

The anchor of a modal superlative and the individual vs stage level reading of the adjective

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Abstract

This paper is about the semantics of quality modal superlatives in predicative function, e.g. Italian *È stata il più calma possibile* ('She was the calmest possible'), with a focus on what is the anchoring of the modal superlative, and how what is being compared is restricted. The limitations of single-anchoring in individuals when analysing modal superlatives, following the strategy generally adopted for ordinary absolute and relative superlatives, are highlighted. The alternative of using a comparison class made of world+individual pairs grouped into equivalence classes defined through the amount of the gradable property (Tovenà & Fleury 2023), proves a better solution. New data on the stage-level vs. individual-level reading of the gradable adjective provide evidence supporting this form of anchoring. The stage-level reading, although predominant, is not the manifestation of the invariance of the individual being compared. Some stage-level interpretations favour selecting a plurality of individuals for comparison, with the difference that this plurality is determined across possible worlds, not in the actual world, in contrast to ordinary superlatives.

Keywords: modal superlatives, stage level vs individual level, comparison class, semantics, pragmatics.

1. On the anchoring of superlatives

1.1. Introduction

Intuitively, sentences containing a superlative of quality assert that an entity is top ranked in a group along a relevant dimension. The absence of an overt comparison class makes the sentence ambiguous, ignoring intonation for the moment. E.g. the superlative in (1) identifies an entity as the one that uniquely shows the highest degree of the ‘height’ quality, either because i) it can be taken in isolation and directly displays the quality, e.g. being a mountain and comparing the height of mountains, in the absolute reading (1a), or ii) it displays the quality but relatively to a set of mountains that have been climbed by a contextually relevant group of climbers, in the relative reading (1b). The relative reading is also paraphrased by saying that the compared entity is a climber who shows a derived quality, e.g. being a mountain climber and ranking climbers using the height of the mountains they climbed.

- (1) Luisa climbed the highest mountain.
- a. Luisa climbed the highest mountain of all absolute reading
 - b. Luisa climbed a higher mountain than anyone else climbed relative reading

Formal analyses of superlatives (Szabolcsi 1986, Heim 1999, i.a.) compare individuals. In general terms, they build a comparison class that is a set of entities in absolute superlatives, or, in relative superlatives, build a set of properties of degrees, i.e. a set of properties of having a certain gradable property to a certain degree, and get a plurality of entities to be compared in the context—i.e. the entities that have the gradable property at issue—by assuming at least two nonempty degree properties. We can verify the situation by briefly reviewing distinctive cases. Let us first recall that gradable adjectives are often understood to be functions from degrees to individuals (Cresswell 1976), e.g. *high* is as in (2), with semantic type $\langle d, \langle e, t \rangle \rangle$.

- (2) gradable adjective *high*
 $\lambda d \lambda x [\text{height}(x) \geq d]$

For the denotation of the superlative morpheme, the proposal in (3) from the manuscript (Heim 1999), inspired by Seuren’s (1973) treatment of comparatives, is widely adopted. It says that there exists a degree d such that x has the property R to that degree, and for all y , if y is not equal to x and is in the comparison class C , then y does not have the property R to degree d .¹ The morpheme is intended to be the same for absolute and relative readings, that would arise from scope ambiguity (Szabolcsi 1986, Heim 1999).

¹ Gutiérrez-Rexach (2006:fn.5) ascribes to Hans Kamp the observation that a plural superlative DP, e.g. *the brightest men*, “would require an amendment [of the definition of the SUP operator] in which more than one individual is compared and separated from the rest of the individuals who have the property under consideration (being bright).”

- (3) superlative morpheme
 $[\text{SUP}](C)(R)(x)=1$ iff $\exists d[R(d)(x) \wedge \forall y[y \neq x \wedge y \in C \rightarrow \neg R(d)(y)]]$ assertion
 $\lambda C \lambda R \lambda x: x \in C \wedge \exists y \in C[y \neq x] \wedge \forall y[y \in C \rightarrow \exists d[R(d)(y)]]$ presupposition
 On the absolute reading, the first argument of SUP is the comparison class C .

This is a set of type $\langle e, t \rangle$ that limits the domain of SUP to those entities that are mountains that are relevant in context. The second argument is R , represents a property of degrees, of type $\langle d, \langle e, t \rangle \rangle$, and is saturated by the complex formed by adjective-noun. The presuppositions in (3) are the double condition on x and y being distinct and being in C , and that R can map all the elements in C to some degree, i.e. C is a subset of the second argument of R . Thus, the set denoted by *high mountain* is plural by presupposition. Once SUP applies, the set of individuals being compared in (1) becomes a singleton, and is as in (4).

- (4) $\llbracket \text{highest mountain} \rrbracket = \lambda x \exists d [\llbracket \text{mountain}(x) \wedge \text{height}(x) \geq d \rrbracket \wedge \forall y[y \in C \wedge y \neq x \rightarrow \neg \llbracket \text{mountain}(y) \wedge \text{height}(y) \geq d \rrbracket]]$

The set contains the unique individual x such that x is a mountain, there is some degree d to which it is d -high, and there is no mountain y distinct from x in C that reaches that degree of height. Uniqueness of the highest mountain follows from its association with a degree not shared with the others, and the assumption that adjectives are downward scalar, mapping an individual to a degree such that it has the property in question to at least that degree. A further assumption is that d is to be understood as the most informative degree of which the descriptive content holds. The definition of the adjective in (2) is crucial for SUP in (3) to produce this effect. Next, the definite article is used to bind variable x and achieve type shifting from the singleton set to the unique entity in it. The derivation of the absolute superlative itself finishes here.

Sentence (1) in the absolute reading is true if *Luisa* climbed that specific unique mountain, whether she is the only one to have done so. First, note that the class of comparison C , covert in (1), is introduced together with SUP, all the entities that are compared are required to belong to it, but the overt conditions come from R . C is constrained by pragmatics, focus typically supplies its values and can be marked by specific intonation. Typically, the two readings we have identified for sentence (1) are associated with different intonation patterns. Stress on the direct object pairs with absolute reading (1a), where the alternatives that are compared are mountains. Conversely, stress on *Luisa* pairs with the relative reading in (1b) discussed shortly, where she is the focussed value and is contrasted with alternative mountain climbers. Second, the common noun introduces a domain restriction only by saturating R together with the adjective. All the mountains are considered in association with their height. It is possible for more than one mountain to have the same height, the identity condition associated with each mountain allows them to be distinguished, but SUP turns out to produce a uniqueness condition that sorts out degrees.

Several proposals have been put forth for the relative reading, we present (a version of) the movement approach. The superlative morpheme, together with C , is assumed to move covertly to a position outside of the DP and adjoin to the clause, creating a constituent that denotes a complex superlative property. The sister constituent of SUP- C , of type $\langle d, \langle e, t \rangle \rangle$, is the complex superlative property that

saturates argument R of SUP. It is a property like (5) for (1), relating mountain climbers to their achievements in terms of heights of mountains climbed.²

- (5) complex predicate of degrees
 $\lambda d \lambda y \exists x [A \text{ mountain}(x) \wedge \text{height}(x) \geq d \wedge \text{climbed}(x)(y)]$

After it has moved, SUP- C takes the subject *Luisa* in (1) as its external argument. The point of comparison in (1) is the subject and the derivation of relative superlatives finishes at the top node. Intuitively, *Luisa* is compared with other individuals in the set C of alternatives provided by focus. C is now a subset of one argument of a more complex R built with material from the whole IP. Intuitively, the relative superlative reading is characterised by the presence of two sets and a relation between their members, besides the usual relation between members of one of these sets and degrees. One is the set of entities, e.g. mountains in (1b), directly mapped to some degree by the function expressed by the adjective, and the other is a set of entities that can be seen as ordered through a derived property constructed taking into account an association they have with the members of the first set, e.g. they are the climbers of the mountains in the first set in (1b). This association makes them restrictors.

Indeed, the content of C is different in the two readings. The degrees of height of the individuals in C are no longer what interests us in the relative reading. But these individuals, in their capacity as climbers, allow us to restrict another set, that of mountains, whose degrees of height continue to interest us. Sentence (1) will be true if there is a degree d such that there exists an entity that *Luisa* climbed that is a d -high mountain, and for all other individuals in the set of alternative mountain climbers, it is not the case that there exists some entity that they climbed that is a d -high mountain. The presuppositions of SUP constrain the comparison class to contain *Luisa* and at least one other individual. A condition is that *she climbed the highest mountain* in (1) presupposes that there is a mountain x she climbed, generated by the condition that there be at least one degree d with the property that mountain x is d -high and is climbed by *Luisa*. An additional presupposition is that there is at least another degree d' that has the property that there is a different value of x that is d' -high, is a mountain, and is climbed by someone. In the end, the class contains only (relevant) individuals who have the property of having climbed some entity that is a mountain of some degree of height. An identity condition on mountains would rule out the case where *Luisa* climbed two maximally high mountains sharing the same height, but is not exploited. An identity condition on climbers would rule out the case where *Luisa* and somebody else climbed a maximally high mountain, be it the same or a different one, but is not exploited. Focus on *Luisa* triggers the presupposition of plurality relatively to climbers, i.e. values for y in (5), and plurality requires the use of an identity condition.

Height is relevant for the ranking, but the ranking cannot be done just in terms of degrees if we are to avoid ties, as just said. One solution against ties is to make use

² This approach requires the definite article in the superlative DP *the highest mountain* to be treated as vacuous or as an indefinite. This serves to make extraction of the superlative morpheme from the DP possible, and is necessary for generating correct truth conditions for the representation produced. The special status of the definite article is represented graphically by writing it as 'A' in (5). This is a well-known problem of this style of analysis.

of intensions, see (6) from Howard (2014)³, where C is a set of particular properties of degrees hereafter called intensionalised degree properties to avoid terminological confusion.

- (6) superlative morpheme with intension
 $[\text{SUP}](C)(R) = 1$ iff $\exists d[R(d)(w) \wedge \forall Q \in C [Q \neq R \rightarrow \neg Q(d)(w)]]$ assertion
 $R \in C \wedge \exists Q \in C [Q \neq R]$ presupposition

Suppose that both Luisa and Daniel climbed mountain(s) 2345 metres high. Consider the intensionalised degree properties ‘ $\lambda d \lambda w$ Luisa climbed a d -high mountain in w ’, and ‘ $\lambda d \lambda w$ Daniel climbed a d -high mountain in w ’. The only way they are identical is if they are true (respectively false) for all world w and all degree d , which means that their climbing mountains of the same height is a logical necessity. Sets of degrees are identified via the information provided by the degree, and the identity condition corresponding to information about who is associated with that degree. In sum, intensions are used to enrich the content of the expression used to characterise sets of degrees. However, using intensions is a sort of overkill, because it brings in worlds with no specific use for them in the comparison proper, where climbers and mountains must belong to the same world, the actual world. We will return to this issue in Section 4.4.

It is worth noticing that Howard (2014) uses a two-argument definition of SUP in (6) with no argument x for the individuals. The intensionalised properties of degrees in C are of type $\langle d, \langle s, t \rangle \rangle$, C is the new form of comparison class, and is produced by postulating the application of a silent set-creation morpheme posited by analogy with the operator ‘?’ for interrogatives (Karttunen 1977). The two vs three-argument versions of SUP discussed in the paper (Heim 1999) differ from each other just in the presence of the restriction C . The argument for the individuals is suppressed in her definition [(65)] where she uses properties of degrees and that, however, she does not discuss. In the relative reading, C is shaped by focus and is constrained to be a subset of the semantic value of its sister constituent, e.g. it has to fulfil the condition $C \subseteq \{\lambda d'. x \text{ climbed a } d'\text{-high mountain: } x \in D_e\}$ in (1b). In the absolute reading, it is necessary to admit the extra assumption that traces and other empty categories can be focus-marked, and to allow for a trace of type e , or a PRO, within the NP, for constraining C in the right way.

Up to here, this introduction has focused on ordinary superlatives and how to construct sets of entities or other abstract structures to be compared. All these ingredients and strategies are directly relevant for modal superlatives, but they obviously do not exhaust the issue. The remainder of the section gradually approaches modal superlatives beginning by pointing out an anchoring difference between ordinary and modal superlatives. More peculiarities are discussed in the subsequent section.

³ Howard (2014) focusses on quantity and adverbial superlatives, and does not discuss predicative cases.

1.2. The issue

As can be gathered from the foregoing review, the plurality of entities associated with a *d*-high degree is roughly taken to correspond to the denotation of the head noun modified by the adjective in the absolute superlative, and is often not acknowledged as a distinct comparison class. In relative superlatives, it is taken to correspond to entities associated to degrees that are mapped by *R* to a function that maps the world of evaluation to True. Formal analyses implicitly agree that ultimately one is comparing entities, both in absolute and relative readings. Individuals play the role of ‘single anchor’ in ordinary quality superlatives in either use.

Explicitly, the debate on superlatives focuses largely on how the property used in the comparison is constructed and what it contains. Implicitly, it is centred on the relative reading, and the absolute vs. relative dichotomy. In all cases, the interpretation of ordinary superlatives is anchored in individuals. The limitations of this approach come to light if we also consider modal superlatives, illustrated by example (7).

- (7) Italian
Luisa è stata (il) più gentile possibile.
‘Luisa was the kindest possible.’

The peculiarity of these superlatives is that they have a reading that is not just the combination of the ordinary superlative meaning plus the regular interpretation of the modal adjective modifying a noun *N*, whose denotation is the set of individuals that are *N* in some possible world. Consider (8).

- (8) a. Luisa is the cleverest lawyer possible.
b. Luisa is the cleverest possible lawyer.

The modal superlative reading, pointed out by Corver (1997) and Larson (2000), admits the paraphrase ‘a lawyer as clever as possible’—which is its telltale sign and is discussed in Section 2.2—and comes with the entailment that Luisa is a lawyer in the actual world (8a) (Romero 2013). The regular modifier reading is said to be preferred when the modal adjective is in prenominal position in English (8b). This reading does not entail that Luisa is a lawyer in the actual world, just that she may possibly be a lawyer who is cleverer than any other. Importantly, according to the regular reading, the sentence states that she is the unique individual with such *d*-clever degree, contra the modal reading.

As for the anchoring of the predicative modal superlative, it is possible that (7) is understood as comparing stages of Luisa across worlds. Therefore, we would remain in the usual situation, where the superlative is anchored in individuals, with the distinction that several possible worlds are taken into consideration and that stages of Luisa are found in them.⁴ This seems to correspond to the reading discussed by Loccioni (2019) although she claims that amounts are compared, and to one analysis by Romero (2013). But there is also a reading according to which different individuals

⁴ Considering different stages of an individual is a matter of varying the time index taken into account for evaluation. Ultimately, a world considered at a different time index is a different world. So, it can be said without error that we remain in the case of modal variation.

are taken into account in the comparison, and the sentence conveys the information that nobody in those circumstances would have done better. Stages of Luisa are compared in this case too, but including stages of other individuals. Furthermore, it is not necessary that all individuals belong/have counterparts in all possible worlds, and it is not a generic reading, contra Romero (2013). Consequently, anchoring on single individuals does not seem to work. The solution of constructing the comparison class for modal superlatives with world+individual pairs proposed by Tovena & Fleury (2023) looks more promising.

This paper is organised as follows. In Section 2, modal superlatives are detailed and their equative reading is introduced. Section 3 provides empirical data in support of a stage-level reading of predicative modal superlatives, and data that can count as evidence that a plurality of individuals rather than stages is being compared. Section 4 opens by recalling the perspective adopted from Tovena & Fleury (2023) according to whom the main information expressed by a modal superlative concerns the attribution to an individual in a world of an amount of a property relative to a specific situation. Next, it is detailed how the modal superlative is sensitive to the distinction between stage and individual-level interpretation of the gradable adjective and how the variation of the individuals and the worlds in the comparison class determine its structure and its content. An in full analysis of some cases allows us to spell out how the contribution of the modal adjective is computed and how the comparison class is built. We also engage in a lengthy comparison with proposals from the literature that exposes several of their compositionality problems. Section 5 summarises the main points made in the paper.

2. Predicative modal superlatives

2.1. Introducing modal superlatives

Modal superlative is a reading arising under specific conditions. Sentence (7) can be paraphrased as ‘Luisa was as kind as possible (in that situation)’.⁵ In general terms, ingredients for superlatives are the dedicated operator -er and/or -est, expression of a covert or overt morpheme, and the definite article, not always present. Romance languages do not have a dedicated operator. In these languages, basic components for superlatives are comparative morphology, definite articles and syntactic conditions. The complex morphosyntax of superlative can be summarised as ‘ER (comparative) + Adj embedded inside a definite DP’.⁶

A distinctive feature of modal superlatives is the presence of an overt modal adjective such as *possibile* that modifies the superlative, see (7). The modal superlative is understood to mean ‘as Adj as possible’, a reading known as modal or equative. Otherwise, *possibile* can be treated as a standard noun modifier. Cross-linguistically, restrictions have been reported on the lexical choice of the modal adjective (Larson 2000, Romero 2013).

⁵ There seem to be aspectual effects, e.g. (7) slightly degrades when turned in the present indicative, but regains full acceptability with *resta* (stays) that implies more transience of the adjectival predicate.

⁶ We refer the reader to Loccioni (2018) and Giurgea (2022) i.a., on this complex issue. See also Dobrovie-Sorin & Tovena (2022) for a recent assessment of the ongoing debate.

The syntax of sentences with modal superlatives is not uncontroversial. All the more so when it comes to predicative modal superlatives, where the definite article is not always present in Romance. If present, it does not agree, see (7) where the gradable adjective agrees instead. This suggests the article is external to the superlative phrase, or marks definiteness at the level of DegP (Loccioni 2018). Special agreement facts are reported also for Dutch (Corver 1997) and German (Schwarz 2005). In German, prenominal superlative *größt* in (9) from the paper (Schwarz 2005) can share a single inflection suffix with the modal adjective, and the two must act as if they are part of one complex modifier, for the modal superlative reading to arise.

- (9) German
 Ich habe das größt mögliche Geschenk gekauft.
 I have the largest possible.INFL present bought
 I bought the largest present possible.

The positioning of the adjective with respect to the head noun is known to be relevant in English. In Italian, it is the presence of a noun that seems to interfere with the availability of the modal reading, see (10) from Tovena & Fleury (2023) with the modal adjective as a standard noun modifier.

- (10) Italian
 Il Pendolino è il treno più veloce possibile.
 ‘Pendolino is the fastest existing train’

Sentence (10) is interpreted as an ordinary absolute superlative, with the modal adjective as a modifier of the noun, as evidenced by the lack of equative reading, cf. below. The sentence says that Pendolino is the fastest type of train existing in the utterance situation. A uniqueness constraint is imposed on the referent of the superlative phrase, and there is no apparent modality, i.e. the compared degrees of speed are associated with entities that must belong to the real world.

Finally, the group of individuals to which *Daniele* belongs in (11a), and that plays the role of comparison class, can be overtly expressed in ordinary superlative (11a). When the superlative is modal (11b), the sentence is perceived as incoherent. Since there is no noun in the predicate, the interpretation of the modal adjective as a regular modifier of the noun is not available.

- (11) Italian
 a. Daniele è il più calmo di tutti.
 ‘Daniele is the calmest of all’
 b. *Daniele è il più calmo possibile di tutti
 ‘Daniele is the calmest possible of all’

The contrast in (11) is reminiscent of the fact that the modal adjective has to be understood as a regular modifier of the noun in the attributive modal superlative (12) (Romero 2013), if *among* or *of* preposition phrases are present and understood as setting up the comparison class. Romero states that the comparison class can only be introduced by a ‘covert’ indexical *C* in modal superlative. But then she claims the function of specifying the comparison class argument of the SUP operator is ‘overtly’

taken up in the syntactic structure by a phrase that is an amount or degree relative clause expressed as a reduced relative.

(12) Among / Of the students, John bought the largest possible present.

Examples (11) are predicative superlatives. Instead of stating ad hoc that the comparison class must be implicit, an alternative answer can build on the intuition that *di tutti* is a ‘fake’ overt comparison class in (11b) where comparison is not limited to individuals in the actual world. The contrast in (11) may be due to the fact that a comparison class consisting of individual-world pairs is difficult to express. These pairs are not in the real world, so to speak. The only way to (partially) characterise the individuals at stake, is indirect by making explicit the type of situation concerned. The identity of the individuals x' that are checked across the worlds is not used. The distinction between individuals or between worlds does not help in establishing the truth conditions of the modal superlative. Just the amount matters.

2.2. More on the equative effect (reading)

The phenomenon known as equative reading (Larson 2000, Schwarz 2005, Romero 2013, Loccioni 2019, Tovena & Fleury 2023) arises from the fact that the uniqueness constraint typical of superlatives is not enforced at extensional level. It could be that Luisa is not the only person to manifest that degree of kindness in that/a comparable situation in (7).

The equative effect emerges from comparing amounts of a gradable quality (Loccioni 2019, Tovena & Fleury 2023). The uniqueness of the amount actualised in a context does not necessarily align with the uniqueness of the individual associated with it. The reading is equative only relative to individuals, as the modal superlative does not distinguish *Luisa* from other entities as that particular member of a set of individuals that has the highest degree of a property.

The equative reading has an impact on the choice of the compared entities. Modal superlatives have been discussed as concerning comparisons of (amounts associated with) stages of the same individual across worlds, as per Romero (2013) and Loccioni (2019), or comparisons of amounts associated with stages of possibly different individuals, as per Tovena & Fleury (2023), leaving aside what Romero (2013) calls “generic” reading, to which we will return in Section 4.3. The difference lies in the option of keeping the value of the individual fixed or not. The availability of one or the other reading may be a matter of idiolect, but the analyses should be able to cover both. Covering both interpretations, however, is likely to mean giving up anchoring the superlative exclusively on individuals. If the individual remains unchanged, the accessible worlds considered are only those in which the individual exists, does not vary independently, and there is no need to keep track of its variation. If the individual is not unchanged, the alternatives are individuals in a similar situation in some worlds, but not necessarily from a set of individuals in the real world, as in the absolute superlative.

2.3. A short point on the readings of the attributive and the predicative function

As hinted at in Section 1.1, the nature of the comparison class and the access to entities directly or indirectly ordered via degrees are not independent issues. Suppression of the argument for individuals from the entry for SUP has its bearing in the case of predicative modal superlatives such as (7), where, intuitively, we are interested in the relation expressed by the gradable adjective holding between degrees and individuals that are values for x , rather than in a relation between individuals x and degrees of other entities related to them, as in the relative reading.

Larson (2000) analysed attributive modal *possible* in (13a) as a postnominal reduced relative clause with an infinitival complement. The antecedent-contained deletion (ACD) gap N in the elided clause is resolved extracting the noun phrase containing the ellipsis site from the antecedent and reconstructing N with an infinitive form of the matrix clause (13b). This solution would not work for examples like (7) where no nominal head is present.

- (13) a. John bought the largest present possible.
 b. [DP_i the largest present [Op_i possible [for John to buy t_i]]] [John bought t_i]

Interpreting the elided clause as a relative clause ranging over degrees rather than over individuals, as per Romero (2013), is intended to provide Larson's analysis with a suitable semantics. But Romero needs to shift the amount relative into a set of upper-bound degree sets to get the comparison class argument she needs as the first argument of SUP, the second argument being created by moving the DegP out of the host NP, and resolving the ACD gap. She also needs to quantify over degree sets and not over degree properties in the definition of SUP, in order to derive the equative force of modal sentences.

We refer the reader to Loccioni (2018) for a comparison of the syntactic structures for attributive and predicative functions. Here we stress the interest of considering basic examples, that is predicative superlatives of the form ' x is the Adj-est' (14a) or their modal versions ' x is the Adj-est possible' (7). The issue of the readings can be approached via the intuitions about comparing individuals from one set in the absolute reading, or from two sets in the relative reading, or about the equative effect in the modal superlative, and by crossing these cases with the two functions. Loccioni (2018) emphasises that extra material within the predicative part—*at Mary* in (14b)—is instrumental for a relative reading to be accessible, contra (14a). In '*John is angrier at Mary than he is at anyone else*', the first set contains d -angry stages of John, and the second set contains individuals that discharge the thematic role of stimulus for the contextual situations of anger with John as an experiencer. Thus, predicative uses of ordinary superlative do not admit a relative reading in a basic realisation. The availability of the modal reading in simple predicative uses like (7) makes these data informative.

- (14) a. John is the angriest
 b. John is (the) angriest at Mary

Loccioni (2018) says that Romero's machinery works for the interpretation of predicative modal superlatives like (7). In no accessible world is Luisa kinder than she

is in the actual world, but she could be as kind as that. Loccioni objects to Romero's ad hoc modification to the type of quantification in SUP that makes it applicable only to modal superlatives, and to the more widespread problem of treating the definite determiner as an existential, cf. fn. 2 above.

We wonder whether that syntactic machinery is needed for basic predicative uses. Roughly speaking, as far as syntax is concerned, the predicative construction can be regarded as basic. We will come back to semantic issues in Section 4.4.

The foregoing helps to clarify why this article deals specifically with predicative uses. We close the issue by recalling, first, that the syntactic structure and semantic analysis of modal superlatives are still open questions in the literature. Second, attributive and predicative functions have been associated with different structures, so each deserves its own analysis. In the predicative structure, the superlative is a predicate that “does not embed a nominal phrase and the determiner preceding the superlative, if there is one, also does not embed a nominal projection.” (Loccioni 2018:65). We take the predicative use as possibly the simplest semantic form of modal superlative, and endeavour to clarify semantic issues while remaining neutral with respect to specific syntactic frameworks.

Interestingly, predicative uses exhibit a contrast in the individual-level vs stage-level interpretation of the gradable adjectives that, to our knowledge, has not received attention in the literature. We turn to this next.

3. The S- vs I-level interpretation of the gradable adjective in modal superlatives

3.1. Preference for a Stage-level interpretation of the gradable adjective

A less discussed peculiarity of predicative modal superlatives is that the gradable adjectives strongly resist an individual-level interpretation, see (7) vs (15).

(7) Italian
Luisa è stata (il) più gentile possibile.
'Luisa was the kindest possible.'

(15) Italian
#Questo ragazzo è il più intelligente possibile. (individual-level)
'This child is the most intelligent possible'

Example (7) suggests individuals are not characterised by unique degrees of a property. The marginality of (15) adds information that no individual level interpretation of the adjective is available in predicative modal superlatives. On the contrary, ordinary superlatives are compatible with stage-level and individual-level interpretations, see (16).⁷

⁷ Toledo & Sassoon (2011) proposed that the interpretation of gradable adjectives is determined by the nature of the comparison class. The comparison class depends on the individual the adjective is predicated of, and can be a set of 'counterparts' of that individual, e.g. stages of *Luisa* associated with different amounts of calm. Alternatively, it can be an extensional category of that individual, e.g. other mountains associated with different amounts of height. The counterpart-set comparison class gives rise to a within-individual interpretation

- (16) Italian
- a. Luisa era la più arrabbiata. (stage-level)
'Luisa was the angriest'
 - b. Luisa era la più intelligente. (individual-level)
'Luisa was the most intelligent'

The strong preference for a stage-level reading for superlatives in predicative modal superlatives, might seem an epiphenomenon. Associating different stages of the individual with different degrees of the property provides a natural space of variation when attributing a gradable property to an individual. A stronger version of this position is to derive the impossibility of individual-level readings from the assumption that one individual is associated with different amounts of the gradable property, and that just this type of different associations are taken into account, whether they are in different worlds or in the same world.

Simply comparing Luisa's kindness across worlds does not work when computing the interpretation of the sentence. One must systematically restrict the comparison to one type of situation. However, this restriction does not require the individuals to exist in all the worlds considered. As it will be argued more extensively in Section 4.2, if we consider an individual and its counterpart(s) in (an)other world(s), either the individual and its counterpart(s) are associated with the same amount of a gradable property in the different worlds, the property is individual-level and is interpreted as characterising the individual; or they are associated with possibly different amounts, in which case the property is stage level and cannot be included in the information that makes up the identity condition for the individual. Indeed, when the amount of gradable property varies and the individual doesn't, the property is interpreted stage-level. However, it does not follow that only stages of one individual are considered. Therefore, it is of paramount interest to see whether there is empirical support against the idea that the stage-level interpretation is a corollary of the fact that modal superlatives would require no variation of the individual, requirement hinted at by Loccioni (2019). The next section looks into this.

3.2. Stage-level adjectives and the (in)variance of individuals compared across worlds

Modal superlatives like (7) have two equative readings where one compares Luisa to herself at various times, or to herself and other people. This has consequences for the formal analysis, but it also has an empirical side. We mentioned above the existence of different idiolects. The case in support of the possibility of comparing more than one individual would be stronger if it could be shown that the predicative modal superlative is not always incompatible with the individual-level reading of the gradable

and a stage-level reading of the adjective. The extensional-category comparison class contains other members of the category to which the individual belongs and matches an individual-level reading of the adjective. Their proposal to associate the two readings with two different classes of comparison has points of analogy with our proposal. However, it is not directly exploitable for modal superlatives, because one cannot exclude having stages of several individuals in the same class of comparison. We would like to thank a member of the audience at our LSRL53 presentation for bringing this paper to our attention. We apologise for not being able to remember who it was.

adjective. Suppose the presupposition of plurality is accepted. When the individual is kept invariant, if the predicative modal superlative allows an individual-level reading of the adjective, there is no plurality of individuals to compare. But if the individual-level reading is available, then it must be conceded that the possibility of varying the individual is not excluded. Alternatively, the stage-level reading of the predicate allows the property of one individual or of possible alternatives to vary through worlds.

Example (17) offers a more articulated scenario to show the comparison of different individuals. The adjective *conciso* (concise) is stage-level and is predicated of *Daniele*, but the gradable property does not characterise just stages of *Daniele*. Being concise is also a property of the letter written by *Daniele*, an individual-level one. Furthermore, it is a property that requires the goal of the letter to be taken into account in order to be ascribed. A one-page letter may be concise if it is written to support a complex point, or it may be verbose if it deals with a simple matter. No specific number works as a standard for the number of words that *Daniele* put in a letter in a situation.

(17) Italian

Nella sua lettera di risposta, Daniele è stato il più conciso possibile.

‘In his letter of reply, Daniel was the most concise possible.’

In short, we have to consider letter writers, letters, and goals. The point is clearly not to compare how *Daniele* would fare in writing over and over again the same letter. The property of being concise predicated of *Daniele* triggers a comparison among writers in (17), and the writers need not all exist in the actual world. As a consequence, the interpretation of examples such as (17) requires checking that any entity in a similar situation of writing a reply for a similar goal does not fare better in terms of amounts of conciseness, whatever the individual and the world. Restricting the situation to homogeneous cases is essential, and the predicate *Q* from Tovena & Fleury (2023) is introduced for this purpose, cf. Section 4.1. In this case, the content of *Q* approaches the content explicitly conveyed by the sentence, but still expresses a restriction that is independent of the reference of the DPs in the sentence.

A different case, still with a stage-level adjective, is represented by (18). Here the adjective *convincente* (convincing) is predicated of *Luisa* and is stage-level, but the gradable property does not characterise just stages of *Luisa*.

(18) Italian

Luisa è stata il più convincente possibile.

‘Luisa was as convincing as possible.’

Luisa in (18) can be truthfully claimed to be convincing because of the way she carried out the task she had to do. At first sight, the property in (18) seems not to be predicated of a second entity that acquired independent existence at the end of the event, in contrast to (17) where the letter was created and was concise. Yet, *Luisa* was convincing in doing something in (18), while doing it. The ‘it’ may well be a product of her activity, although it ceased to exist at the end of the activity (Twardowski 1999). The specific instalment of activity produced is individual-level convincing. Again, the point is not to compare how *Luisa* would fare in engaging over and over again in the production of the same activity. The modal superlative requires one to check that any

entity in a Q situation of doing a similar activity for a similar purpose does not do better in terms of amounts of persuasion effect, whatever the individual and the world that are considered.

As a counterpoint, consider (15) again, where the adjective *intelligente* is clearly interpreted as individual-level. In a first interpretation, the possible levels of intelligence map onto the levels of intelligence of a relevant group of people in the actual world. For instance, there is some people in a room and one has to choose the most intelligent child in this group. This interpretation does not involve possible worlds and is not a modal superlative. In a second interpretation, levels of intelligence are compared in a more abstract way. Levels are organized into hypothetical ranges of intelligence in the population. In this context, a child is the most intelligent possible if s/he reaches the highest rank of intelligence among ranks reached by children. Once again, the intelligence of children is not directly compared across possible worlds. In both contexts, the individual-level interpretation seems to resist to the modal superlative interpretation.

In short, the distinction between uniqueness vs. plurality of individuals in a modal superlative does not coincide with the distinction between stage-level vs. individual-level interpretation. A comparison based on a plurality of individuals can be favoured even when the property is stage-level but leans on an individual-level property that does not seem to imply the same individual in all worlds. This remark has a direct impact on the issue of restricting the entities in the comparison class.

4. Working out what a predicative modal superlative is anchored to

4.1. Restricting individuals and situations in predicative modal superlatives

In this article, we adopt the perspective, introduced by Tovena & Fleury (2023), that the main information expressed by a modal superlative concerns the attribution to an individual of an amount of a property relative to a specific situation satisfying certain constraints. The amount is assessed as the maximum possible in that situation, not in absolute terms, and is not intended to singularise a particular individual by attributing to it a property of a higher degree than to the other members of a certain group. It may be the case that the comparison is not constructed from a specific individual, which does not preclude the use of conditions to explore the space of alternatives.

A first step in Tovena & Fleury's (2023) analysis is to define a predicate that allows one to relate individuals, worlds and constraints on the considered situation, without hierarchising them. Consider the superlative in (7) again. It is about amounts of kindness ordered regardless of who displays them in the accessible worlds. There is a form of homogeneity constraining the individual who can instantiate the argument of the adjective, beyond mere pragmatic relevance. This is so despite the impossibility of expressing a restriction overtly via a common noun (Loccioni 2018). A similar homogeneity condition restricts the type of situation. However, contrary to the case of individuals, this second restriction can be expressed overtly, directly as in (19a) or by mentioning a participant in the event as in (19b).

(19) Italian

- a. Luisa è restata (il) più calma possibile davanti a tale scena.
 ‘Luisa was as calm as possible in front of such a scene.’
- b. Luisa è stata (il) più gentile possibile con quel cliente difficile.
 ‘Luisa was the kindest possible with that difficult customer.’

An available interpretation implies that, in other situations, the amount might well have been superior, while asserting that the actual amount was the maximal one under the circumstances. Narrowing down the relevant alternatives is crucial given the violation of maximality, and is done too systematically to be just a contextual effect.

The conditions of homogeneity on individuals and on situations just seen, are visible to each other. They are neither independent nor ranked with each other. The conditions on the individual are not sufficient to determine the set of individuals involved in the comparison, and neither are the conditions on the situation sufficient to determine the set of situations involved in this comparison. To determine whether an individual x' and a world w' are to be taken into account, the conditions on the individual and the situation must be tested within each accessible world w' (in addition to compliance with the descriptive content of the sentence by x' in w'). The consistency of situations considered across accessible worlds is captured by assuming that the modal adjective projects a predicate Q that selects a type of situation to be verified in the worlds. A situation in a world w is (merely) a part of this world w (see Barwise & Perry 1980, and subsequent work), just as an event in a world w is a part of the world w , implying a temporal dimension. In our analysis, the predicate Q describes a situation involving three components and has the form $Q(w')(x')(q')$. It comprises an attribution of an amount q' to an individual x' in the world w' , and specifies the type of situation as an enrichment of the explicit content of the sentence.

The nature of the contextually relevant predicate Q assumed in this analysis is entirely different from C assumed in the paper (Heim 1999). The parameter C sets up a domain, be it a set of individuals or a set of properties of degree built on individuals. On the contrary, Q is not an object with an extension in the actual world. It is a predicate that allows one to filter out individuals and worlds that constitute possible alternatives. The nature of Q and its function in strictly enforcing homogeneity of situations and individuals, are not comparable with the assumption that C is somehow consistent and contextually relevant.

Predicate Q constrains both individuals and worlds, as required by the fact that the variables x' and w' are closely connected. On the one hand, it is not possible to identify an individual x' independently of the world w' that hosts it. Since the individual x' does not necessarily have a counterpart in the actual world, its identification crucially rests on the characterisation of the situation in which it is found in the host world. The question of the existence of counterparts, discussed in more detail in Section 4.3, plays a decisive role in the analysis of restrictions, especially for a reading involving several individuals, as is the case here. On the other hand, an accessible world w' cannot be determined and selected independently of the individual x' it hosts. Ultimately, the pair (w',x') is inseparably determined by applying predicate Q .

Predicate Q captures the fact that certain properties of degrees and certain properties related to the type of situation must be verified. Amounts can be associated neither with given individuals x' nor with given worlds w' , but with pairs (w',x') of individuals and worlds, which are organised in equivalence classes, according to their

amount. This grouping into equivalence classes is precisely what will enable the equative reading. The intuition is that if there is an accessible world w' and an individual x' verifying predicate Q , i.e. verifying the description of the sentence as well as certain homogeneity conditions on the individual and the situation, then nothing prevent us from imagining another world w'' and another individual x'' , similar to w' and x' , such that x'' manifests the same amount as x' . This does not make the modal superlative false, whether or not the amount in question is actually the greatest.

A world w' can be in several equivalence classes. Similarly, an individual x' can be in several equivalence classes. The pairs (w',x') are collected into a set called S by going through all individuals x' and accessible worlds w' so that x' is in w' , and x' and w' verify predicate Q for some amount q' . Such set S is defined in (20). It should be added that here the role of the modal base and the accessibility function is not to express a classical modality, but simply to pre-select worlds w' that have been explored exhaustively and in which certain properties are verified on individuals x' in the world w' . The selection of accessible worlds is encoded without the existential operator, as a simple conjunction.

$$(20) \quad S = \lambda x' \lambda w' [\exists q' [w' \in Acc(w) \wedge Q(w')(x')(q')]]$$

The set S is a sort of proto comparison class, because the goal is to distinguish its members from each other by using the amount associated with them. For each pair (w',x') in S , there is a unique amount q' verifying $Q(w')(x')(q')$. This unique association can be exploited to group together the elements of S that share the same amount, via an equivalence relation “ \sim ” on S defined as in (21).

$$(21) \quad (w_1, x_1) \sim (w_2, x_2) \text{ iff } \lambda q' [Q(w_1)(x_1)(q')] = \lambda q' [Q(w_2)(x_2)(q')]$$

Partitioning S yields the set C , made up of all the equivalence classes defined on amounts. This set C works as the comparison class for the modal superlative. Comparison is done between the equivalence class of (w_0, x_1) , where w_0 is the actual world and x_1 is *Luisa* in (7), and all the other equivalence classes in C . A function called f is introduced to associate to each equivalence class $c' \in C$, the unique amount q' associated to all the members of c' , written $f(c') = q'$. Function f makes explicit such an association. This is handy when performing the operation done by the superlative, which is to compare *Luisa*'s amount with the amounts associated to each of the cells of the partition. Introducing an equivalence relation is a way of explicitly managing the grouping of entities that serve as the basis for the comparison class, by relying on information available in the relation between worlds, individuals and amounts. Instead, other proposals in the literature make groupings without taking this information into account, see Section 4.3 and Section 4.4.

The purpose of introducing C and f is to capture the concept of a comparison class in which each member can be canonically associated with an amount. The simultaneous introduction of both C and f might seem to depart from the usually sequential flow of a semantic composition. In Section 4.3, we show how C and f are intimately linked and how it is possible to introduce a single object that manages the information contained in C and f .

$$(22) \quad \lambda C [\exists q [f(c) = q \wedge \forall c' \in C [f(c') \leq f(c)]]]$$

The superlative operator in (22) is a function that applies to a partition and returns True iff the amount of the class c , e.g. the class of Luisa in (7), is the biggest amount among the cells of the partition. Leaving the semantic type of at least C , f and c underspecified, enables the operator to work for modal and ordinary superlatives.

4.2. On the contributions of modal accessibility function Acc and predicate Q

The semantics of the modal superlative is essentially based on two mechanisms, namely the restriction on possible worlds and the restriction on individuals to whom a gradable property is attributed. The first restriction is embodied by an accessibility function Acc that gives a modal colour to the modal superlative, in the same way as an accessibility function in a simple modal sentence such as *Mary must fasten her seatbelt*. For example, the judge showed a maximum amount/degree of leniency towards the defendant in (23), within the limits of the law. This restriction gives a deontic colour to the modal superlative.

- (23) Italian
 La giudice è stata il più clemente possibile.
 ‘The judge was as lenient as possible.’

The second restriction is trickier. It involves determining whether the individual to whom the gradable property is attributed, is the same or varies across possible worlds. Remember that in an absolute superlative, e.g. *the judge is the most lenient*, the individual necessarily varies within a relevant comparison class, and is the only component that varies. On the other hand, in a modal superlative, since both components—possible worlds and individual—are liable to vary, and since the variation of possibilities is at least ensured by the variation of worlds, it seems that the variation of the individual is not systematic and depends on the semantic content and context of the sentence. The main criterion that determines the set of possibilities for leniency in (23) is based on the possibilities offered by the provisions of the law. In a first approximation, (23) would have an interpretation whereby the clemency of the judge in the actual world is compared with the clemency of the same judge in the accessible worlds. But even in a case like this, it is difficult to impose non-variation on the individual. In Italian, e.g. it cannot be ruled out that comparisons are also made with other judges. Moreover, pragmatically this should ideally be so, since the judgment should not be subject to the inclinations of who ‘embodies’ the judicial authority in the specific case. Formally, assuming that the individual denoted by *la giudice* is invariant across possible worlds, we run through the accessible worlds w' (following the accessibility function Acc) and sort the amount properties $\lambda q'[Q(w')(\text{the judge})(q')]$ relative to the actual world, where $Q(w')(x')(q')$ is a predicate built upon the content of the sentence, and expresses the situation in which x' was q' -lenient in the world w' . A crucial question is whether it is restricted to the semantic content of the sentence or whether it also takes into account elements of context characterising the individual.

In the particular case where the individual is invariant, this question is tricky to decide, insofar as, technically, these additional elements can be expressed as a set of propositions that can either enrich the predicate Q , or be made part of a circumstantial modal base, which is one of the possible components of Acc . However,

the lack of variation for individuals is not the general case for modal superlatives. In (24), the property of fairness is a characteristic of the decision, in the sense that we cannot modify the degree of fairness of a decision without modifying the decision itself, at least in a given world and time. Different decisions associated with different degrees of exactitude are compared in the most natural interpretation of the modal superlative in (24), and the decisions are located in possible worlds.⁸

(24) Italian

La decisione è stata il più giusta possibile.
‘The decision was as fair as possible.’

What determines the variation of x' is primarily the semantic content of the sentence. The individual x' is a q' -right decision for a certain degree q' in a certain world w' . But the restriction of x' does not stop at the mere content of the sentence. The context can provide additional restrictions on the type of situation in which the individual is placed, and specify a number of characteristics of that individual or of other participants in relation to that individual. For example, the decision is a court decision concerning a defendant involved in such and such a case, whether or not the defendant is determined by the context. These characteristics cannot be expressed using complete propositions, because the individual to whom the gradable property is predicated varies across worlds and is not completely determined. The role of Q applied to w' , x' and q' is to capture this extra information, beyond the content of the sentence itself. The accessibility function is unable to do this, as it is built from a set of complete propositions.⁹ Dealing with the context is a task shared between the accessibility function and the predicate Q that conveys a type of situation. The resulting quantification is not a simple quantification over possible worlds, as for a simple modal sentence, but a quantification over worlds (restricted by the accessibility function) and individuals (restricted by the Q predicate), which leads to a kind of nested/mixed modality.

The discussion of examples (23) and (24) allowed us to highlight the fact that it is not systematic not to have at least potentially some variation on the individual of whom the gradable property is predicated. It remains possible for individuals to vary even in cases where the amount is a likely stage-level property in (23). This is the preferred option when the property is an essential/permanent characteristic of the individual in (24). This can also arise when the stage-level property of an individual leans on the individual-level property of the result associated to an event, be it a product or an action, as pointed out for (17) and (18). Thus, modal superlatives appear to be sensitive to the type of stage or individual-level interpretation of the gradable adjective.

⁸ We could envisage another interpretation of (24) in which the decision would not vary but its degree of fairness would be subject to criteria that change according to the worlds. However, this complex interpretation seems pragmatically excluded.

⁹ Traditionally, an accessibility function can be defined on the basis of a set of propositions, possibly a modal base and an ordering source. Attempting to restrict indeterminate individuals x would mean introducing incomplete propositions such as x' is a q' -just decision (possibly having such and such other properties specified by the context). But such an addition is outside the standard framework.

This sensitivity can be expressed in terms of constraints on the domain containing the plurality of elements to be compared. The possible variations and their constraints can be summarised in terms of variation of the individuals being compared, variation of the gradable property of these individuals, and variation of the possible worlds. When the individual is invariant, i.e. is compared to itself, which is a possible interpretation of (23), the main source of variation concerns the gradable property of the individual through the variation of the worlds accessible via *Acc*. Thus, the gradable property is necessarily stage-level. This case can be schematised by a kind of implication (unique individual) \Rightarrow (stage-level). The contraposition gives us (individual-level) \Rightarrow (varying individual). If the gradable property is interpreted as individual-level, the individual is necessarily varying. Now, when the individual is not the only one involved in the comparison, and is possibly compared to other individuals, we have at least two sources of variation, the plurality of individuals and the plurality of possible worlds. The individual is not compared to a relevant and finite set of individuals located in the real world, contrary to the absolute modal superlative, but to a possibly infinite set of individuals located in accessible worlds and specified by a type of situation, or in any case a set without the presupposition of the existence of a boundary. The plurality of amounts of the gradable property is provided by the plurality of individuals, and the gradable property can be individual-level as in (24) or stage-level. This case can be represented by the implication (varying individual) \Rightarrow (individual-level or stage-level).

What we have seen is how the variation of the individuals is sensitive to the distinction between stage-level and individual-level of the gradable property. In all cases, the worlds are determined by an accessibility function and the individuals are selected inside these worlds by a type of situation. These constraints on the variation of the individuals and the worlds determine the structure and the content of the comparison class and make the modal superlative anchored to individuals and worlds.

4.3. Modality and comparison class: some examples in full

4.3.1. *Selecting individuals across possible worlds*

Proposals in the literature provide some options for selecting individuals to compare across possible worlds. Loccioni (2019) gives an interpretation of the predicative modal superlative in which an individual is compared with themselves across worlds. The caption ‘don’t compare yourself to others’ under her figure 1 suggests she rules out an interpretation involving several individuals. Romero (2013:100) does not rule out extending the comparison to several individuals, when talking about readings of attributive modal superlatives. But for Romero, degrees are selected in the same way when there is one or more individuals, essentially via constraints imposed by the modal base. We show how these constraints prove too strong and how the entities to be compared can be selected more finely by analysing in detail an example of a modal attributive superlative and one of a predicative. We take off from a remark about the variability of individuals and their properties across worlds.

Consider the sentence *John climbed the highest possible mountain* and the interpretation with a single individual—possible for John to...—and the one with several individuals—possible for one to... If we accept that one individual in the real world and its counterparts in the accessible worlds are in a relation of similarity (Lewis 1968) and share certain characteristics, even if it is difficult to define them precisely,

then it is reasonable to think that the set of degrees attained by John and his counterparts in the accessible worlds, or even the maximum degree, does not necessarily coincide with the set of degrees attained by any other individual and their counterparts in the accessible worlds.

This remark has several consequences. First, if the two interpretations exist, they are different, since the degrees recovered may not coincide. Second, there are individuals located in accessible worlds who have no counterpart in the real world, just imagine an individual who is sufficiently different from those in the real world. Importantly, the interpretation ‘possible for one to...’ must concern all ‘possible’ individuals, and nothing suggests that the comparison should be restricted to individuals in the real world and their counterparts in possible worlds. Hence, the set of degrees cannot be translated by the formula $\lambda d[\forall y \diamond \exists x[mount(x) \wedge climb(y,x) \wedge high(x,d)]]$ proposed by Romero (2013) as ‘generic’, where the universal quantification on individuals y takes wide scope over modality. The individuals for which we check the degrees reached necessarily have a counterpart in the real world in Romero’s formula.

A third consequence is going to shed light on the role of modality, the selection of entities to be compared, and how to put the two together. Let’s start by looking at the interpretation ‘possible for John to...’ in a context where John has a broken arm. There is an interpretation of the modal superlative that takes this element of context into account, and corresponds to the paraphrase ‘John climbed the highest mountain possible given his broken arm.’ This additional restriction can technically be encoded in the modal base by adding the proposition *broken-arm(j)* (John has a broken arm).

Now, let’s look at the interpretation ‘possible for one to...’ taking into account the same element of context. In this case, the degree reached by John in the real world is compared with the degrees reached by individuals with a broken arm in accessible worlds. This time, integrating this element of context into the modal base is less natural, and means integrating a complex proposition of the form $\forall y[(\exists x[mount(x) \wedge climb(y,x)]) \rightarrow broken-arm(y)]$. This solution is problematic because one gets a modality in which one only considers weird accessible worlds where all the climbers have a broken arm. Moreover, this restriction excludes worlds where y has a broken arm but lives alongside other climbers who do not have a broken arm. However, a form of emulation with able-bodied climbers could significantly enhance the performance of an unable-bodied climber in such a context, and could push y to reach the highest degrees in these worlds. The existence of such correlation between the degrees achieved by one individual and the degrees achieved by all individuals, cannot be ruled out. In short, on the assumption that part of an individual’s identity is irreducible across worlds, or that an individual possesses some similarity with his counterparts, not all relevant circumstances can be encoded in the modal base.

The property *broken-arm* could not be used to impose a uniform constraint on individuals in accessible worlds according to Tovena & Fleury (2023), even if this constraint were limited to individuals who meet the descriptive content of the sentence. Instead, it is used to select individuals meeting the constraint, or any other situation, and the worlds in which they are found, in order to constitute the right comparison class.

Compositionally, this selection takes place below the modal operator itself—coded by the accessibility function—at the level of the predicate denoted by the sentence, and can technically be coded as an enrichment of the situation described by

this predicate. For instance, from the predicate $\exists x[mount_w(x) \wedge climb_w(y,x) \wedge high_w(x,q)]$, with world indices added for compositional purposes, we get a predicate $Q(w,y,q)$ that captures the same situation plus the fact that y is in the specific situation of having a broken arm in world w . Crucially, the enrichment of the predicate, or of the situation it describes, takes place at the level of the predicate and outside the modal operator, at a low level of the composition. Part of the selection is ‘uncoupled’ from the modal base, so to speak.

Whether this enrichment is coded directly by introducing a predicate Q that replaces the original predicate, as above, or by an explicit operator that handles (a type of) situation and modifies the predicate, does not change the substance of our argument. The addition of such an operator is left to future investigation and could also concern the way in which the modal base is coded, with the aim of making the formula more homogeneous, without altering the truth conditions of the sentence or the scope of the different operations.

At this stage of the composition, we have selected worlds and individuals within these worlds. Each individual is associated with an amount q in the world w that hosts it, i.e. the only amount q verifying $Q(w,y,q)$, if we formalize with predicate Q . The result is the function $\lambda w \lambda y \lambda q [Q(w,y,q)]$.

The function of the modal operator is limited to restricting possible worlds (Tovena & Fleury 2023), not to introducing an existential quantifier on worlds as in a classic modality. The aim of the modal superlative is not so much to verify a classic modality, potentially an infinite number of times, but rather to go through all the accessible worlds and extract information from them, including degrees. Introducing an existential by default prevents us from capturing the complexity of the modality expressed by a modal superlative. In our approach, the contribution of the modal operator is coded as the simple conjunction $\lambda w' \lambda x' \lambda q' [w' \in Acc(w) \wedge Q(w',x',q')]$.

The absence of the existential affects the information that passes through the modal operator. Information about the relation between amount q , individual y who manifests it, and world w in which y is located, gets preserved. The word *possible* can no longer be seen as the simple translation of a standard modality (Tovena & Fleury 2023). This is not so in Romero’s (2013) and Loccioni’s (2019) proposals, where the modal operator is treated as an existential.

4.3.2. Grouping worlds and individuals

Once the worlds, individuals and their amounts have been selected, all that remains is to make the right groupings to construct the comparison class and obtain the equative reading. Romero (2013) builds her comparison class by collecting all the degrees that are selected, and constructing a set of properties of degrees via a SHIFT operator. The goal of the shift is precisely to turn things into the right type, so as to compare them with a property of degrees in the real world. The peculiarity of this solution is that the degrees are retrieved while disregarding the worlds and individuals to which they are attached. The same can be said of the solution for predicative modal superlative in Loccioni (2019). She collects all the selected degrees and applies a MAX operator to them to get the highest degree that saturates a degree property in the real world.

These solutions are designed to deliver equative readings. But collecting degrees all-round comes at a price, as i) information about individuals, worlds and the degrees associated with them is lost when the comparison class is built; ii) it becomes necessary, at least for the sake of composition, to call upon the content of the sentence

a second time in order to construct a degree property in the real world that can be compared with the members of the comparison class (Romero 2013), or applied to the highest degree resulting from this comparison class (Loccioni 2019).

Tovena & Fleury (2023) build the comparison class more straightforwardly by making the most of the information available. More precisely, the function $\lambda w'\lambda x'\lambda q'[w'\in Acc(w) \wedge Q(w',x',q')]$, obtained in Section 4.3.1, gives us information on the pairs of worlds and individuals to be compared, and the amounts associated with each of the pairs. An equivalence relation is explicitly defined in order to collect in the same class of equivalence all the pairs (w', x') associated with the same amount q' . The set of equivalence classes is the comparison class C of the modal superlative. A function f is defined in a canonical way to associate to each equivalence class the amount shared by all its members (see Section 4.1). For instance, if an equivalence class c' in C contains the pairs of worlds and individuals associated with the amount q' , we can write $f(c')=q'$. As a result, the comparison class C is much more than a set of amounts as we can find in Romero (2013) or Loccioni (2019). The comparison class C , along with the function f , preserves the information on the relation between worlds, individuals and amounts. In Tovena & Fleury (2023), the set C and the function f are used to express the modal superlative (see Section 4.1).

So far, two objects C and f are used in the composition of the superlative operator SUP. But from a purely practical compositional point of view, we might be better off dealing with a single object that holds information from both the comparison class C and the function f . Note that the comparison class C and the function f are closely related, because the former is the domain of the latter. We can build a new function that carries the information from C and f , using the lambda expression $\lambda c'\lambda q'[c'=\{(w',x'): w'\in Acc(w) \wedge Q(w',x',q')\}]$, noted F . If we continue along this path, we need to make some adjustments. Instead of using C and f in the expression of the superlative operator SUP, we only use F . Let's see how to express f and C with F . First, if q' is the amount associated with the equivalence class c' , i.e. q' is the amount shared by all the pairs of worlds and individuals in c' , we write $f(c')=q'$, which is equivalent to $c'=\{(w',x'): w'\in Acc(w) \wedge Q(w',x',q')\}$, as c' is the set of pairs (w',x') associated with the amount q' among all the pairs to be compared, i.e. $F(c')(q')$. Second, if c' is an equivalence class in C , written $c'\in C$, this means that there exists some amount q' associated with c' , i.e. $\exists q'[F(c')(q')]$. These adjustments are summarised in (25).

$$(25) \quad \begin{array}{l} \text{a. } f(c')=q' \leftrightarrow F(c')(q') \\ \text{b. } c'\in C \leftrightarrow \exists q'[F(c')(q')] \end{array}$$

Consequently, the SUP operator given in (22), recalled in (26a), can be rewritten with F instead of C , as in (26b). The benefit of the formula in (26b) is that the introduction of the function f is no longer necessary. In a sense, the function F plays the role of the comparison class, insofar as it contains information about the selection of entities to be compared and their grouping according to amounts.

$$(26) \quad \begin{array}{l} \text{SUP operator rewritten with } F \\ \text{a. } \lambda C[\exists q[f(c)=q \wedge \forall c'\in C[f(c')\leq f(c)]]] \\ \text{b. } \lambda F[\exists q[F(c)(q) \wedge \forall c'[\exists q'[F(c')(q')] \rightarrow q'\leq q]]] \end{array}$$

The presence of the inequality \leq calls for further explanation, especially if we envisage to apply this solution to an ordinary superlative. First, the reason why the formula contains such an inequality instead of a negation, as in formulas (3) and (6), is that the solution is based on amounts instead of degrees. Second, the formula (26b) does not contain an expression of type $c \neq c'$ in the antecedent of the implication, as in formulas (3) and (6). Without going into details, the distinction between c and c' in the antecedent is not necessary, as only one element in C can be associated with a given amount, in the modal superlative case. However, it is worth emphasising that incorporating this distinction, along with strict inequality as in (27), does not alter the truth conditions of the modal superlative.

$$(27) \quad \text{SUP operator with } F \text{ and strict inequality } < \\ \lambda F[\exists q[F(c)(q) \wedge \forall c'[(\exists q'[F(c')(q')]) \wedge c \neq c'] \rightarrow q' < q]]]$$

The point of introducing a new formulation of the SUP operator in (27) is to make it easier to apply the operator to the case of an ordinary superlative, where several entities in the comparison class may be associated with the same amount, and not to have an operator that is specialised only for modal superlatives. In the ordinary superlative case, F could take the form $\lambda c' \lambda q'[Q(c', q') \wedge c' \in D]$, where c' is a variable for individuals and D a set of relevant individuals. Moreover, no equivalence relation is required in order to group individuals. Strict inequality takes on its full meaning and is even necessary, as it precludes the case where several individuals express the highest amount. In view of a unified analysis of superlatives, it remains to be shown whether and how the presence of a relevant set of individuals D , or any other peculiarity, could block the introduction of an equivalence relation between individuals in ordinary superlative.

The construction is similar for predicative modal superlatives. The main difference lies in the complexity of the degree predicate linking the individual to an amount. In the attributive example *John climbed the highest possible mountain*, this predicate is given by $\exists x[mount_w(x) \wedge climb_w(y, x) \wedge high_w(x, q)]$ that links an individual y to the height of a mountain x existing in the world w . In the predicative example (7), the relation is given by $kind_w(x, q)$ that directly connects individual x to an amount she manifests in world w . The rest of the composition is the same. As in the previous example, the predicate is enriched by a type of situation that cannot be fully encoded in the modal base. For instance, imagine Luisa in a situation where she has a toothache and is exhausted as a result, and consider an interpretation of (7) related to this type of situation. The predicate Q is built on the relation $kind_w(x, q)$ enriched by the right specifier.

4.3.3. Composing SUP operator with the subject in predicative and attributive functions

One last point to address is that the individual in the real world is treated at the same time as the individuals in the possible worlds, in the formula of the SUP operator obtained so far in (27). However, the composition with the individual in the real world denoted by the subject of the sentence can be deferred without altering the truth conditions. It suffices for the SUP operator to combine first with the comparison class,

now represented by F , and then with the individual x in the real world w .¹⁰ The new SUP is given in (28a). Function F is recalled in (28b).

- (28) SUP operator with F and externalised subject
- a. $\lambda F \lambda x [\exists q [\exists c [(w, x) \in c \wedge F(c)(q)] \wedge \forall c' [(\exists q' [F(c')(q')] \wedge c \neq c') \rightarrow q' < q]]]$
 - b. $F = \lambda c' \lambda q' [c' = \{(w', x') : w' \in Acc(w) \wedge Q(w', x', q')\}]$

Given an individual x that manifests an amount q in the real world w , the existential expression $\exists c [(w, x) \in c \wedge F(c)(q)]$ recovers the class c that contains (w, x) and is associated with the amount q . Note that it is necessary to ensure that the real world w is taken into account by the function F , which is built on accessible worlds, in order to guarantee the existence of an equivalence class associated with x . However, the accessibility function is not always reflexive. To remedy this, we suggest to add the real world w to the set of accessible worlds. The function F becomes $\lambda c' \lambda q' [c' = \{(w', x') : w' \in \{w\} \cup Acc(w) \wedge Q(w', x', q')\}]$. Conceptually, this addition is not trivial and will require further study.

It should be added that the construction presented here can be adapted to readings of predicative and attributive modal superlatives in which the individual in the real world is compared with themselves in the accessible worlds. The question that remains is to what extent we need to distinguish the semantics of these interpretations.

4.4. Reviewing the flow of information on worlds, individuals and amounts in previous proposals

In Section 4.3, we highlighted how crucial it is to correctly use information about worlds, individuals and amounts in the composition of the modal superlative. In this section, the proposal we have defended is compared specifically on the role of this information with other proposals in the literature, and it is made transparent how these proposals did not handle it correctly.

Howard (2014) takes the ordinary superlative to be an operator that quantifies over degree properties of type $\langle d, st \rangle$ (Heim 1999) that we have called intensionalised degree properties to make their type explicit. This allows him to distinguish intensionalised properties such as $\lambda d \lambda w [Mary \text{ sang } d\text{-loud in } w]$ and $\lambda d \lambda w [Lee \text{ sang } d\text{-loud in } w]$, associated with Mary and Lee respectively, even if the two individuals sing as loud as each other (Howard 2014:24-25). Given that the semantics of the superlative is based on the unicity of the intensionalised property of degrees associated with an individual, within a comparison class made up of intensionalised properties of degrees, the right truth conditions follow, i.e. if $\lambda d \lambda w [Mary \text{ sang } d\text{-loud in } w]$ is the unique property to reach some degree d , then Mary is the unique individual who sings d -loud.

A drawback is the lack of semantic justification for using intensionalised degree properties for ordinary superlatives, rather than sets of degrees, except for enforcing some uniqueness properties. In a sentence like *Mary sang the loudest*, it would seem more natural to compare directly the (sets of) degrees attained in the real world by Mary and alternative individuals, rather than the degrees attained by these individuals across all possible worlds. Moreover, comparing intensionalised degree properties such as $\lambda d \lambda w [Mary \text{ sang } d\text{-loud in } w]$, $\lambda d \lambda w [Lee \text{ sang } d\text{-loud in } w]$, etc., is

¹⁰ We thank Orin Percus for suggesting this step.

like comparing the propositions $\lambda w[\text{Mary sang } d\text{-loud in } w]$, $\lambda w[\text{Lee sang } d\text{-loud in } w]$, etc., according to the degrees d that verify them, which is no more natural. A second drawback, the one we are concerned with, is mentioned by Howard (2014:49). Intensionalised degree properties, handy for ordinary superlative, becomes a liability with modal superlatives, that do not have the same uniqueness constraints. It therefore seems necessary to give them up.

Romero (2013) deals with attributive modal superlative as a case of comparison among properties of degrees. She defines a degree property of type $\langle d, t \rangle$ in the real world, of the form $\lambda d \exists x [\text{mount}(x) \wedge \text{climb}(j, x) \wedge \text{high}(x, d)]$, which she wants to compare to a set of degree properties constructed from degrees reached in possible worlds. In order to do so, she gathers all the degrees in the set $\lambda d. \diamond \exists x [\text{mount}(x) \wedge \text{climb}(j, x) \wedge \text{high}(x, d)]$ and then transforms this, via a SHIFT operator, into a set of degree properties that can be compared to the previously constructed degree property in the real world. Compositionally, to constitute this comparison class, she follows Larson (2000) and assumes a reduced relative clause that contains the modality and an ACD gap, whose resolution consists of duplicating part of the content of the sentence. This structure delimits a domain of variation from which a set of degrees is extracted and is used as a basis for the comparison class, in a kind of parallel processing.

This solution raises several issues. First, as explained in Section 4.3, information is lost when harvesting all degrees indiscriminately. Degrees are not associated with entities at any level of the composition, except in the real world. The degree properties recreated a posteriori to form the comparison class are ‘abstract’ properties which have lost their link with the original entities. The upside of this strategy is that we get the equative reading straightforwardly, because the set of degrees collected across the worlds is the same, whether there is a single highest mountain climbed or several, or a single climber who climbed the highest mountain or several. The downside is that it is difficult to envisage adapting this solution to ordinary superlatives, because the association between entities and degrees is not handled explicitly. The need to shift the set of harvested degrees into a set of degree properties is a likely reflection of this uncaptured information. It is a bit like using the SHIFT operator to perform an operation in which you disregard information and then want to reconstruct it afterwards. Second, the parallel processing of the reduced relative clause makes the construction of the comparison class to look simpler in attributive superlative, but its motivation is not obvious in the absence of an overt relative clause. As for predicative modal superlatives, the justification for this separate treatment is even less obvious. Third, the modal adjective *possibile* is treated as a classic modal operator, without specifying the nature and the content of the modal base, and omitting possible restrictions that could not be encoded therein.

Loccioni (2019) proposes a construction of predicative modal superlatives in which she exploits the ACD technique in a different way from Romero, who is interested in attributive modal superlatives. Instead of using ACD to construct a set of degree properties and then comparing it with a degree property in the real world, Loccioni uses ACD to construct a comparison class made up of degrees from which she extracts the highest degree, using a MAX operator, and then applies it to a degree property in the real world. For Loccioni, in a sentence like *Lenuccia è il più gentile possibile*, the MAX operator is a combination of the comparative morpheme *più*, which creates a totally ordered set of degrees, the SUP operator, which transforms this set into a singleton containing the highest degree, and the determiner *il*, which tests the

uniqueness of the degree and returns it. At first sight, this construction works, but it actually raises a number of compositionality issues. First, the input set of *più* is $\lambda d.\diamond[kind(Lenuccia,d)]$, hence already totally ordered by nature, unless one thinks one can be agnostic about the ordered structure of a degree set. The role of *più* is at best redundant, at worst non-existent. Next, as SUP necessarily returns a singleton, leaving aside the borderline case of an empty degree set, it is no longer useful to check the uniqueness of the degree, hence the role of the determiner *il* boils down to type shifting the set into its unique member.

Loccioni's problems derive from her harvesting degrees in an undifferentiated way, disregarding information about the relation between entities and degrees. She proposes a similar construction for non-modal attributive superlative in her dissertation (Loccioni 2018:53-55), with the difference that information about the relation between entities and degrees is preserved. In her example [(101)] *il più grosso gatto bianco* 'the biggest white cat', *più* takes as arguments the gradable adjective *grosso* and the set of entities denoted by the NP *gatto bianco*. The morpheme *più* plays the non-trivial role of grouping the white cats, which is not in itself a totally ordered set, into equivalence classes by degree of size and ordering the classes. Next, SUP picks out the first-ranked class, which potentially contains several entities. Finally, the determiner checks that this class contains a single element. Unfortunately, when she turns to predicative modal superlative, she abandons the equivalence class approach. As a result, information is lost and the semantics of comparative and superlative morphemes, and of the determiner become somewhat trivial.

Our review has uncovered problems in all the proposals in the literature, concerning how to restrict the domain of comparison, process the information and compose it. Moreover, these proposals do not deal with I-level and S-level issues, which have an impact on the interpretation of modal superlatives and the variability of the entities that make up the comparison domain. Our proposal aims to remedy these shortcomings using a composition where each step is motivated by semantic constraints. We have chosen to examine predicative modal superlatives paying close attention to the type of objects to be compared, their restriction by the modal base or by other constraints. The mechanism we have adopted allows us to manage information as closely as possible and to group the objects to get the right truth conditions, avoiding parallel processing. The equative reading is obtained explicitly by equivalence of pairs of individuals and worlds, according to the amounts reached by these individuals in these worlds. This explicitness provides the right level of information and leaves open the future possibility of seeking to justify the criteria for triggering or blocking such equivalences, for modal or ordinary superlatives.

5. Conclusions

This paper has dealt with modal superlatives in predicative function. It is assumed that these superlatives should not be traced back to either absolute or relative superlatives. There are commonalities with both of them though, as Luisa in example (7) *Luisa è stata (il) più gentile possibile* (Luisa was the kindest possible) directly displays the quality, like absolute superlatives, and is compared in a restricted context, like relative superlatives. The focus has been on whether the strategy of single anchoring to an individual used for ordinary superlatives is the right one when it comes to modal

superlatives. We have pursued the line of analysis where the comparison class contains world+individual pairs, expanding on Tovena & Fleury's theory (2023) and defending it on theoretical and empirical grounds.

Modal superlatives are specialised in identifying a uniquely higher amount of a gradable property relevant in the context, and are not intended to singularise an individual by attributing to it the property of a higher degree than to the other members of a group. The modal/equative interpretation of (7) can be paraphrased as 'Luisa was as kind as possible', where the uniqueness of the amount does not necessarily align with the uniqueness of the individual associated with it. As a result, the uniqueness constraint typical of ordinary superlatives is not enforced on individuals at extensional level. Formally, world+individual pairs are grouped by amounts, and this information is explicitly encoded to guarantee the right level of information.

The article has enriched this discussion by contributing new data on how gradable adjectives strongly resist an individual-level interpretation in predicative modal superlatives. What initially seemed to be a requirement for the stage-level interpretation, has been decoded by showing how the variation of the individuals is sensitive to the distinction between stage-level and individual-level interpretation. For instance, we have looked at cases where the stage-level property of an individual leans on the individual-level property of the result associated to the event, e.g. (17) *Nella sua lettera di risposta, Daniele è stato il più conciso possibile* (In his letter of reply, Daniel was the most concise possible). Being concise characterises stages of Daniele, but is also an individual-level property of the letter written by him. Letters vary and do not all exist in the actual world. The leaning on the individual-level property of something else is what matters, whether the phenomenon is specific of superlatives or shared with comparatives does not matter for our argument. In sum, one deals with individuals that do not have counterparts in all the worlds, in particular possibly not in the real world, contra Romero (2013), and cannot be kept fixed in the comparison, contra Loccioni (2019).

Counterparts acquire full relevance when considering whether the modal base is sufficient to express all necessary restrictions. Restricting the situation to homogeneous cases is another essential feature in the analysis of modal superlatives. The fact that the individuals to whom the gradable property is predicated vary across worlds and are not completely determined, entails that relevant characteristics concerning individuals cannot always be expressed using a (set of) closed formulae, i.e. complete propositions. No existential quantification can be assumed to bind their variable. Herein lies a fundamental difference between the contributions of a standard modal accessibility function *Acc* and the predicate *Q* (Tovena & Fleury 2023). Predicate *Q* selects a type of situation to be verified in the worlds, and filters the pairs world *w'* and individual *x'* that constitute possible alternatives and are found in the comparison class. In all cases, the worlds are determined by *Acc*, and the individuals are selected inside these worlds by a type of situation defined by *Q*, regardless of whether they have counterparts in the real world. These constraints on the variation of the individuals and the worlds, determine the structure and the content of the comparison class, and make the modal superlative anchored to individuals and worlds.

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References

- Barwise, Jon, & John Perry. 1980. *The situation underground*. Stanford, CA: Stanford University Press.
- Corver, Norbert. 1997. *Much*-support as a last resort. *Linguistic inquiry* 28(1): 119–164.
- Cresswell, Max J. 1976. The semantics of degrees. In B. Partee (ed.), *Montague grammar*, 261–292. New York USA: Academic Press.
- Dobrovie-Sorin, Carmen, & Lucia M. Tovena. 2022. Superlatives and definiteness: crosslinguistic empirical generalizations and open questions. Talk at the Workshop *Superlatives and Definiteness*, Going Romance XXXVI. Universitat Autònoma de Barcelona, November 2022.
- Giurgea, Ion. 2022. Superlatifs et définitude dans les langues romanes: formes similaires, structures différentes. Talk at the XXXe Congrès International de Linguistique et de Philologie Romane, Universidad de La Laguna, 4–9 July.
- Gutiérrez-Rexach, Javier. 2006. Superlative quantifiers and the dynamics of context dependence. In K. von Stechow, & K. Turner (eds), *Where Semantics Meets Pragmatics*, 237–266. Amsterdam: Elsevier.
- Heim, Irene. 1999. Notes on superlatives. Unpublished ms., Massachusetts Institute of Technology.
- Howard, Edwin M. 2014. Superlative degree clauses: evidence from NPI licensing. Master's thesis, Massachusetts Institute of Technology.
- Karttunen, Lauri. 1977. Syntax and semantics of questions. *Linguistics and philosophy* 1: 3–44.
- Larson, Richard K. 2000. ACD in AP. In *Proceedings of WCCFL 19*: 1–15.
- Lewis, David K. 1968. Counterpart theory and quantified modal logic. *The Journal of Philosophy* 65: 113–126
- Loccioni, Nicoletta. 2018. Getting 'the most' out of Romance. Ph.D. thesis, University of California, Los Angeles.

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- Loccioni, Nicoletta. 2019. The Romance of modal superlatives as degree descriptions. In *Proceedings of SALT 29*: 219–237.
- Romero, Maribel. 2013. Modal superlatives: a compositional analysis. *Natural Language Semantics* 21(1): 79–110.
- Schwarz, Bernhard. 2005. Modal superlatives. In *Proceedings of SALT 15*: 187–204.
- Seuren, Pieter. 1973. The comparative. In K. Ferenc, & N. Ruwet (eds), *Generative Grammar in Europe*, 528–564, Dordrecht: Reidel.
- Szabolcsi, Anna. 1986. Comparative superlatives. *MIT Working Papers in Linguistics* 8: 245–266.
- Toledo, Assaf, & Galit W. Sassoon. 2011. Absolute vs. relative adjectives–variance within vs. between individuals. In *Proceedings of SALT 21*: 135–154.
- Tovena, Lucia M., & Damien Fleury. 2023. Situations and modality in predicative modal superlatives. *Working papers in linguistics and oriental studies/Quaderni di linguistica e studi orientali (QULSO)* 9: 195–211. <https://doi.org/10.36253/qulso-2421-7220-15156>
- Twardowski, Kazimierz. 1912/1999. Actions and products. Some remarks from the borderline of psychology, grammar and logic. In J. Brandl, & J. Wolenski (eds), *Kazimierz Twardowski. On Actions, Products and Other Topics in Philosophy. Poznan Studies in the Philosophy of the Sciences and the Humanities*, 103–132. Amsterdam: Rodopi. English translation by Arthur Szylewicz.