

Modal superlatives as degree descriptions

Abstract In this paper, I present a novel compositional analysis of modal predicative superlatives that is, predicative superlatives accompanied by modal adjectives such as *possible* (*Mary wanted to be the prettiest possible*). I argue that they are amount relative clauses denoting a maximal degree and with a similar contribution as that of a Measure Phrase. I show that not only can this analysis derive the semantics of these constructions in a more satisfactory way than previous accounts could, but it can also capture the morphosyntax of modal superlatives in languages such as Italian and Spanish.

1 Introduction

In this paper, I defend a novel compositional analysis of modal superlatives, that is, superlatives accompanied by certain modal adjectives, such as *possible*, that give rise to the so-called modal superlative reading. The existing literature on modal superlatives mainly deals with cases such as (1) and (2) where the superlative adjective modifies a head noun (see Larson 2000, Schwarz 2005 and Romero 2013). It is well established that when *possible* appears prenominally (as in (2)), the combination of superlative predicates and the modal adjective can also have a regular modifier reading.

- (1) Don tried to hire the prettiest girl possible.
- (2) Don tried to hire the prettiest possible girl.
 - a. Regular modifier reading: ‘Don tried to hire the prettiest x such that x is possibly a girl’
 - b. Modal superlative reading: ‘Don tried to hire as pretty a girl as it was possible for him/one to hire’

This paper is concerned with a particular type of modal superlative that was not discussed before and that I refer to as a modal predicative superlative. (3) below provides an example of a modal predicative superlative in English. (4) shows the Italian and Spanish counterparts of (3). As I will show, these Romance languages play an important role in the proposal I put forth.

- (3) Mary wanted to be the prettiest possible.

- (4) a. Maria voveva essere il più carina possibile
 Maria wanted to.be the.SG.M. more pretty.SG.F. possible
- b. María quería estar lo más guapa posible
 Maria wanted to.be it.M.S. more pretty.7s.f. possible
 ‘Maria wanted to be the prettiest possible’

The superlatives in (3) and (4) differ from (1)-(2) in that they are not associated with a nominal projection. That is, the postcopular phrases in (3) and (4) are assumed not to contain a noun phrase (for a discussion of this assumption see Loccioni 2018). The absence of a nominal phrase will dispense us from having to discuss the syntactic distribution of the modal adjective relative to the nominal head, including the properties of the regular modifier reading. Since this interpretation is only possible in the presence of a nominal phrase, this paper will not have anything to say about it.

As we will see in more detail in Sections 2 and 3, these modal cases have peculiar semantic and syntactic properties that uniquely apply to them. First, they can be paraphrased using an equative construction. That is, *the A-est possible* is very close in meaning to ‘as A as possible’. This is a typical feature of amount relatives and it is not shared by non-modal superlatives. Second, they have a cluster of peculiar morphosyntactic features that distinguish them from other superlatives. Romance languages will turn out to be more informative than English in this respect.

In a nutshell, I account for these facts as follows. I argue that modal superlatives are unique in that they involve an elliptical *bona fide* degree or amount relative clause which denote a single degree and whose semantic contribution is similar to that of a Measure Phrase. This account will require a novel composition of the superlatives which involve the formation of an ordered set and the selection of a maximal element. I argue that not only is this account able to derive their peculiar semantics (dispensing us from the *ad hoc* components that previous accounts posited), but it can also capture the morphosyntax of these constructions. As an example, it can account for the presence of the definite determiner, which none of the existing analyses interpret in the usual way.

The rest of the paper is organized as follows. Section 2 discusses the unique interpretative properties of modal superlatives and presents the previous accounts of that. Section 3 introduces the relevant Romance data that will play a role in the proposal, which is developed in Section 4. Section 5 offers some general discussion of the consequences and loose ends of the analysis. Lastly Section 6 concludes.

2 The interpretation of modal superlatives and previous accounts

2.1 The “equative force” of modal superlatives

Semantically, modal superlatives are unique in that they have what Schwarz 2005 calls “equative force”. That is, they can be paraphrased using an equative construction as shown in (5).

- (5) She wanted to be the prettiest possible.
 ≈ She wanted to be as pretty as possible

This is a typical feature of so-called *amount relatives* (also referred to as *degree relatives*) which are relative clauses interpreted as a property of amounts or degrees. Two famous examples of this types of relatives are given in (6) and (7) (see Carlson 1977, Heim 1987, Grosu and Landman 1998 Grosu and Landman 2013, a.o for discussion).

- (6) It will take us years to drink the champagne that they spilled that evening.
 ≈ It will take us years to drink as much champagne as they spilled that evening

adapted from Heim 1987

- (7) John put in his bag [every book he could].
 ≈ John put in his bag as many books as he could Grosu and Landman 2013

The sentence (6) is most naturally interpreted as referring to an *amount* of champagne and not to a specific champagne, even if an *object* interpretation is available. Same for (7) which, on its most natural interpretation, says that John put in his bag as many books as he could fit in.

Since *the A-est possible* roughly means ‘as A as possible’, the shared intuition is that they are compatible with ties. That is, (5) is judged true as long as in no accessible world is Mary prettier than she wanted to be.

It turns out that modal superlatives are unique in this respect. None of the non-modal predicative superlatives have “equative force”. They have instead stronger truth conditions that result in incompatibility with ties. In order to show the difference, let me consider two different types of non-modal predicative superlatives. They are provided in (8). The first type is one where the comparison class is overtly provided by a relative clause containing an NPI element. It is shown in (8a). In the second type the superlative associates with a focus element that provides the alternatives (*yesterday* in (8b)).

- (8) a. Yesterday, Mary was the kindest she has ever been
 ≈ Mary was kinder yesterday than she was at any other relevant time
 ≠ Yesterday Mary was as kind as she has ever been
- b. Mary was the kindest YESTERDAY
 ≈ Yesterday Mary was kinder than any other relevant day
 ≠ Yesterday Mary was as kind as on a day when she was the kindest

The reader may have already noticed that sentences (8a) and (8b) have a very similar interpretation, despite their different surface structures. In particular, the NPI element in (8a) *ever* seems to play a role similar to that of the focused phrase *yesterday* in (8b), as explicitly suggested by Howard 2014. In particular, they both introduce alternatives. Importantly, both sentences in (8) require that yesterday was the *only* time where Mary was kind to that unparalleled level. The same uniqueness requirement does not extend to modal cases, which have weaker truth conditions. Consider (9). The speakers' intuitions are that it does not mean that it is not possible for Mary to be as kind as she was yesterday. It may very well be that in other accessible worlds, Mary was as kind as that.

- (9) (Yesterday) Mary was the kindest {possible/ she could be}

In other words, the uniqueness requirement associated with the time variable in (8) does not extend to the world variable in (9).

In the next section I review the existing accounts of modal superlatives and I show how they derive the peculiar semantics of these constructions.

2.2 Previous accounts

In the literature, there are three main accounts of English modal superlatives: (i) Larson 2000, (ii) Schwarz 2005 and (iii) Romero 2010, 2013. They all focused on DPs with a nominal projection (like (1), (2) and (10a) below) and did not discuss predicative cases like (3). Here only the features of their accounts that are relevant for predicative cases are discussed.

Larson 2000 analyzed the modal predicate *possible* in (10a) as a postnominal reduced relative clause with an infinitival complement. This is shown in (10b). The elided clause contains an antecedent-contained deletion (ACD) gap \blacktriangle (shown in (10c)) that is resolved by extracting the noun phrase containing the ellipsis site from the antecedent and reconstructing \blacktriangle with an infinitive form of the matrix clause (as in (10d)).

- (10) a. John bought the largest present possible
 b. John bought the largest present [RC possible for him to buy t]
 c. John bought the largest present [RC possible \blacktriangle_{ACD}]
 d. [DP_{*i*} the largest present [Op_{*i*} possible [for John to buy t_i]]] [John bought t_i]

Larson 2000 does not provide a semantic account for (10a) and seems to have in mind a standard individual-based relative clause for postnominal *possible*. That would not be able to account for the predicative cases we are interested in, where no nominal head is present. A way to adjust Larson’s analysis to extend to these data is to interpret [*possible* ▲] as an amount relative clause. As we will see that is exactly what Romero 2013 proposes and that I will also adopt as part of my proposal. Before turning to her account, let me briefly review the second approach to modal superlatives, which is due to Schwarz 2005.

Schwarz 2005 argues that *-est possible* should be treated as a non-decomposable lexical item, which occupies the specifier position of A (as shown in (11b)), just like bare *est* in a non-modal superlative is assumed to do (see (11a)).

- (11) a. $[_{AP} [_{DegP} est] [_{A'} large]]$
 b. $[_{AP} [_{DegP} est possible] [_{A'} large]]$ Schwarz 2005

Semantically *-est possible* is taken to denote a degree operator with the same categorial status as *-est*. The two degree operators are assigned the meanings in (12) and (13). In (12), P and Q range over properties of degrees whereas **Q** is a contextually determined set of properties of degrees. In (13), P ranges over intensional degree properties; w and w’ range over possible worlds; and R is an accessibility relation between possible worlds.

$$(12) \quad \llbracket est \rrbracket = \lambda P_{\langle d, st \rangle}. \exists d [P(d) \ \& \ \forall Q \in \mathbf{Q} [Q \neq P \rightarrow \neg (Q(d))]]$$

$$(13) \quad \llbracket est possible \rrbracket^w = \lambda P_{\langle s, dt \rangle}. [\forall d [\exists w' [wRw' \ \& \ P(w')(d) = 1] \rightarrow P(w)(d) = 1]$$

Since (10a) is assigned the LF in (14a) (where A is the abstract indefinite determiner associated by Szabolcsi 1986 to relative interpretations of superlatives), it produces the truth conditions (14b). It says that in no other accessible world did John buy a present larger than the one he bought in w.

- (14) a. $[_{DegP} est possible] \lambda_1 [John \ bought \ A \ [_{AP} e_1 \ large] \ present]$
 b. $\forall d [\exists w' [wRw' \ \& \ John \ bought \ a \ d\text{-large} \ present \ in \ w'] \rightarrow John \ bought \ a \ d\text{-large} \ present \ in \ w]$

Schwarz’s (2005) machinery can be used to derive the meaning of our predicative cases. Consider (15), which is a simplified version of (3) (simplified to avoid the complications of the control structure of *want*). The logical form and truth conditions of (15) are given in (16a) and (16b).

(15) Mary was the prettiest possible

- (16) a. $[_{DegP} est possible] \lambda_1 [Mary \ was \ [_{AP} d_1 \ pretty]]$
 b. $\forall d [\exists w' [wRw' \ \& \ John \ was \ a \ d\text{-pretty} \ in \ w'] \rightarrow Mary \ was \ d\text{-pretty} \ in \ w]$

(16b) says that in no accessible world is Mary prettier than she is in the actual world. This derives truth conditions equivalent to ‘(at least) as pretty as possible’, which is a desirable result. Note, however, that this is due to the stipulated meaning that Schwarz 2005 assigned to *est possible*. Under his analysis, the “equative force” of modal superlatives is not and could not be compositionally derived from bare *-est*, as the two operators are taken to be independent from each other. Ideally, the meaning of *-est possible* should be derived compositionally from the meaning of *-est* and the meaning of *possible*, but Schwarz 2005 assumes that such a derivation “is unlikely to succeed”. As we will see, Romero’s analysis is an attempt to provide such a compositional analysis. I turn to her account next.

In her analysis of modal superlatives, **Romero 2013** builds on both Larson 2000 and Schwarz 2005. First, she follows Larson 2000 in taking *possible* to head a reduced relative clause with an ACD gap, but she interprets the constituent [possible \blacktriangle] as a relative clause ranging over degrees and not over individuals:

$$(17) \quad [\lambda d [\text{possible } \blacktriangle_{\text{ACD}}]]$$

Second, she claims that a shifted version (see below) of (17) overtly expresses the comparison class argument of *-est*, which is its first argument. For the superlative morpheme, she uses the two-place lexical entry in (18b) (see Romero 2010 for discussion of why a two-place lexical entry may be preferable).¹

$$(18) \quad \begin{array}{l} \text{a. Let } P \text{ be a degree set and } Q \text{ be a set of sets} \\ \text{-est}(Q,P) \leftrightarrow \exists d [P(d) \ \& \ \forall Q \in Q [Q \neq P \rightarrow \neg (Q(d))]] \\ \text{b. } \llbracket \text{-est} \rrbracket = \lambda Q_{\langle dt,t \rangle} . \lambda P_{\langle d,t \rangle} . \exists d [P(d) \ \& \ \forall Q \in Q [Q \neq P \rightarrow \neg (Q(d))]] \end{array}$$

Note that (18b) differs from the lexical entry that Schwarz 2005 assumes (see (12)) in that: (i) Q is an argument of the superlative morpheme rather than being contextually determined, and (ii) quantification is over degree sets rather than degree properties. This latter point is also an element of diversion from Heim’s (1999) original proposal and it turns out to play a central role in Romero’s compositional analysis, as I will show later.

The SHIFT operation spelled out in (19) takes the set of degrees $[\lambda d [\text{possible } \blacktriangle]]$ and turns it into a set of upper-bound degree sets (of type $\langle dt, t \rangle$), making it into a suitable argument for *-est*:

$$(19) \quad \text{SHIFT}_{\langle d,t \rangle \rightarrow \langle dt,t \rangle}^{\downarrow} = \lambda D_{\langle d,t \rangle} . \lambda D'_{\langle d,t \rangle} . \exists d' [D(d') \ \& \ D' = \lambda d'' . d'' \leq d']$$

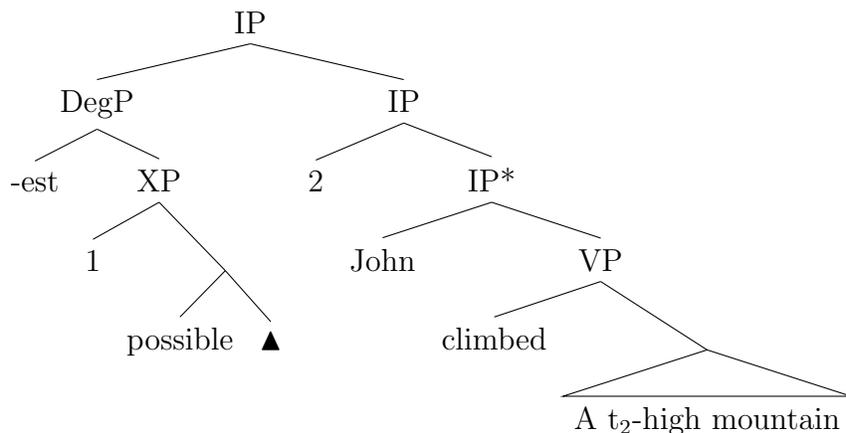
¹Importantly, Romero does not adopt the presupposition in (i):

$$(i) \quad \llbracket \text{-est} \rrbracket(Q,P) \text{ is defined only if } P \in Q \ \& \ \exists Q [Q \in Q \ \& \ P \neq Q]$$

This has important consequences for the meaning that her account generates. In particular, it has the effect of deriving the weaker interpretation *at least as d as possible* as opposed to the stronger *as d as possible and no more*. Thanks to Yael Sharvit for clarifying this point.

Lastly, the DegP [*-est* 1 possible ▲] moves out of the host NP to gain sentential scope, as shown in tree structure below for the example sentence in (20). In this way the ACD gap is resolved and a suitable second argument for *-est* is created.

(20) John climbed the highest possible mountain

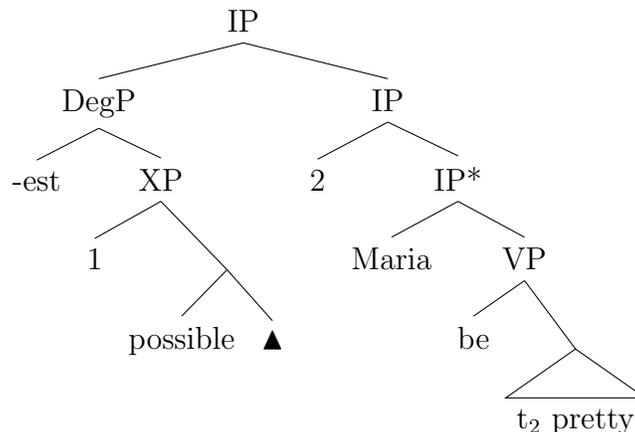


Romero's LF for (20) is given in (21a) and the corresponding truth conditions in (21b)

- (21) a. [-est [1 possible <for John(/him) to climb A t_1 -high mountain>]] [2 John climbed a t_2 -high mountain]
- b. $\llbracket (20) \rrbracket = 1$ iff
 $\exists d[\exists x[\text{mount}(x) \ \& \ \text{climb}(j,x) \ \& \ \text{high}(x,d)] \ \& \ \forall D' [(\exists d'[\diamond \exists x[\text{mount}(x) \ \& \ \text{climb}(j,x) \ \& \ \text{high}(x,d')]] \ \& \ D' = \lambda d''.d'' \leq d') \ \& \ D' \neq \lambda d.\exists x[\text{mount}(x) \ \& \ \text{climb}(j,x) \ \& \ \text{high}(x,d)]] \rightarrow \neg D'(d)]]$
 “There is a degree (of height) d s.t. John climbed a d -high mountain and there is no degree higher than d s.t. it is possible for John to climb a mountain of that height”

(20) derives truth conditions similar to Schwarz's. It says that it is not possible for John to climb a mountain higher than the one he climbed. Romero's machinery can also be used quite successfully to derive the meaning of our predicative cases. To illustrate how this works, I will consider (15) (repeated in (22)) once again. In this case the first argument for *-est* would be the shifted version of [1 possible < for Maria/one to be t_1 pretty >] and the second argument would be the set of degrees [2 Maria is t_2 pretty]. The details are given below.

(22) Mary was the prettiest possible



(23) **LF:** [[-est [1 possible < for Maria/one to be t_1 pretty >]] [2 Maria is t_2 pretty]]

- (24)
- $\llbracket 2 \text{ Maria is } t_2 \text{ pretty} \rrbracket = \lambda d. [\text{pretty}(m,d)]$
 - $\llbracket < \text{for Maria/one to be } t_1 \text{ pretty} > \rrbracket = [\text{pretty}(m, g(1))]$
 - $\llbracket \text{possible} < \text{for Maria/one to be } t_1 \text{ pretty} > \rrbracket = \diamond [\text{pretty}(m, g(1))]$
 - $\llbracket 1 \text{ possible} < \text{for Maria/one to be } t_1 \text{ pretty} > \rrbracket = \lambda d. \diamond [\text{pretty}(m, d)]$
 - SHIFT ($\llbracket 1 \text{ possible} < \text{for Maria/one to be } t_1 \text{ pretty} > \rrbracket$) = $\lambda D'. \exists d' [\diamond [\text{pretty}(m, d')] \& D' = \lambda d''. d'' \leq d']$
 - $\llbracket (15) \rrbracket = 1$ iff $\exists d [\text{pretty}(m, d)] \& \forall D' [(\exists d' [\diamond [\text{pretty}(m, d')]] \& D' = \lambda d''. d'' \leq d') \& D' \neq \lambda d. [\text{pretty}(m, d)]] \rightarrow \neg D'(d)$
 “There is a degree d s.t. Mary is d -pretty and there is no degree higher than d s.t. it is possible for Mary to be *that* pretty”

We have intuitively derived an appropriate interpretation that matches speakers’ intuitions. (22) is true if Mary in the actual world is pretty to a degree such that it is not possible for her to be prettier than *that*. That is, in no accessible world is Mary prettier than she is in the actual world. In some of these worlds, however, she could be as pretty as she is in @. The reader can easily verify that this treatment has the welcome result of allowing ties.

Crucially, this particular interpretation is the result of the fact that quantification is taken to be over degree sets. Quantification over degree properties instead would not be able to derive the “equative force” of modal superlatives. Let me quickly show why quantification over degree sets is successful, whereas using degree properties would not be. It boils down to the fact that degree sets that have the same extension are indistinguishable. Thus, in a scenario where Mary is as pretty in w_0 as she is in w_4 , the degree operator in (18b) would not be able to distinguish between the following (extensionally identical) sets of degrees:

- (25)
- $\lambda d. \text{Mary was } d\text{-pretty in } w_0$
 - $\lambda d. \text{Mary was } d\text{-pretty in } w_4$

Assume that w_0 is the actual world. If (25b) is identical to $[\lambda d. \text{Mary was } d\text{-kind in } w_0]$, then (25b) would be not computed as one of the sets (25a) is compared against. In other words,

$$\forall D' \in \{\lambda d. \text{Mary was } d\text{-pretty in } w' : w' \in \text{Acc}(w_0)\} [D' \neq [\lambda d. [\text{Mary is } d\text{-pretty in } w_0] \rightarrow \neg D'(d)]]$$

will not apply to (25b) because the two degree sets are indistinguishable.²

If quantification over degree properties is used instead, *-est* would be able to distinguish between the intentions of (25a) and (25b). As a result, it would derive truth conditions that are too strong, namely that there is no other possible world in which Mary is as pretty as she is in w_0 . In our context, then, (24) maps to False.

Hence, quantification over degrees derive the “equative force” of modal superlatives. Unfortunately this also means that it cannot be extended to non-modal cases (such as (8a) and (8b)), because it would derive wrong truth conditions. In the case of (8a) (repeated in (26)) for example, it would derive the meaning roughly paraphrased in (26b) instead of (26a), contrary to intuitions.

- (26) Yesterday, Mary was the kindest she has ever been
- a. \approx Mary was kinder yesterday than she was in any other relevant time
 - b. $\not\approx$ Yesterday, Mary was as kind as she has ever been

This is because *-est* would not be able to distinguish between identical degree sets. Imagine a scenario where Mary was as kind yesterday as she was on Monday. In such a scenario, (27a) and (27b) would end up denoting the same set of degrees. As a result, (26) would be predicted to be true, contrary to intuitions.

- (27) a. $\lambda d. \text{Mary was } d\text{-kind yesterday}$
 b. $\lambda d. \text{Mary was } d\text{-kind on Monday}$

On the other hand the only way for the degree properties (28a) and (28b) to be identical is if $\forall w \forall d$, Mary was as kind yesterday as she was on Monday. This would hold only if it is a logical necessity that Mary is as kind on Monday as she was yesterday.

- (28) a. $\lambda d. \lambda w. \text{Mary was } d\text{-kind yesterday in } w$
 b. $\lambda d. \lambda w. \text{Mary was } d\text{-kind on Monday in } w$

To conclude this section, both Schwarz 2005 and Romero 2013 are able to derive the desired “equative” interpretation of modal superlatives, but they do so at the expense of having some *ad hoc* components in their analysis. In the case of Schwarz 2005, *-est possible* is considered a non-decomposable degree operator, whose meaning is unrelated to the meaning of bare

²For discussion of this point, see Howard 2014.

-est. This does not seem a desirable component of the analysis. In the case of Romero 2013, a more familiar meaning for *-est* is assumed but with a particular type of quantification (over degree sets) that could not be extended to other non-modal superlatives.

To add to that, they both inherit a well-known problem shared by any Heimian scopal theory of superlatives, which is that the definite determiner is not interpreted in the usual way. In the semantic compositions above, it has merely existential force. This is particularly surprising in the case of Romance modal superlatives given the data I am going to present in the next section. As I will show, modal superlatives turn out to be the only case of predicative superlatives that allows the presence of an overt definite determiner in languages like Italian and Spanish.

3 Morphosyntactic properties of Romance Modal Superlatives

In the previous section we observed that modal superlatives have unique semantic properties. That is, they are the only ones to have “equative force” and therefore to be compatible with ties. On the other hand, if we consider English data alone, they do not look morphosyntactically very different from other non-modal superlative phrases. In all the examples below, for instance, the predicate appears with a definite determiner. Sentences (29a) and (29b) appear particularly similar. In both cases, the superlative embeds a relative clause structure.

- (29) a. Yesterday Mary was the kindest {possible/ she could be}
b. Yesterday Mary was the kindest she has ever been
c. Mary was the kindest YESTERDAY

This is where languages like Italian and Spanish turn out to be useful in allowing one to identify some morphosyntactic properties that uniquely belong to modal superlatives and that are not shared by their non-modal counterparts. I turn to these languages next.

First of all, the Italian (and Spanish) counterparts of (29) do not have the same grammaticity status as English. This is shown in (30), where I present Italian data.³ Whereas the modal superlative in (30a) is fully acceptable, (30b) and (30c) are ungrammatical.

³It may be useful to inform (or remind) the reader that Romance languages lack a morphological distinction between *more* and *most* and the superlative interpretation seems to arise as a combination of a definite marker and a comparative morpheme only.

- (i) a. Nino è più alto (di Lenuccia)
Nino is more tall than Lenuccia
'Nino is taller (than Lenuccia)'
b. Nino è il più alto
Nino is the more tall
'Nino is the tallest'

- (30) a. Maria è stata il più carina che poteva (con i clienti)
 Mary was the.NEUTR more nice that she.could with the costumers
 ‘Mary was the nicest she could be (with the costumers)’
- b. *Ieri, Maria è stata { il/ la/ \emptyset } più carina che fosse
 Yesterday, Mary was the.NEUTR the.F more nice she has.SUBJ
 mai stata.
 never been
- c. *Ieri Maria era { il/ la/ \emptyset } più carina
 Yesterday Maria was the.NEUTR the.F more nice

In (30a) the determiner does not agree in gender with the adjective *carina*, ‘nice/pretty’. This type of mismatch is only attested in modal superlatives:

- (31) Maria era la/ il più carina
 Maria was the.F the.NEUTR more nice
 ‘Maria was the nicest one’

Consider (30c) next. There, an unsuccessful attempt is made to convey the relevant relative reading using three strategies: (i) the neutral, non-agreeing determiner *il*, (ii) the feminine determiner *la* or (iii) no overt determiner. The first option results in ungrammaticality altogether whereas the other two are grammatical but not under the intended interpretation. In particular an agreeing determiner would deliver an absolute interpretation (where Maria is compared to other relevant female people) whereas the absence of D would result in a comparative reading. These two options are shown below.

- (32) Ieri Maria era la più gentile
 Yesterday Maria was the.F more kind
 ✓ ABS \approx Maria was kinder than any other relevant female person
 x REL \approx Maria was kinder yesterday than she was on any other relevant day
- (33) Ieri Maria era più gentile
 Yesterday Maria was more kind
 ‘Yesterday Maria was kinder/*the kindest’

From the perspective of Loccioni 2018, (32) shows that in this case the superlative must be attributive and cannot have a purely predicative construal. In other words, the postcopular superlative in (32) modifies a null head noun and the determiner agrees in gender with the nominal head.

- (34) la più gentile N

These facts suggest that on the one hand definiteness (or perhaps uniqueness) has to be overtly expressed in Italian to obtain superlative import (otherwise the only available in-

terpretation is comparative), but on the other hand an agreeing determiner always signals the presence of a nominal projection the determiner agrees with. Agreeing determiners are therefore excluded from purely predicative construals, which are the focus of this paper.

Additional evidence for this analysis comes from Spanish copular alternation. In Spanish, sentential clauses with a superlative in postcopular position such as (32) require the copula *ser*, excluding the other copula found in this language, *estar*. This holds true regardless of the adjective choice. That is, even adjectives that can appear with the copula *estar* in the ordinary form require *ser*, when in the superlative form. The adjective *enojada* below is such an example.

- (35) a. María está enojada
 Maria is annoyed.F.SG.
 ‘Mary is annoyed’
 b. María es/*está la más enojada
 Maria is the.F.SG. more annoyed.F.SG.
 ‘Mary is the most annoyed’

Modal predicative superlatives on the other hand can appear with *estar*.

- (36) María quería ser/ estar lo más guapa posible
 Maria wanted to.be to.be it.M.S. more pretty.7s.f. possible
 ‘Maria wanted to be the prettiest possible’

If the copula *estar* is not able to take nominals and it is only compatible with predicative constructions (see Roy 2006 a.o. for discussion), then the facts above can be accounted as follows. Whereas *la más enojada* in (35b) is an attributive elliptical superlative (that contains a null noun), *lo más enojada* in (36) is a predicate without nominal projection.

One may wonder how the relevant reading of *Mary was the kindest YESTERDAY* is obtained in Italian (and Spanish). The strategy used by these languages is shown in (37). The predicate appears without an overt determiner and it is embedded inside a definite relative clause whose head (*giorno* in our case) participates in the calculation of the comparison class. (37) is in fact understood as comparing days when Mary was kind to some degree.

- (37) il giorno in cui Maria è stata più gentile
 the day in which Maria is been more kind
 ‘the day when Maria was the kindest’

The definiteness of the relative clause in (37) plays a crucial role in yielding superlative import. This is shown by the fact that the indefinite relative clause in (38) cannot have a superlative interpretation.

- (38) un giorno in cui Maria è stata più gentile
 A day in which Maria was more kind
 ✓ ‘A day when Maria was kinder’
 x ‘A day when Maria was the kindest’

More generally, in Italian and Spanish the predicative superlatives which underlay relative readings are possible only DP-internally and they are dependent on the presence of a higher definite determiner. They cannot be spelled out with their own determiner to appear as the main sentential predicate (see (30c)). This does not extend to modal cases. Not only can they appear with an overt determiner as sentential predicates, but they are also compatible with an indefinite determiner at the higher DP level.

- (39) a. Ho bisogno di una torta il più grande possibile.
 I.have need of a cake the more big possible
 ‘I need the biggest possible cake’
 b. *Ho bisogno di una torta il più grande
 I.have need of a cake the more big
 int. ‘I need the biggest cake’

Moreover, the nominal phrase can be cliticized to the exclusion of the predicate, as shown in (40a).

- (40) a. La voglio il più grande possibile
 CL I.want the more big possible
 b. *La voglio il più grande
 CL I.want the more big

Overall these data clearly suggest that in Romance, modal superlative predicates show a level of syntactic independence that their non-modal counterparts do not have. Unlike other predicative superlatives in Romance, they form a syntactic constituent that is headed by a definite determiner and that can appear as the sentential predicate.

Two additional facts will play a role in the proposal I put forth in the next section. First, modal superlatives look suspiciously similar to other (free) amount relatives in these languages. Compare Spanish (41) with the free relatives in (42) that are normally taken to denote single degrees. Among other properties, they both appear with the neutral/pronominal form of the determiner, *lo*.

- (41) María quería estar lo más guapa (que fuera) posible
 Maria wanted to.be it.M.S. more pretty.7s.f. that was possible
 ‘Maria wanted to be the prettiest possible’

- (42) a. Susana es más guapa de [_{FreeRC} lo que lo es María]
 Susana is more pretty of the that it is Mary

- ‘Susana is prettier than Mary is’
- b. María es dos veces [lo guapa que era su madre]
 Maria is two times the[neutr] beautiful.F that was her mother
 ‘Maria is twice the beauty that her mother was’ Grosu and Landman 2013

Second, in Italian the *wh* word *quanto*, ‘how much’ can be used instead of the neutral form of the determiner. *Quanto* is also used in *than*-complements, which are normally assumed to denote single degrees.

- (43) a. Gianni è più alto di quanto non (lo) sia Piero
 Gianni is more tall *di* how(much) EXPL.NEG it be.SUBJ Piero
 ‘Gianni is taller than Piero (is)’⁴
- b. Dovevo essere quanto più carina possibile
 had.to be how.much more pretty possible
 ‘I had to be the prettiest possible’

To sum up, Romance languages like Spanish and Italian clearly show that modal superlatives are morphosyntactically unique. They seem to form an independent syntactic constituent, which can be headed by a definite determiner and can appear in positions where their non-modal counterparts are not able to. Overall they look very similar to constituent that are normally taken to be degree descriptions. In the next section I argue that they are in fact *bona fide* degree relatives which denote maximal degrees that saturate the degree of the adjective directly.

4 Modal superlatives are degree descriptions

I take the facts mentioned above to suggest that the degree phrase in these modal cases is a free relative that denotes a single *maximal* degree and not a set of degree sets (as in Romero 2013). The role of the DegP is to provide a degree that saturates the degree slot of the adjective. In this respect the DegP has a similar contribution as that of the Measure phrase *5 feet* in (44).

- (44) Federica is five feet tall

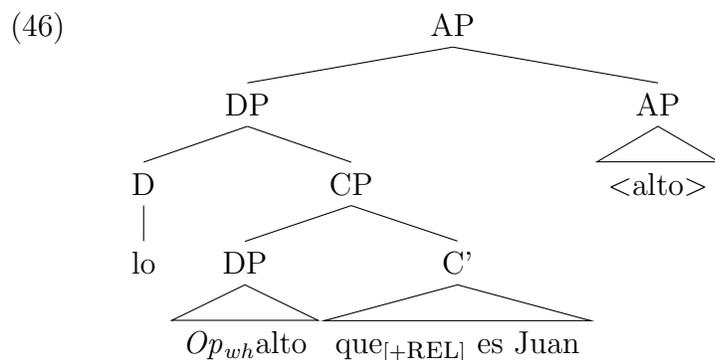
This treatment reproduces what Mendia 2017 proposes for degree relatives such as (45), which do not involve a superlative morpheme but arguably some process of maximalization.

⁴In (43a), the gradable predicate *alto* can be replaced by the clitic *lo* or can be elided in the clause complement of *di*. When elided, it becomes less acceptable without the negative particle: *Gianni è più alto di quanto ??(non) sia Piero*. As far as I know this was not previously noticed. Unfortunately, I do not have an explanation to offer at this point.

- (45) Pedro es lo alto que es Juan.
 Pedro is the tall that is Juan
 ‘Pedro is as tall as Juan’

Mendia 2017

Mendia argues that the free relative *lo alto que es Juan* provides a degree argument for a second occurrence of the adjective *alto* that is deleted under identity. He assigns to *lo* the semantics of MAX in (47) and to the free relative the interpretation in (48).



- (47) $\llbracket \text{MAX} \rrbracket = \lambda N_{\langle dt \rangle} . \iota d [d \in N \ \& \ \forall d' [d' \in N \ \& \ d \neq d' \rightarrow d' < d]]^5$

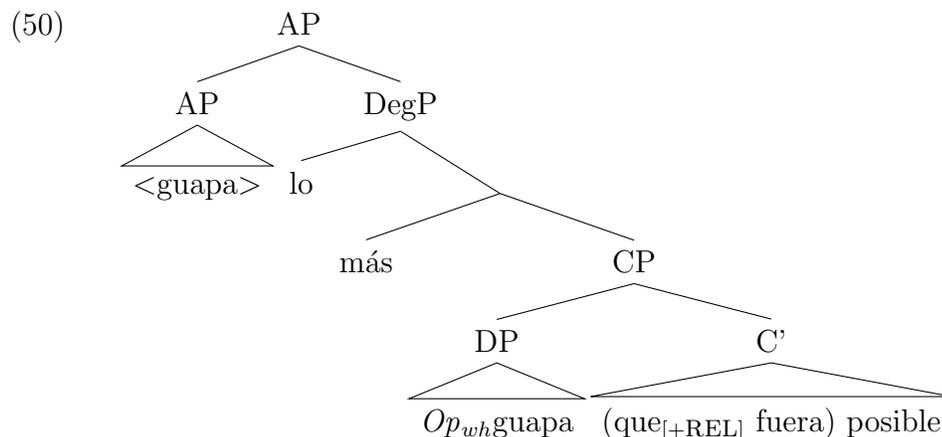
- (48) $\text{MAX}(\lambda d. \text{tall}(d, \text{Juan}))$

I adopt a similar structure for modal cases such as *lo más guapa (que fuera) posible* in (41). I place the measure/degree phrase on the right, as in Romance they normally follow the adjective (exemplified by Italian here):

- (49) a. L' uomo era alto [_{MP} due metri]
 The man was tall two meters
 b. The man was [_{MP} two meters] tall.

Zamparelli 2000

⁵Uniqueness is built into the lexical entry of MAX here. Alternatively, one could keep maximalization and the operation of performing a “uniqueness test” on a maximalized set distinct, like in Krasikova 2012.



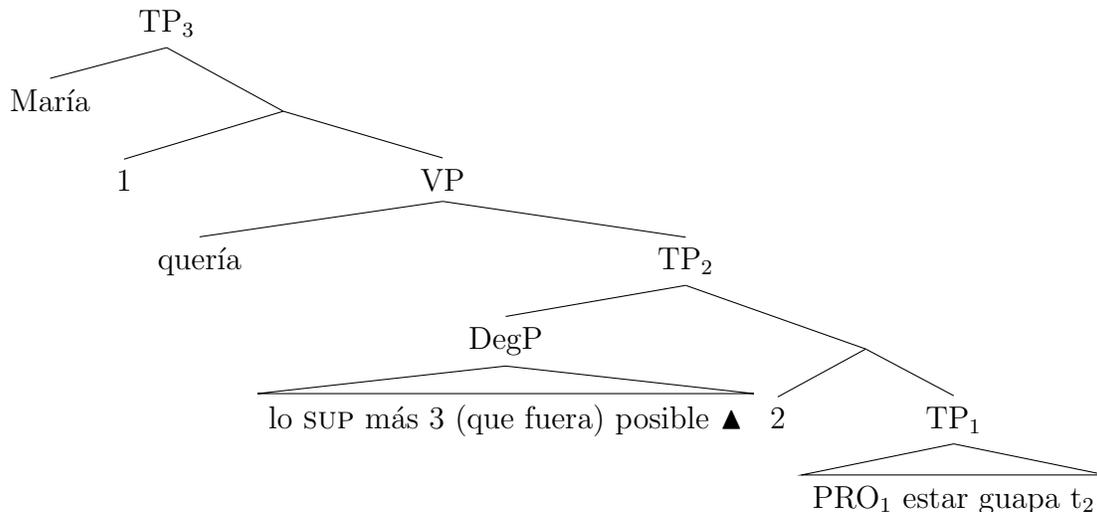
To handle our modal cases, I follow Romero 2013 and assume that the DegP moves out to gain sentential scope. ACD is resolved with the lowest TP (TP₁ in the structure below). Compositionally, I break down the superlative into two components:

- (i) a comparative morpheme that creates a total ordering of degrees and
- (ii) an ordinal-like element SUP that turns the ordered set into a singleton containing the maximal degree

Finally, the definite determiner performs a “uniqueness test” and returns the unique maximal degree. Note that the two operations in (i)-(ii) *plus* the function played by the definite determiner are assumed to mimic *de facto* what MAX (as given in (47)) could do. In (53e), the result of applying, *lo*, SUP and *más* to the set denoted by (53d) will be noted as MAX(N). This is done for the sake of simplicity and readability. The three operations should be thought as distinct.

$$(51) \quad lo \circ SUP \circ más = MAX$$

The structure in (52) is fed to semantic interpretation. The semantic composition of the Degree phrase is spelled out in (53).



(52) María [1 quería [[lo SUP más 3 (que fuera) posible <para PRO₁ estar guapa t₃ >] [2 PRO₁ estar guapa t₂]]]

- (53) a. $\llbracket 2 \text{ PRO}_1 \text{ estar guapa } t_2 \rrbracket = \lambda d. [\text{guapa}(g(1),d)]$
 b. $\llbracket \langle \text{para PRO}_1 \text{ estar guapa } t_3 \rangle \rrbracket = [\text{guapa} (g(1), g(3))]$
 c. $\llbracket \text{possible} \langle \text{para PRO}_1 \text{ estar guapa } t_3 \rangle \rrbracket = \diamond [\text{guapa} (g(1), g(3))]$
 d. $\llbracket 3 \text{ possible} \langle \text{para PRO}_1 \text{ estar guapa } t_3 \rangle \rrbracket = \lambda d. \diamond [\text{guapa} (g(1), d)]$
 e. $\llbracket \text{lo SUP más 3 possible} \langle \text{para PRO}_1 \text{ estar guapa } t_3 \rangle \rrbracket = \text{MAX}(\lambda d. \diamond [\text{guapa} (g(1), d)])$

As shown in (53e), the DegP ends up denoting a unique maximal degree. Given the semantics of MAX, $\llbracket \text{MAX}(\lambda d. \diamond [\text{guapa} (g(1), d)])\rrbracket$ should be thought as a shorthand for:

$$(54) \quad \iota d [\diamond [\text{guapa} (g(1), d)] \ \& \ \forall d' [\diamond [\text{guapa} (g(1), d')] \ \& \ d \neq d'] \rightarrow d' < d]$$

We are now ready to calculate the meaning of TP₃. The unique maximal degree denoted by the DegP measures the degree of the property denoted by *guapa*. In particular, DegP will be taken as an argument by its sister, which is of the appropriate type, $\langle d, t \rangle$. The whole sentence then asserts that María wanted to be *that* pretty, where *that* is equal to the maximal degree such that she cannot possibly be prettier than that. This is shown in (55), where I treat the control structure as a complex predicate for simplicity.

$$(55) \quad \llbracket (41) \rrbracket = \text{querer-estar-guapa}(\text{María}, \text{MAX}(\lambda d. \diamond [\text{guapa} (\text{Maria}, d)]))$$

When the degree phrase is defined, this derives the same truth conditions as Romero 2013. It does so interpreting the degree phrase as a degree description of type d . The fact that the existence of a unique maximal degree is required in order for the relative clause to be defined could potentially be a problem, as pointed out to me by Yael Sharvit. An example

of a problematic case is provided by sets where no maximal element can be identified. Take as an example the set of prime numbers. Unless we contextually restrict the set of numbers under consideration, *the largest prime number* fails to refer. Here, I avoid this problem by assuming that the context always plays the role of restricting the set of degrees under consideration to a finite set. I set aside for future investigation any potential side-effects of this decision.

Note that both the uniqueness test and maximalization happen in immediate succession, at the degree level. This explains why it is hard to provide a comparative paraphrase to these constructions: they do not compare entities. It turns out that modal superlatives are unique in this respect. From the current perspective, modal superlatives are the only ones that involve a true d(egree)-interpreted amount relative.

5 General discussion and loose ends

This paper contributes to the point partially made by Howard 2014 that the two relative clauses in (56) cannot be given the same treatment. The question of whether a unified treatment is possible was left open by Romero.

- (56) a. Mary was the kindest [she could be].
b. Mary was the kindest [she has ever been].

Not only they have very distinctive semantic properties but they also differ morphosyntactically, at least in languages such as Italian and Spanish. In this paper I argued that their properties are the result of a derivation where maximalization and the uniqueness test happen at the degree level in immediate succession. This returns a degree description (of type *d*) which can be fed to the adjective.

Modal superlatives can thus be thought of as partitives constructions over degrees. In this respect, they are parallel to partitives over individuals such as (57).

- (57) the prettiest of his sisters

In the same way in which (57) takes the comparison class overtly, so do modal superlatives. Unlike our modal cases, however, (57) denotes a unique individual and not a maximal degree. In order to capture the morphosyntactic partitive nature of modal superlative, a novel compositional analysis was proposed in this paper. I composed modal superlatives in four main steps. First, the comparison class of degrees is formed. Second, the comparison component of the superlative creates a total ordering of degrees. Third, the ordinal-like element SUP turns the ordered set into a singleton containing the maximal degree. Lastly, the determiner performs a uniqueness test and returns the unique maximal degree. This is a new way of

analyzing superlatives that takes the morpho-syntax of these constructions into account.⁶ On the other hand, an analysis based on the Heimian meaning of *-est* in (18b) (and repeated in (58)) would not capture the shape of these constructions.

$$(58) \quad \llbracket \text{-est} \rrbracket = \lambda \mathbf{Q}_{\langle dt, t \rangle}. \lambda P_{\langle d, t \rangle}. \exists d [P(d) \ \& \ \forall Q \in \mathbf{Q} [Q \neq P \rightarrow \neg (Q(d))]]$$

Many questions are left open to future research. Let me mention two. First, it is unclear why the strategy underlying modal cases is not available to non-modal superlatives. Second, my analysis of modal superlatives as free degree relatives does not explain why the comparative or superlative morpheme is needed in order to get maximality. Let me be more specific about these two issues for which, unfortunately, I do not have explanations to offer at this point.

We noted that modal superlatives are the only ones which have equative force as a result of a particular derivation where a degree relative is formed. A similar strategy where maximalization and the uniqueness test happen in immediate succession at the degree level is not available in non-modal cases. If an analysis of the modal as an existential quantifier over possible worlds is on the right track, why does existential quantification over individuals and times work differently? In other words, why is the degree description in (59a) a possible one, but not the ones in (59b)-(59c)?

- (59) a. $\text{MAX}(\lambda d. \exists w' \in \text{Acc}_w: \text{kind}(d, \text{María}) \text{ in } w')$
 b. $*\text{MAX}(\lambda d. \exists t \text{ kind}(d, \text{María}) \text{ at } t)$
 c. $*\text{MAX}(\lambda d. \exists x \text{ kind}(d, x))$

If (59c) was a possible logical form for *Yesterday, Mary was the kindest she has ever been*, then the sentence could mean ‘yesterday, Mary was as kind as those times when she was the kindest’, which does not seem to align with speakers’ intuitions.

This seems to suggest that if modals are in fact quantifiers over possible worlds, then they behave differently from other quantifiers. That modal operators sometimes interact with degree quantifiers in an unexpected way is something that has been noticed and that is still waiting for a principled explanation. Degree quantifiers are in fact known to refuse to take scope over other logical operators (the so-called “Kennedy’s generalization”⁷) with the exception of a handful of modal operators, which are possible interveners.

The difference between other quantificational DPs and modals is shown by Heim 2000 with the contrast between examples such as (60a) and (61a). The DegP is not able to outscope the universal quantifier and the reading corresponding to the LF in (61c) is not available. That is, (60a) cannot mean that the shortest girl is less than 4’ tall. The sentence (61a) on the other hand can have a reading where the DegP moves above the possibility operator. It is shown in (61c). Under this interpretation, the sentence means that the paper is not

⁶For a (parallel) compositional analysis of partitive constructions such as (57), see Loccioni 2018.

⁷See Kennedy 1999, Heim 2000 a.o.

allowed to be as long as 10 pages.

- (60) a. (John is 4' tall.) Every girl is less tall than that.
 b. [every girl]₁ [less than 4']₂ t₁ is t₂ tall
 $\forall x[\text{girl}(x) \rightarrow \text{MAX}\{d: \text{tall}(x,d)\} < 4']$
 c. *[less than 4']₂ [every girl]₁ [t₁ is t₂ tall
 $\text{MAX}\{d: \forall x[\text{girl}(x) \rightarrow \text{tall}(x,d)\} < 4']$
- (61) a. (This draft is 10 pages.) This paper is allowed to be less long than that.
 b. $\exists w \in \text{Acc}: \text{MAX}\{d: \text{long}_w(p,d)\} < 10\text{pp}$
 c. $\text{MAX}\{d: \exists w \in \text{Acc}: \text{long}_w(p,d)\} < 10\text{pp}$

The second open question has to do specifically with the type of analysis I put forth. I argued that modal superlatives in Romance should be analyzed as free relative clauses that denote a maximal degree and I adopted a very similar structure to the one that Mendia 2017 defends for other free relatives that do not involve superlative import.

If [*lo que lo es María*] in (42a) and [*lo más guapa posible*] in (41) both denote a maximal degree (as shown below) one could wonder what the role of the comparative/superlative morpheme is, if any. We may expect to be able to form a degree description with the modal and without the comparative morpheme. However, this expectation is not met and *lo guapa posible* is not a possible degree description in Spanish.

- (62) a. *lo que lo es María* = $\text{MAX}(\lambda d.\text{pretty}(d,\text{María}))$
 b. *lo guapa que era su madre* = $\text{MAX}(\lambda d.\text{pretty}(d,\text{SM}))$
 c. *lo más guapa posible* = $\text{MAX}((\lambda d.\diamond\text{pretty}(d,\text{María}))$
 d. **lo guapa posible* = $\text{MAX}((\lambda d.\diamond\text{pretty}(d,\text{María}))$

6 Conclusion

In this paper I presented a novel analysis of modal superlatives that was motivated by both their peculiar interpretation (their “equative force”) and their morphosyntactic properties. Specifically, I argued that they involve a *bona fide* elliptical degree relative. Internally, the degree phrase was analyzed as a partitive construction over degrees, parallel to partitive constructions over individuals such as *the tallest of the boys*. As in the case of other morphologically partitive constructions, the comparison class is overtly specified in modal superlatives. In order to capture the morphosyntactic properties of modal superlatives, I put forth a novel composition which involves the formation of an ordered set and the selection of a maximal element. Once ellipsis is resolved, the relative clause refers to a maximal degree which plays the role of a Measure Phrase. That is, it directly saturates the degree slot of the adjective.

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