e. Mary was prettier yesterday than on any other relevant day.

The coordination-based argument discussed in the text is thus stronger, all the more since it also derives the unavailability of superlative ellipsis.

parse. To give a single example for space reasons (see other arguments in Lechner 2001, 2004, 2020), comparative ellipsis structures, just like gapping structures, are constrained by isomorphism: the antecedent and the gap have to be embedded at the same depth inside their respective conjuncts as illustrated in (136) for gapping and (137) for comparative ellipsis; (138) further shows that the same holds of partially reduced comparative clauses, thus corroborating that (137) is derived by gapping (vs. direct analysis mentioned in the introduction).

(136) The girls want to visit Sam and the boys [*(want to) visit] Otto.
(137) More girls want to visit Sam than [*(want to) visit] Otto.
(138) More girls want to visit Sam on Monday than [*(want to) visit] Otto on Friday.

Strikingly, the same kinds of arguments have been provided by Corver (1993), among others, about subcomparatives. For instance, the contrast between (139)a and (139)b shows that subcomparative deletion requires a parallel, coordinate-like configuration, while that between (139)a and (139)c shows that comparative deletion does not.

(139) a. *John gave more books than he had given pencils to Sue to his best friend Peter.
       b.   John gave more books to his best friend Peter than he had given pencils to Sue.
       c.   John gave more books than he had given to Sue to his best friend Peter.

(Corver 1993: 779-780)

The coordination properties of subcomparatives and comparative ellipsis can explain, I suggest, why such constructions do not have superlative counterparts,[40] because superlatives, unlike comparatives, are partitive, and it is independently known that entailment of a conjunct by the other is generally banned. Specifically, Hurford's (1974) constraint has been shown to extend from disjunction to conjunctions (Katzir & Singh 2014, i.a.): for example, the conjunction in (140) is odd because the second conjunct entails the first one.

(140) #John lives in Paris and (he lives) in France.

Crucially, parsing a superlative as a conjunction would yield the same type of infelicity because of the partitive nature of superlatives as sketched in (141) (which purposely remains unspecified with respect to the contribution of -est).[41]

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[40] This hypothesis also predicts that superlative clauses cannot be extraposed. It has been observed by e.g. Lechner (2001) or Lechner & Corver (2017) that comparative clauses exhibit coordinate-like properties when they are extraposed, thus allowing comparative ellipsis or comparative subdeletion.
  (xxvi)   a. More people bought magazines than (bought) books.   (Lechner 2001: 701)
           b. More people than *(bought) books bought magazines.
Under the hypothesis that the absence of superlative ellipsis and subsuperlatives is due to the impossibility of coordinate parses in superlatives, we expect extraposed superlative clauses to be ruled out. This seems to be borne out:
  (xxvii) a. The most people that bought anything bought books.
           b. *The most people bought books that bought anything.
Cf. Hulsey & Sauerland's (2006) observation that relative clauses under the low reading of intensional superlatives disallow extraposition (see fn. 23).

[41] It is worth noting that although they involve a coordination between the complement of -est and the domain of comparison, all lexical entries of -est avoid this effect (or the reverse effect, i.e. contradiction, due to the negation of the second conjunct) by explicitly excluding the member of the first conjunct from the domain of comparison (see e.g. (38) repeated below).
  (xxviii) $[\![$ -est $]\!](C_{<dt,t>})(P_{<dt>}) = 1$ iff $\exists d \mid P(d)=1$ **and** $\forall Q \mid C(Q)=1$ <u>and $Q \neq P$</u>, $Q(d)=0$
In other words, *Ann is (the) tallest (that anyone is)* is de facto analyzed as *Ann is taller than anyone <u>else</u>*. As discussed by Loccioni (2019), it is worth wondering whether this type of analysis, which artificially reduces superlatives to the same type of coordination parse as comparatives, does not miss a crucial point. The absence of

(141) a. Ann is the tallest that anyone is.
      b. #...Ann is d-tall and everyone is d-tall.

Due to their relational nature, comparatives, however, can perfectly be expressed as involving a conjunction as shown in (142).

(142) a. Ann is taller than Bill is.
      b. …Ann is d-tall and Bill is d-tall.

This unavailability of a coordination parse in superlatives vs. comparatives can thus explain why unlike comparatives, ellipsis processes restricted to coordination structures cannot target superlatives.[42] In fact, gapping and pseudogapping are also ruled out in superlatives unlike in comparatives:[43]

(143) a. On Monday Ann was the happiest that anybody ever *(was).
      b. Ann was happier on Monday than Bill (was) on Tuesday.
(144) a. Ann visited Berlin the most often that anybody ever did *(visit) any city.
      b. [(1)d] Ann visited Berlin more often than Cleo did Dubai.

In sum, two facts that could appear to challenge the hypothesized parallel between comparative and superlative clauses can in fact be accounted for by independent differences between comparatives and superlatives. This supports our hypothesis that the comparandum can be expressed in the same way in comparative and superlative constructions modulo their intrinsic semantic differences. To what exact extent this hypothesis can be generalized to all cases beyond the cases of intensional superlatives and upstairs *de dicto* readings must nevertheless be left for future research as it will require a systematic exploration of many other issues that cannot be addressed within the limits of this paper. But the hope is that the few cases examined systematically in this article will motivate further research testing the underlying general hypothesis that comparative clauses have superlative counterparts, which promises to bring closer together the syntax/semantics of comparatives and superlatives.

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subsuperlatives and superlative ellipsis seems to corroborate this hypothesis, which would thus merit further investigation.

[42] This hypothesis does not challenge the hypothesis that partitives denoting the domain of comparison (e.g. *of any island*) also correspond to superlative clauses (see fn. 21) because they would involve DP ellipsis and not gapping.
[43] (143) and (144) avoid extraposition of superlative clauses (see fn. 40), and they do not involve attributive superlatives because attributive comparatives exhibit independent constraints on left branch extraction preventing comparative deletion as in (xxix) (see fn. 39 on subcomparatives), which could presumably independently affect gapping and pseudogapping with both attributive comparatives and superlatives.
   (xxix)   *Pico wrote a more interesting novel than Brio wrote a play.   (Kennedy & Merchant 2002: 92)
Nevertheless, note that Kennedy & Merchant (2002) claim that gapping and pseudogapping (vs comparative deletion) are in fact licensed with attributive comparatives.
   (xxx)   Pico wrote a more interesting novel than Brio a play.   (Kennedy & Merchant 2002: 98)
   (xxxi)   Pico wrote a more interesting novel than he did a play.   (Kennedy & Merchant 2002: 98)
The same does not hold of superlatives, which corroborates our hypothesis:
   (xxxii)   *Pico wrote the most interesting novel that anybody (did) a book.

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