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THE SYNTAX AND SEMANTICS OF DEGREE EXPRESSIONS IN SPANISH

Antonio Fábregas
University of Tromsø-Norway's Arctic University

ABSTRACT. This article provides an overview of the syntax and semantics of degree in Spanish, eventually suggesting that degree structure should be viewed as equivalent to aspect in the verbal domain. §1 introduces several of the themes that will be discussed in the article, while §2 introduces the semantics of degree. §3 discusses the basic syntactic properties of degree, particularly with adjectives. §4 introduces the notion of scale, which we will argue should correspond to Aktionsart in the verbal domain. §5 analyses positive degree, and explains how it differs from a scale both in syntax and in semantics. §6-§8 discuss comparative and superlative degrees, first their morphological facts (§6), then the specific properties of comparatives (§7) and finally those of superlatives (§8). The article ends with some conclusions in §9.

Keywords. degree, adjectives, positive, comparative, superlative, scale

RESUMEN. Este artículo proporciona una revisión de la sintaxis y la semántica del grado en español, proponiendo que la estructura del grado debe concebirse como equivalente al aspecto en el dominio verbal. §1 introduce varias de las cuestiones que se discutirán en el artículo, mientras que §2 se focaliza en la semántica del grado y §3 en sus propiedades sintácticas básicas. §4 se dedica a introducir la noción de escala, que argumentaremos debe verse como equivalente a la Aktionsart de los verbos. §5 analiza el grado positivo, y explica cómo difiere de una escala en sintaxis y semántica. §6-§8 presentan los grados comparativo y superlativo, primero sus propiedades morfológicas (§6), después las propiedades específicas del comparativo (§7) y finalmente las del superlativo (§8). §9 cierra el trabajo con algunas conclusiones.

Palabras clave. grado, adjetivos, positivo, comparativo, superlativo, escala

1. Introduction: the basics of degree

The linguistic notion of degree refers to the grammatical manifestation of measurement applied to properties. Degrees are the different extents in which a particular property, such as beauty or kindness, is possessed by an individual (Klein 1991). Prototypical syntactic expressions of degrees are those in (1), in Spanish.

(1)   a. Juan es <u>muy</u> alto.
             Juan is very tall
         b. Luis es <u>un poco</u> alto.
             Luis is a bit tall

Intuitively, the adverbs underlined in (1) measure the extent to which the subject possesses a particular property, tallness. The idea is that the value of the property of tallness is high in Juan, and lower in Luis. Implicitly, then, the notion of degree always involves some comparison: when we talk about the extent of a property in an individual, we are always comparing that extent to the other extents of the property, assuming that

the propery can be manifested in different values. This is what makes a property gradable: that it can be conceived as possessed by individuals to different extents, or that it has different possible values. Tallness is a gradable property because it denotes a dimension that we can conceive with different values. In this particular case, in our culture the values of the dimension can be expressed numerically (*1 meter; 1 meter and 1 centimeter; 1 meter, 1 centimeter and 1 milimeter*, etc.). If a predicate is gradable, it typically allows different values that can be ordered inside a sequence, where some values are higher than other values. These sequences of ordered values within the same property are referred to as 'scales'.

Then, as a first approximation, degrees are different values inside a scale that expresses one and the same dimension. When we talk about degrees we measure the values that specific individuals exhibit within that particular dimension, at the very least comparing the actual value that they exhibit with other possible values within the same scale.

In (1), the degree adverbs *muy* and *un poco* are picking up sets of values from the scales that the gradable adjectives provide, and relate the subjects *Juan* and *Luis* with those sets of values. Simply put, within the same scale of values of tallness, it is said that Juan possesses tallness to a high extent, and Luis possesses it to a low extent, presupposing some standard value of tallness that the speaker deduces by some means.

This seems pretty straightforward. However, as almost any other linguistic phenomenon, this characterisation is simplistic and hardwired with points of conflict and discussion. Let us highlight some of these problems, which will constitute recurrent topics that we will visit and revisit across this article.

1.1. Some relevant issues in the syntax and semantics of degree

Intuitively, talking about degrees implies talking about comparison, even beyond the so-called 'comparative construction' that will be mentioning later. In our example (1), precisely because 'tallness' can be conceived in different values, it does not make sense to state that someone has tallness to a high degree unless we implicitly compare the specific value of tallness with some kind of standard value that we presuppose. We cannot simply say that 1.89 meters is a high value of tallness: it might count as very tall if we think of the typical value of tallness for children, but it will probably not count as very tall if we have basketball players in mind, and it definitely does not count as very tall if we have in mind buildings. We are therefore necessarily comparing even in this case one value of tallness with other possible values of tallness. This fact raises several questions that have been extensively discussed in the literature, and that we will review in the following sections (Bartsch & Vennemann 1972, Kamp 1975, Cresswell 1976, van Benthem 1982, Hoeplelman 1983, von Stechow 1984, Bierwisch 1989, Klein 1991, to cite only some of the classical references; see Schwarzschild 2008 for a recent overview).

First of all, if measuring degrees involves comparison, we have to ask ourselves why only some predicates –taken in the semantic sense, that is, as linguistic objects that define properties of arguments– allow the measuring of degrees. Kamp (1975) is generally cited as the first author that observed that typically adjectives are vague predicates, while nouns are sharp predicates precisely because the first ones allow degree modification. Typical adjectives such as *tall* or *angry* denote properties that cannot be directly predicated from their subjects: because they can be possessed to different extents, out of context no object is tall or angry, unless one first defines what is the minimal extent that in that context counts as 'tall enough' or 'angry enough'. In contrast, typical nouns such as *dog* or *table* express sets of properties without

conceivable associated values, in such a way that even out of context and without comparing the individual to other individuals we can determine if we can truthfully predicate from them that they are 'dogs' or 'tables'. Vagueness, then, is intertwined with the notion of degree. It turns out that an excellent question that we could ask ourselves is why adjectives are typically vague, why nouns are typically sharp, and exactly how vagueness is represented in syntax and semantics. We will say a bit about this in §2.

Second, if a gradable predicate has a set of values which we call 'degrees', this means that degree is an order-inducing property, one that in principle allows us to organise in different classes the entitities of the world according to the particular value that they possess of the same property. This brings up the issue of how degree should be interpreted in semantics, whether degrees should be equated to numerical values within a scale, or to some other type of object. Again, §2 will briefly discuss this problem.

Third, if the set of ordered values is only present in some predicates, this brings up the issue of why and how some predicates are gradable but others are not. What makes a predicate gradable? How is this 'having possible values' linguistically codified in syntax and semantics? Is it for instance enough to say that the predicate must contain a scale? If we take combination with *muy* as a sign that the predicate is gradable –because that adverb is picking up some values within the set provided by a scale–, it becomes immediately obvious that not all adjectives –in the traditional sense– are gradable. Relational adjectives (Bosque 1993) and adverbial adjectives of the non-intersective type (Partee 2010; see Fábregas 2017 for an overview) do not allow this modification.

(2)   a. Esta mesa es (*muy) metálica.
         this table is very metalic
       b. Juan es el (*muy) anterior presidente.
         Juan is the very previous president

It is unclear that all qualifying adjectives allow degree modification, also. There is a sense in which (3a) is unremarkable, but (3b) –although interpretable– requires some further mental gimnastics to assign a proper interpretation to *muy*.

(3)   a. Juan es muy peludo.
         Juan is very hairy
       b. Juan está muy desnudo.
         Juan is very naked

This contrast has been related to the notion of scale, proposing that perhaps one should differentiate linguistically between different types of scale depending on how many values are ordered, and whether it is possible to conceive that there is a maximal or a minimal value of that dimension. §4 will discuss these facts.

Beyond this, it is not clear that all nouns reject degree modification (4).

(4)   Hoy me siento muy mujer.
       today me feel.1sg very woman
       'Today I feel a lot like a woman'

Has the noun corresponding to 'woman' become an adjective in (4)? Note that it would not carry number agreement in (5), which suggests that it should still be viewed as a noun. How is it gradable, then? Or is this not degree?

(5)   Hoy todas nos sentimos muy mujer(??-es).
        today all us feel very woman-pl
        'Today we all feel a lot like a woman'

Some verbs allow degree modification, as (6), where the adverb *mucho* 'a lot' expresses the particular extent to which the speaker loves the addressee (Bosque & Masullo 1998). Some prepositional phrases also allow it, sometimes even when they introduce subordinate clauses (7).

(6)   Te quiero mucho.
        you love.1sg a lot
        'I love you a lot'
(7)   a. Todo está muy en orden.
           all is very in order
        'Everything is very organised'
        b. Soy muy de levantarme tarde.
           am very of waking.up-SE late
        'I have a big tendency to wake up late'

These produce a syntactic and a semantic question: syntactically, what type of structure introduces degree, so that typically adjectives but also some instances of other categories are combinable with it? Semantically, what decides if an expression contains a degree? §3 will discuss the first question, and §4 will discuss the second one.

Fourth, if gradable adjectives denote sets of ordered values –scales– where some values will be enough and some other values will not be enough to predicate the property from the object, these two different sets of values might have different properties. Informally, within a scale of tallness the values that are not enough to say that an entity is 'tall' will be values within the same dimension to say that the entity is 'short'. It seems, then, that *tall* and *short* form a polar opposition within the same dimension –the same scale of values–. The adjective *short* would then seem to be negatively oriented towards the low values, and then the question is whether the negative or positive orientation within a polar opposition has grammatical consequences. It seems that this is in fact the case, as we will discuss in §4.

Beyond these four problems, there are others that directly connect with the traditional description of degree in descriptive grammars. It is generally said that (some) adjectives inflect for degree –a good question in itself being whether degree counts really as inflection within a paradigm or should be viewed as some other type of operation; see §6 for these issues–. Within this description, three values are generally singled out: positive (8a), comparative (8b) and superlative, which at least includes two forms with very different properties (8c-d).

(8)   a. alto
           tall
        b. más alto
           more tall
        'taller'
        c. el más alto
           the most tall
        'the tallest'
        d. altísimo

tall-splt
'extremely tall'

Several remarks are in order already with respect to the terminology. The 'comparative' is traditionally (8b), suggesting that the operation of comparing two values of the same scale is restricted to the grammatical form in (8b). We have seen that even in the positive degree, comparisons are implicitly assumed –there is no way to call Juan tall unless we are comparing his value of tallness with the standard one within the context, in senses that we will be more precise about in §5–. This standard value can for instance be expressed with a prepositional phrase, as in (9), where the underlined constituent says that the standard value of tallness that we take into account here is the one that we typically assign to midgets. In a sense that we will explain in §7, in the comparative the 'standard' value is provided by the second member of the comparison.

(9)   Juan es alto <u>para (ser) un enano</u>.
        Juan is tall to (be) a midget
        'Juan is tall for a midget'

Superlatives obviously also involve comparisons, most clearly in (8c), where one cannot conclude that an individual is the one that stands out in terms of tallness within a group of people unless one has compared that value of tallness with the ones of all the other members in the group. Thus, at least in this sense 'comparative' for (8b) is misleading.

A second issue related to this classification is how the semantics of the positive degree –and its syntax– differ from the plain form of the adjective itself. In which sense is 'tall', as a predicate that introduces a set of degrees, different from 'tall' as an adjective in positive degree, predicated from Juan? How does a language go from a scale denotation to the denotation of 'tall enough for the standard value'? §5 will discuss these issues, which are much more complex than they might seem at first sight.

A third issue refers to the traditional 'comparative' itself. Comparatives are of course not restricted to degrees (10), but in this article we will restrict ourselves to degree comparatives. The comparative degree form of the adjective introduces additional syntactic elements, most significantly the so-called comparative coda –underlined in (11)– which is introduced by different invariable elements whose syntactic status is unclear.

(10)   Juan tiene más libros que películas.
        Juan has more books than movies
(11)   a. Juan es más alto <u>que Pedro</u>.
           Juan is more tall than Pedro
        b. Juan es más alto <u>de lo que es Pedro</u>.
           Juan is more tall of that what is Pedro
        c. Juan es tan alto <u>como Pedro</u>.
           Juan is as tall as Pedro

(11a) and (11b) are traditionally 'comparatives of difference' ('comparativas de desigualdad'), stating that there are different values of the relevant property exhibited by each one of the individuals. Note that between these two comparatives the codas are introduced by different elements, and equally different is –at least on the surface– the

structure of each coda, with a clear clausal structure in (11b). (11c) is a 'comparative of identity' ('comparativa de igualdad'), sometimes also known as 'equative', which uses yet another comparative coda.

There are many syntactic and semantic aspects that are noteworthy with these constructions. We will dedicate §7 to these, but here we will advance a few properties. Note, for starters, that one would want to explain why some codas appear introduced by *de*, others by *que* and others by *como*. Also, if (11a) compares two degrees –the degree of tallness of Juan and the degree of tallness of Pedro– a relevant question is which element within the comparative coda expresses the degree of tallness of Pedro: there is no degree adverbial there, but we interpret it. Third, comparatives of difference seem able to license elements that otherwise require negation to be licensed, such as *ninguno* 'none' in (12) (just like superlatives, cf. 12c; thanks to Ulises Delgado for the reminder).

(12)   a. Juan es más alto que ninguno.
            Juan is more tall than none
        b. *Juan es tan alto como ninguno.
             Juan is as tall as none
        c. la galaxia más grande nunca vista
            the galaxy most big   never seen
        'the biggest galaxy ever seen'

Fourth, comparatives of difference license additional syntactic constituents that equatives do not license, such as the differential phrase, which it typically a quantified NP that measures the precise difference between the two values compared.

(13)   Juan es <u>dos centímetros</u> más alto que Pedro.
        Juan is two centimeters more tall than Pedro

All these issues, and several more, will be discussed in §7.

As for superlatives, the first obvious complication is how the one in (8c) differs from the one in (8d). For one, the former licenses a PP that denotes the group of comparison, while the latter does not; the use of the definite article is virtually compulsory in (14a), and impossible in (14b).

(14)   a. Juan es el más alto <u>de la clase</u>.
            Juan is the most tall of the class
        b. Juan es (*el) altísimo (*de la clase).
            Juan is the tall-splt of the class

The semantics of the superlative, and the structural relation between superlatives and comparatives is one of the most discussed topics in the literature about degree; we will provide the main avenues that have been explored in this respect in §8.

Finally, another typical problem that is discussed in the context of degree is how the notions of degree and comparison are grammaticalised outside from the obvious candidates, which are the degree values of adjectives and the degree adverbs that appear with them. First of all, note that some adjectives in themselves seem to grammaticalise a notion of comparison even without the help of degree modifiers, raising the question of how they relate to comparative structures. Note that these adjectives arguably introduce an element equivalent to the comparative coda.

(15)   a. Juan es diferente de Pedro.
           Juan is different from Pedro
       b. Juan es igual a Pedro.
           Juan is identical to Pedro

In the adverbial domain, there are reasons to believe that the adverbs *antes* 'before' and *después* 'after' are comparative. Note that their semantics is order-inducing, across a temporal axis –they express different temporal intervals that are located with respect to another temporal interval, preceding or following them in time–. Also, they reject comparative adverbials (16), perhaps because they express already a notion of comparison lexically.

(16)   a. *más antes
              more before
       b. *más después
              more after

Comparative adjectives reject the modifier *muy* 'very' and accept *mucho* 'much' to express the differential value (17). Similarly these adverbs reject the first and accept the second (18).

(17)   a. *muy más alto
              very more tall
       b. mucho más alto
              much more tall
       'much taller'
(18)   a. {mucho / *muy} antes
              much   very before
       b. {mucho / *muy} después
              much   very   after

They are different from each other, however, in that only *antes* has the property of licensing negative polarity items like *ninguno* 'none'.

(19)   a. antes que ninguno
              before that none
       'before anyone'
       b. *después que ninguno
               after that none

The notion of comparison in degree can also be grammaticalised with verbs, such as *superar* 'be more than', or with nouns such as *exceso* 'excess'.

(20)   a. Juan supera a Pedro en altura.
              Juan is.more than Pedro in height
       b. Juan tiene un exceso de bondad.
              Juan has an excess of goodness
       'Juan is too good'

Although we will not discuss this last issue systematically, we will refer to it in §2, §3, §6 and §7, where we will particularly emphasise the case of the adverbs that order objects in a temporal sequence.

We are almost ready to get into the details of how degree works in Spanish, but before we do that there is a more general issue that we need to clarify: whether quantity and degree can be interpreted as essentially the same notion or not. The next subsection is dedicated to that issue.

1.2. Degree and quantity: one or two notions?

Degree is the grammaticalisation of measurement applied to properties, an operation that is expressed as picking some set of values of that property from a scale. If degree reduces to 'measurement of properties', it is relevant to ask ourselves the question of whether degree and quantity should be reduced to one single linguistic object. After all, the notion of quantity is also a manifestation of the act of measuring, only that applied to masses of objects of collectivities of individuals. Perhaps 'quantity' and 'degree' are just two different traditional terms that ultimately refer to the same basic unit of language, some type of device that picks different measures of something.

Intuitively, we could think in fact that when we say (21) we are measuring the degree of beauty of María, more or less meaning the same as (22).

(21)   María tiene mucha belleza.
       María has much beauty
(22)   María es muy bella.
       María is very beautiful

Note that in (21) we are using an element that, in combination with nouns, is generally described as a quantifier. In fact, in singular, it combines with mass nouns as in (23), and *belleza* is itself a mass noun, so the equivalence seems perfect.

(23)   María tiene mucho dinero.
       María has much money

In fact, it is a well-known fact in the literature on diachronic morphology that *muy* and *mucho* share the same etymological origin, MULTU (Penny 1993: 69). The difference simply depends on whether the last vowel was kept and lowered to -*o*, triggering palatalisation of the group LT (24a), or it disappeared, triggering vocalisation of L before T (24b).

(24)   a. MULTU > mucho
       b. MULT > muyt > muy

Let us consider how many options we have to describe the relation between degree and quantity. The first one would be to say that they are essentially the same linguistic object, an operator –see §2 for why degree modifiers are operators– that ranges both over quantities and degrees. When the operator combines with an object that denotes a property, we have called this 'degree', and when it combines with an object that denotes a substance or a group of entities, we have called it 'quantity'.

In favour of this approach we have several surface facts. Beyond the historical relation between *muy* and *mucho*, most degree modifiers are also used to express quantities.

(25)   a. poco alto
        little tall
    b. poco aceite
        not-much oil

(26)   a. bastante alto
        quite-a-lot tall
    b. bastante aceite
        quite-a-lot oil

(27)   a. suficientemente alto
        enough tall
    b. suficiente aceite
        enough oil

(28)   a. demasiado alto
        too tall
    b. demasiado aceite

(29)   a. nada alto
        not tall
    b. nada de aceite
        nothing of oil

(30)   a. un poco alto
        a bit tall
    b. un poco de aceite
        a bit of oil

(31)   a. qué alto
        so tall
    b. qué de aceite
        so-much of oil

(32)   a. tan alto
        so tall
    b. tanto aceite
        so-much oil

(33)   a. más alto
        more tall
    b. más aceite
        more oil

(34)   a. menos alto
        less tall
    b. menos aceite
        less oil

With sometimes small differences, such as the additional morpheme to mark (27a) as an adverb in contrast to the agreeing form in (27b), or a partitive preposition in (30b) or (31b), it seems that the same operators can be used for both quantities and degrees. This would suggest that we have only one set of linguistic objects, measuring operators, that can range over degrees or quantities, depending on what the modified constituent provides them with.

This would essentially mean that degree and quantity are one and the same notion, presumably 'extension', whose measure is provided by a defined set of operators.

Traditionally, we call those extensions 'quantities' when talking about 'nominal' notions, and 'degrees' when they are denoted by qualities expressed by adjectives.

However, this proposal has several problems. First of all, it is not true that all operators will range both over quantities and degrees. In the interrogative domain, there are several exceptions not etymologically related to each other, that differentiate between degrees and quantities.

(35)   a. ¿Cómo de alto?
            how of tall
        'How tall?'
        b. *¿Cuánto alto?
            how tall
(36)   a. ¿Cuánto aceite?
            how-much oil
        b. *¿Cómo de aceite?
            how of oil

Even though *cuán* –etymologically related to *cuánto*– is still used in some areas of America, for many speakers it is not possible to use it in combination with adjectives. No variety to the best of our knowledge accepts *cómo de* for quantities.

If degree and quantity were the same notion, we would not explain why some operators are specifically designed for degrees or for quantities. Conversely, however, if degree and quantity are different notions, the cases where (virtually) the same operator applies to both can be easily accommodated. These operators could range over two objects –their selection is underspecified– and the minimal differences in shape identified in several of the pairs above could be a sign that additional grammatical structure has to be built for an operator of quantities or degrees to be adapted to contexts where the variable is of the opposite type.

Bosque (2017), in fact, advocates for the view that degree and quantity should be kept separate. Intuitively, *muy tranquilo* 'very quiet' does not express a big quantity of quietness, and *mucha arena* 'much sand' does not express a big degree of sand. In fact, saying that quantities are degrees would imply that all nouns and all groups measure their quantity as a scale, with a set of ordered values. If one could perhaps say that the set of ordered values in a noun like 'water' is measured in liters or pints, it is unclear what that set of ordered values would be in a mass noun such as *víveres* 'food' or *ropa* 'clothes'. It is equally difficult to imagine what type of scale one would have in a group denoting expression such as *chicos* 'boys'. At the very least, the notion of comparison that is crucial in the semantics of a scale would not be present in these nouns, plural or singular mass substances.

I believe that an empirical argument can be construed that equally advocates for treating the notions of degree and quantity as separate entities in syntax and semantics. Consider the following sentence.

(37)   Hoy hace más calor.
        today there.is more heat

This sentence has two distinct readings. In the first reading, one says that today –as compared with another day, perhaps yesterday– the value of heat is higher. Maybe yesterday the temperature was 37º Celsius and today it is 39º. This would clearly be a

degree reading, where one compares two temporal intervals according to where they are located in a scale of heat.

The second reading –although less salient– is appropriate to a different situation, where the temperature might be the same (37º) or even lower (36º). In this reading, the speaker states that, in the same way that yesterday there was a lot of heat, today there is also a lot of heat.

The first reading is clearly degree, and the second reading measures the quantity. These two readings are distinct even though the noun that is modified is the same in both cases. For this reason, one could not say that the base provides a scale in the first case and no scale in the second reading: the two readings of the operator cannot be differentiated by what the noun provides as a base to measure the extension.

One could still say that maybe the two readings are simply operating over two different aspects of the lexical meaning of the noun, without any further difference in the nature of the operator. Assuming a theory like Pustejovsky's (1995), where nouns carry with them different parameters of meaning, one could say that the degree reading emerges when the operator picks the formal properties of the object –its temperature, in this case– and the quantity reading happens when the same operator picks the constitutive parts of the object. However, even if this was correct, degree and quantity would have to be differentiated in the structure as two different components, with distinct properties. The reason is that only the degree reading allows a coda. (38) only has the degree reading, and is not truthfull in a context where there is more quantity of heat if the temperature is lower.

(38)   Hoy hace más calor que ayer.
        today there.is more heat than yesterday
        'Today it is warmer than yesterday'

Another empirical argument to keep the two notions –degree and quantity– as distinct is provided by (39).

(39)   un poco de extrema vergüenza
        a bit of extreme shame

Note that in (39) we have two components that act as measurers: *un poco de* 'a bit of' and *extrema* 'extreme'. If degree and quantity were the same, both measurers would be operating over the same notion, providing contradictory measures of it. In fact, it is well known that two operators cannot pick the same variable (Vacuous Quantification, Partee, ter Meulen & Wall 1990).

(40)   *muchos pocos niños
         many few boys

Although less natural for some speakers, (41) is also grammatical.

(41)   Mostró un poco de demasiada vergüenza.
        showed.3sg a bit of too-much shame
        'He showed a bit of an extreme shame'

The operator that is closer to the noun, *demasiada*, is measuring the degree of shame –the shame was too high, in a scale, as compared with other states of shame–. The

second operator measures the quantity of the extreme shame that was shown. Clearly, that such structures with two operators are grammatical constitutes a solid argument that degree and quantity have to be represented as two separate units in language, because otherwise it would not make sense to say that the same notion is at the same time small and too big.

(39) and (41) also are informative about the relative syntactic ordering of quantity and degree when both co-ocurr in the same syntactic structure: quantity seems to be higher than degree. We will revisit this issue in §3, and now we will move to a discussion of the semantics of degree.

2. The semantics of degree: main theories

Before we get into the controversial details, let us provide a general characterisation of what degree and degree modifiers are in semantics. Let us go to a basic example with an adjective in the positive degree.

(42)   Juan es alto.
        Juan is tall

As we informally said, this means that the degree of tallness that Juan possesses is at least as high as a standard degree that, within the context, counts as the minimum to be considered tall. Let us now be a bit more precise: we will say from now on, following Kennedy (1999) and many others, that the *maximal* degree possessed by Juan is at least as high as the standard degree of tallness in the context. The reason is simple: if Juan reaches 1,82 meters, he also reaches 1,81 and any other lower degree starting from zero, because those degrees are logically entailed by saying that he reaches 1,82 meters. What is relevant for us, then, is the maximal degree.

Here we have three components, which become apparent if we translate (42) to a logical semantic formula:

(43) $\max\{d: tall(Juan,d)\} \geq d_{standard}$

Read in prose, we say that the maximal (max) degree (d) of tallness that Juan has is equal or higher ($\geq$) than the standard degree.

Even though it is not represented with a separate morphological unit, in this formula it becames apparent that we have an operator that binds a variable, assigning it a value: the positive degree is assigning a particular value to the degree variable, essentially saying what the specific degree of tallness of Juan is.

The variable related to this operator is an open degree argument that the gradable predicate 'tall' carries with it, by hypothesis (Cresswell 1976, von Stechow 1984, Heim 1985). Degrees, then, are primitives in the semantic ontology (type <d>), together with individuals (<e>), propositions (<t>) and other possible primitives.

As in the case of any operator, the operator combines with a restrictor, which reduces the range of objects of type <d> that can be picked to only those satisfying some additional description. In the case of (43), the degrees that can be picked are only those equal or higher than the standard degree value.

Kennedy & McNally (2005: 367) propose the following general denotation for a degree operator.

(44) $[[Deg]] = \lambda G \lambda x. \exists d[R(d) \& G(d)(x)]$

Essentially, this means that any degree operator existentially quantifies the degree variable (d) provided by the gradable predicate (here represented as G). This predicate G has at least two arguments: an individual (x) and the degree variable itself (d), which have to be satisfied for the predicate to be complete. Finally, the degree that is existentially bounded –informally, picked in the denotation of the operator– is restricted to those satisfying a particular description (R). To be explicit and help the reader navigate this complex semantic description, (45) shows how the elements in (44) correspond to those in (43):

(45)   a. d = max d
   b. G = tall (after lambda satisfaction)
   c. x = Juan (after lambda satisfaction)
   d. $R = \geq d_{standard}$

As a result, (42) is only true is Juan's tallness is possessed to a specific degree that satisfies the restrictor, that is, that is equal or higher to the standard degree value, because the positive degree operator can only pick degree values that are equal or higher to that standard value.

Different degree operators carry with them different restrictors, essentially delimiting the subset of degrees that they can pick –and accordingly the sentences will be true only if any of the degrees of the subset are actually possessed by the individual–. For instance, the comparative degree operator in principle restricts the possible degrees picked to those equal, higher or lower than the (maximal) degree denoted in the comparative coda. The superiority comparative in (46) picks only those higher.

(46)   Juan es más alto que Luis.
   Juan is more tall than Luis

(47) $[[más\ alto\ que\ Luis]] = max\{d: tall(Juan,d)\} > max\{d: tall(Luis,d)\}$
   a. G = tall
   b. x = Juan
   c. $R = > max\{d: tall\ (Luis, d)\}$

The lessons to take home are, then, that (i) degrees are primitives in the semantic ontology; (ii) measuring properties is assigning a value to an open degree variable introduced by those predicates, subject to the scales that they denote; (iii) this measurement is performed by operators and (iv) those operators differ in their meaning by the type of restriction that they place on the degrees that they can pick (higher or equal than the standard, higher than the maximal degree of the same property that another individual possesses, identical to the maximal degree of the property possessed by another individual, etc.).

2.1. What does an adjective denote

From this perspective, then, the basic semantics of a gradable predicate –let us use gradable adjectives as prototypical representatives of this class– would be as represented in (48), which take the expression to be <d, <e,t>> (that is, an expression from degrees to predicates of an entity), in contrast with Kennedy's (1997) proposal, to be reviewed later.

(48) $[[tall]] = \lambda d\lambda x[height(x) \geq d]$

This involves the three main properties that we have mentioned above for gradable predicates. The gradable predicate has two open positions for arguments: a degree argument (d) and a subject of predication (x), which is the entity that exhibits or possesses a particular degree of a property. The subject argument will be satisfied, typically, by combination with a DP argument, while the degree argument is satisfied by existential binding when the adjective combines with a degree operator. Second, the gradable predicate defines the set of values that we call degrees within one conceptual dimension, which for the case of the adjective 'tall' is height. Third, as can be seen through the expression '$\geq$ d' (more or equal to a certain degree), the semantics of the gradable predicate has comparison between different values hardwired in its semantic denotation. In essence, this standard approach says that an adjective denotes a relation between a degree and an individual, intermediated by the specific property whose degree value the individual possesses.

In fact, within this standard theory of the meaning of gradable predicates – specifically adjectives– they cannot be used to denote properties of individuals until the degree open position has been bound by an operator. This essentially means –looking now slightly into the syntax of the construction (§3)– that whichever head is responsible for introducing the degree operator must combine with the gradable adjective before the head that introduces the subject. Assuming (with Baker 2002) that adjectives get their subjects by combination with a Pred(ication)P, then this property suggests a syntax as follows.

(49)

```
              PredP
             /     \
          DP        Pred
         Marta      /   \
                 Pred    DegP
                        /    \
                      Deg     AP
                      Op[pos]  /\
                              guapa
```
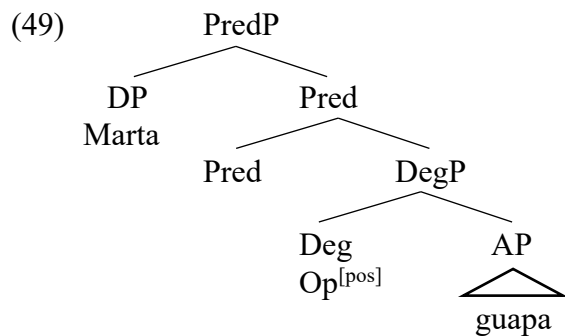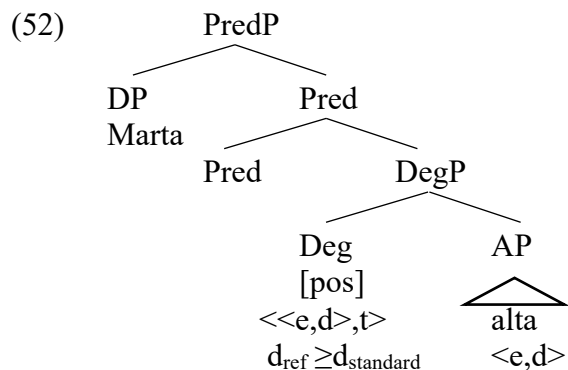
The same would go for other gradable predicates, beyond adjectives. Assuming that (50) has a degree reading, as mentioned above, the (partially satisfied) predicate 'love Mary' would have the denotation in (51).

(50)   Juan quiere mucho a María.
         Juan loves a.lot DOM María
         'Juan loves María a lot'

(51)   [[love María]] = $\lambda d\lambda x[\text{love.María}(x) \geq d]$

Even though this is the standard semantic analysis of a gradable predicate, it is by no means the only option. Kennedy (1997, 1999), building on Bartsch & Vennemann (1972) and Krifka (1989) would argue that an adjective like 'tall' does not express the relation between the entity that is tall and the degree of tallnees, but rather would denote the degree or extent to which the entity is tall –that is, the adjective itself produces a degree value–. From this perspective, adjectives would be measure functions, that is, a function from individuals to measures of degree. Assuming a primitive <d>, then

adjectives would be of semantic type $\langle e,d \rangle$, taking individuals (our 'x' in the formulas above) and returning degrees. Consequently, degree modifiers would not be quantifiers in the standard sense, binding the degree variable within the adjective, but rather functions that take adjectives and return truth values by relating the degree expressed by the adjective (reference degree, or d_{ref}) to the standard value ($d_{standard}$).

(52)

$$
\begin{array}{c}
\text{PredP} \\
\diagdown \\
\text{DP} \qquad \text{Pred} \\
\text{Marta} \\
\text{Pred} \qquad \text{DegP} \\
\text{Deg} \qquad \text{AP} \\
\text{[pos]} \qquad \text{alta} \\
\langle\langle e,d\rangle,t\rangle \qquad \langle e,d\rangle \\
d_{ref} \geq d_{standard}
\end{array}
$$

The denotation of the adjective itself gives us a measure, and we evaluate that measure with respect to some standard, but the degree modifier's role is just to determine whether the relation with that standard is truthfull or not. Note, however, that the formula in (52) will not satisfy the entity of type $\langle e \rangle$ until the last step of the derivation. We will revisit these two views of adjectives and degree modifiers several times in this overview, and particularly in §2.4, §5 and §7.

2.2. Vagueness

In either of the two approaches to gradable predicates –as relations between degrees and individuals or as formulas that define the measure of a property for an individual– the notion of comparison is hardwired within the semantics of the gradable adjective, essentially indicating that the predicate, alone, will not be truthfully or falsely applied to an individual until the standard value has been defined. This is so because in the two approaches the gradable predicate has a scale underlying its semantics. The notion of vagueness directly derives from here (Wheeler 1972, Kamp 1975, Klein 1982, Bierwisch 1989, Ludlow 1989, Pinkal 1990).

Vagueness, to put it simply, is the property of some predicates whereby they do not always return a truth value when predicated from an individual. For the purposes of this overview, vagueness is a characteristic property of gradable predicates, even if things are a bit more complex than this. In order to illustrate it, let us compare the denotation of two adjectives, one gradable and one non gradable.

(53) a. Francisco es argentino.
         Francisco is Argentinean
      b. Francisco es gordo.
         Francisco is fat

(53a) contains a non gradable adjective, a relational adjective. This predicate is not vague, meaning that predicating it from Francisco will always return a truth value: if Francisco has an Argentinean passport, (53a) is true; otherwise, it is wrong. No individual in the world would not give us a truth value when combined with this predicate.

(53b) contains a gradable predicate, one that is vague. In practice, this means that depending on the context and the invididual, (53b) will not always return a truth value. Unless we define the standard degree of fatness that is relevant in the context we will not know if Francisco is fat or not. If we set the standard value of fatness for supermodels, it will probably be true that Francisco is fat; if we set it for sumo wrestlers, it will probably be false that Francisco is fat. Put differently, for the non gradable predicate we will have this:

(54)   [[Francisco Argentinean]] = 1 iff Francisco is from Argentina; 0 otherwise.

(55)   [[Francisco fat]] =   1 iff the maximal degree of fatness of Francisco is equal or higher to the standard degree of fatness
0 iff the maximal degree of fatness of Francisco is lower than the standard degree of fatness
Undefined if the standard degree of fatness is not specified

Vagueness can be identified through several properties (Kennedy 2007). A vague predicate, as we see, will have different truth values depending on the context. In essence, whether John loves Mary a lot, enough or too much is true or not depending on what we decide within the context is a reasonable degree of loving; John might love Mary enough to marry her but not enough to have children with her. Similarly, John will be cruel or not depending on what we consider within the context a reasonable amount of cruelty, which will obviously be different if we are talking about a battle in World War II or a normal day in a kindergarden. This property is a direct reflection of the proposal that, whenever you are gradable, you are comparing some measure of the predicate to a standard measure that needs to be specified somehow.

Second, vague predicates tend to give rise to borderline cases where it is difficult to evaluate whether the predicate applies or not to the entity, even with a reasonable standard value set. If we are customs officers that need to determine whether Francisco is Argentinean or not, our job will be easy: we will probably never have to discuss whether the person counts as Argentinean or not. However, if as customs officers we have to determine whether a substance is liquid, we will quickly risk running into disagreements: does a soft cheese count as liquid enough in the context? A marmelade? The reason, obviously, is that the vague predicate 'dense' underlies our definition of liquid, and things are not just dense or not, but denser or not than specific standards that sometimes are not clear enough.

Third, vague predicates give rise to the so-called Sorites Paradox –also known as the slippery slope paradox–. This paradox essentially takes a predicate, defines an entity as truthfully having that predicate, and proposes that a minimally smaller extent of the same property also counts as enough to satisfy the predicate. By iterating these minimally smaller differences, one arrives to an intuitively wrong result, without it being clear at which point all those minimal differences added up to a difference that was too much. Consider this:

(56)   a. Any adult that weighs only one milligram more than a thin adult is thin.
b. (and 1 more, and 1 more, and 1 more...)
c. Any adult that weighs 145 kilos more than a thin adult is thin.

We probably agree in (56a); we most probably disagree in (56c). If an adult that weighs 45 kilos and 1 milligram is thin, probably one that weighs 45 kilos and 2 milligrams is also thin; and then 3 milligrams, and then 4, etc.; if we iterate this too much we arrive to 145 kilos. The reason for the paradox is that a vague predicate never contains in its definition a clear boundary between what counts as enough and what counts as not enough. Thus, a single minimal change in the extent of the property will never change our perception of whether the extent is enough or not, but incrementally all the minimal changes will give us too much, at some point. This 'at some point' is the crucial piece: the specific point is not defined within the predicate, because it is gradable.

Being vague ultimately means that the predicate has to fix a standard value in order to be used as what we normally understand as 'a predicate', that is, an expression that combined with its arguments gives us a truth value. There are two different approaches about how to represent vague predicates, then.

The first approach is to say that the predicate cannot be applied to the argument until the standard value has been set, and therefore the predicate has stopped being vague – because now we have a measure of what counts as enough–. If one adopts this view, one has to further determine at which level the standard value has been fixed, that is, whether the standard value becomes defined within the AP, by the degree operator or above. We will revisit this issue in §5, when discussing the semantics of positive degree expressions.

The second approach is to let the standard value be undefined and therefore let the predicate be vague at all levels, with the result that sometimes the predication would give us undefined truth values –therefore, one would have to admit that logic allows more than two values for truth values, unlike classical approaches to truth– (see for example Kamp & Partee 1995 on the semantics of *falso* 'fake' in combination with nouns, as in *una pistola falsa* 'a fake gun').

It seems to us that determining between these two approaches to vagueness depends more on wide-ranging assumptions about the codification of meaning in the human mind than on fine-grained testable predictions. Ultimately, the debate revolves around the question of whether humans accept expressions without truth value when building meaning, or having a truth value is always necessary to obtain propositional meanings. Because of this we will not discuss the two approaches in opposition. In this article we will assume the first approach, namely that being vague requires that the predicate satisfies a standard value before combining with the subject. This decision is not taken because of theoretical reasons or a particular stance about how humans compute meaning, but simply because this approach will allow us to discuss specific semantic and syntactic properties of the grammar of positive degree within the realm of linguistics. The decision is also more coherent with our choice to accept degrees as primitives in the semantic ontology –even if one could still have degrees in the approach that we do not adopt here–.

2.3. Degrees as numerical values or intervals

Quite informally, we have characterised degrees as different values that are ordered within a complex object called 'scale', and which we have assumed underlies the semantics of gradable predicates. However, we have not said anything about what these values are.

Klein (1991) presents three alternatives to how degrees should be considered in semantics –assuming, as we have done before, that degrees are primitive objects in the ontology.

The first approach is associated to Cresswell (1976): degrees are equivalence classes: namely, each degree of a property identifies with the set of entitites whose maximal degree of that property is the same. Comparison, then, could also be established between individuals carrying that property, not necessarily between the maximal degrees that each individual has. Consider the formula in (57).

(57)   ιd[P(d, x)] ~ ιd[P(d,y)]

With the sign ~ we intend to express any type of comparison between two degrees, for any property P and any two individuals x, y. What (57) states is that there is a unique value (ι) of a degree of a property P that the individuals x and y possess. That unique value would be the maximal value exhibited by those individuals. Now we apply this formula to a specific comparative like (58), obtaining (59).

(58)   Pedro es más guapo que Luis.
         Pedro is more handsome than Luis

(59)   ιd[handsomeness(d, Pedro)] > ιd[handsomeness(d,Luis)]

If each degree is the set of individuals that have a particular property up to that degree, then (59) could be (60), where we just have to tag the specific property compared as part of the comparison.

(60)   Pedro $>_{handsome}$ Luis

Thus we would not really need degrees for comparisons.

A second option is to imagine that degrees are numbers that can be added, substracted or simply concatenated (Hellan 1981, von Stechow 1984). In this view, each degree value could be identified with a number within a series. Obviously, some properties have values that are already codified in our cultures as numbers –weight, length, distance...–, so this has some intuitive appeal. In this view, each degree expression assigns a particular numerical value to a property, and comparison simply orders those numbers. Scales are inherent orderings of the values of a particular property. These values should at least be able to accept addition (61a, where we add 6 centimeters to the value), substraction (61b), multiplication (61c) and division (61d).

(61)   a. Juan es seis centímetros más alto que Pedro.
             Juan is six centimeters more tall than Pedro
         b. Juan es seis centímetros menos alto que Pedro.
             Juan is six centimeters less tall than Pedro
         c. Juan es el doble de alto que Pedro.
             Juan is the double of tall than Pedro
         'Juan is twice as tall as Pedro'
         d. Juan es la mitad de alto que Pedro.
             Juan is the half of tall than Pedro
         'Juan is half as tall as Pedro'

Note, however, that the view of degrees as specific numerical values loses its intuitive appeal once we move away from properties and dimensions which we normally compute numerically, such as sizes, speed, density and other numerical

values. If we are comparing properties such as kindness, cruelty, or candor we have no scales with numerical values, but we are still able to perform the operations in (61) – eg., 'Juan is twice as cruel as Pedro'–. Also, comparing two degrees does not always involve knowing the numerical value of each degree, as we can say that Juan is taller than Pedro without any precise idea of how many centimeters each one measures. What this means is that we should not take the numerical value in its literal form: what is required is that the values are added as the natural numbers are added in their sequence, that is, exhaustively (any value is ordered with respect to any other value) and transitively (if a value d is higher than d" and d' is higher than d, then d' is higher than d").

Note also that the numerical values within each scale should be comparable, even if one compares one scale with established numerical values to one without them.

(62)   a. Juan es más alto de lo que Pedro es cruel.
             Juan is more tall of that what Pedro is cruel
         'Juan is taller than Pedro is cruel'
         b. Juan es el doble de guapo de lo que Pedro es amable.
             Juan is the double of handsome of that what Pedro is kind
         'Juan is twice as handsome as Pedro is kind'

What is crucial for this approach, in any way, is that the degrees are ordered within the scale as natural numbers are ordered in sequence, preserving always the relative ordering between any two values, so that addition, substraction and multiplication / division are defined for each degree on the same scale. In this approach, what one compares is not individuals, but degrees exhibited by those individuals, so these degrees have to be strictly ordered with other elements within the same scale.

The third approach to degrees comes from Kamp (1975). Here degrees are delineations that define boundaries for the predicate: each different degree defines a different boundary between what counts as having the property and what counts as not having it, as we saw in §2.2 for the case of vague predicates. Once a specific degree is picked, all objects in the world can be partitioned between 'being P' and 'not being P'; as we saw, vague predicates are vague precisely because the boundary is undefined out of context. In this view, rather than comparing degrees one is comparing the different delineations of the predicate. If we say that Juan satisfies the value 's' (for standard) of a particular property, then by implication Juan satisfies any other value below that value s. If within the same property Pedro satisfies only a subset of those values, we will conclude that Pedro is less P than Juan, for that property P, because there is a particular value 's' that delineates Juan as P and Pedro as 'not P'. Thus, the following formula is true in this case:

(63)   ∃s[P(s, Juan) & ¬P(s, Pedro)]

Or in other words: there exists a boundary s that delineates the predicate as possessed by Juan to a sufficient extent, and as possessed by Pedro to an insufficient extent. Note that we do not need to order the degrees as numerical values in a sequence for this; existential quantification would be enough to capture comparison of difference, and universal quantification is enough to capture comparison of equality. (64) simply says that any boundary s of the property possessed by Juan is also possessed by Pedro, essentially saying that they have the same value of the property.

(64) $\forall s[P(s, \text{Juan}) \rightarrow P(s, \text{Pedro})]$

This delineation approach is currently not as extended as the one that treats degrees as numerical values, coming from von Stechow (1984). Von Stechow argues that the problem of the degree-as-delineation approach is that it does not straightforwardly capture the numerical computations in (61), where degree values are added, substracted, multiplied or divided. The formula in (63) does not have any place to express that the difference between the maximal value of P for Juan and for Pedro is, for instance, 6 centimeters. See Klein (1991: 684-685) for a discussion on how this theory could add this type of information. In any case, the degree-as-numerical-value approach is the most extended in current studies.

2.4. Scope ambiguities

If degree modifiers are operators –remember the discussion at the beginning of this section– we expect them to produce scope ambiguities when they interact with other operators. As a quick reminder of what a scope ambiguity with operators is, consider the sentence in (65), with two operators: the quantifier corresponding to 'two' and the negation.

(65)   No escribió dos poemas.
         not wrote.3sg two poems

In one reading (two > no), there are two specific poems that were promised and not written; in the other reading (no > two), one simply states that it is not true that he wrote two poems.

Do we have similar scope ambiguities with respect to degree modifiers? The answer is yes, even if they are not so easy to identify. Let's begin with the case where it has been identified an ambiguity, which involves the interaction of particular types of verbs with degree operators. The following example is sometimes cited as Russell's Paradox.

(66)   I thought that your yacht was bigger than it is.

The shape of this sentence is that an attitudinal verb, like *believe* or *think*, embeds a degree expression. This sentence has two interpretations: one, the most salient one, states that the actual size of the yacht is bigger than what the speaker previously thought. The second one is internally incoherent: the speaker entertains the contradictory thought that the size of the yacht is 'd' and at the same time higher than 'd'. The first reading has sometimes been described as a 'de re' reading where there is a specific degree scoping outside the attitude of the speaker, and the second reading has been described, by opposition, as 'de dicto'.

The standard way of treating this ambiguity until von Stechow (1984) was to play with the scope of the comparative degree morpheme (MORE) relative to the attitudinal predicate. Postal (1974) treats the coherent reading as involving raising of this operator above the attitudinal predicate:

(67)   MORE (x [I thought that your yacht is big to x], y[your yacht is big to y])

The incoherent reading would keep the operator within the scope of the attitudinal verb:

(68)   I thought that [MORE (x[your yacht is big to x], y[your yacht is big to y])]

Von Stechow (1984) notes that this analysis, essentially raising the operator above the attitudinal predicate, is adopted with technical differences by Bartsch & Venneman (1972), Cresswell (1976) or Williams (1977), among others. However, von Stechow (1984) shows that this analysis cannot be correct.

The main reason for this, as Heim (2000) explains, is that raising that operator is an island infraction from within a comparative clause, an operation that should not be possible because of structural reasons –see §6 later–. There is in fact an alternative way to analyse the ambiguity without moving the operator from its assumed base position. Let us see it.

The standard analysis of degree operators in comparative than-clauses –as we will see in §6– is one where a covert degree operator is moved as a wh-element to the initial position of the clause.

(69)   than the bed is long
        [wh$_i$ the bed is t$_i$ long]

The trace of the operator is a variable over degrees, and the whole sentence is the definite description of a degree, the maximal degree of longness that the bed has:

(70)   max {d: long(the bed, d)}

If MORE as an operator simply says that the maximal degree possessed by an individual exceeds the maximal degree possessed by another individual, a sentence like (71) would mean what (72) says, informally.

(71)   John is taller than the bed is long.
(72)   The maximal degree to which John is tall exceeds the maximal degree to which the bed is long.

If one accepts that within the semantic interpretation there are world parameters representing intensionally the beliefs held by the subject as opposed to those belonging to other subjects or the 'actual' world, this type of semantics gives the two readings without changing the scope of the degree operator.

The representation in (73) represents the 'de dicto' contradictory reading:

(73)   John thinks$_w$ λw'[[-er than wh it is t long$_{w'}$] the yacht is t long$_{w'}$]
        $\forall$w' $\in$ Acc(w): max{d: long$_{w'}$(y,d)} > max{d: long$_{w'}$(y,d)}

The same world (w') is binding the two degrees, basically saying that John believes simultaneously that the yacht is long to degree d and long to degree d, with one of the degree values being higher than the other.

In contrast, the 'de re' non-contradictory reading is represented by (74), where notice that the second degree is tagged as belonging to world w, outside of the beliefs of John, while the first is tagged as belonging to world w', corresponding to John's beliefs.

(74)   John thinks$_w$ λw'[[-er than wh it is t long$_w$] the yacht is t long$_{w'}$]
        $\forall$w' $\in$ Acc(w): max{d: long$_{w'}$(y,d)} > max{d: long$_w$(y,d)}

This basically reads as follows: in any world compatible with John's beliefs (w'), the maximal degree of length of the yacht is higher than the actual maximal degree of length that it has in the actual world (w).

Thus, if this intensional semantics is correct, the so-called Russell's paradox would not be an instance of operator movement with degree modifiers. Are there any such cases? Stateva (2000) argues that this is the case, when one moves away from attitudinal verbs and considers intensional verbs such as *necesitar* 'need'. Consider the following sentence:

(75)   El trabajo necesita ser exactamente 5 páginas más largo que eso.
        the essay needs to.be exactly 5 pages longer than that

There are two readings of this sentence, as Heim (2000) points out. Assume that the essay is now 10 pages. In one reading, the essay must be exactly 15 pages, and not longer than that: if you submit 16 pages, you are failed. In the second reading, the essay must be at least 15 pages, five more, but it could be longer. If you submit 16 pages, you are ok.

The first reading says that exactly 5 pages more are needed:

(76)   need [[exactly 5 pp -er than that] the essay be t long]
        $\forall w \in Acc(w): max\{d: long_w(e,d)\} = 15pp$

Here the quantified element is within the scope of the intensional verb. In the second reading, it scopes out of the intensional verb to say that there are exactly 5 pages more that are needed for the essay to be acceptable –with the possibility that more pages can. be added–.

(77)   [exactly 5 pp -er than that] [need [the essay be t long]]
        $max\{d: \forall w \in Acc(w): long_w(p,d)\} = 15pp$

Heim (2000) notes, however, that not all intensional verbs produce the same type of ambiguity, and that anyways intensional verbs sometimes act bizarrely with respect to scope, specifically allowing split scope. Split scope cases are instances where one and the same morphological object seems to become split in two, with one component having wide scope and another component having narrow scope. For instance:

(78)   No deposit is required.

(78) in its most salient reading means that 'it is not required to make any deposit', where the negative part of the determiner *no* seems to scope above the intensional verb, and an expression roughly corresponding to the indefinite *a deposit* is still within the scope of the verb. Heim, however, suggests that split scope should be treated as operator movement anyways, therefore supporting the view that (75) should be considered as an instance where the degree operator moves to trigger an ambiguity.

As we can see, it is not easy to find uncontroversial cases where degree operators show clear instances of quantifier raising, something that might support Kennedy's (1999) view that degree modifiers should not be treated as generalised quantifiers. The problem, again, is wider than what we can treat exhaustively in this state of the art.

2.5. Constituency problems

By semantic compositionality, the standard theory accepted since von Stechow (1984) has the consequence that the constituency of the elements involved in the degree construction is different than what some syntactic properties seem to require. In order to see this, let us consider the sentence in (79).

(79)   Juan es más A de lo que Juana es (A).
        Juan is more A of that what Juana is (A)
        'Juan is A-er than Juan is'

In the von Stechow-theory, as we saw above, the than-clause has essentially a semantic representation as (80), where P stands for whatever gradable predicate that can be combined with it.

(80) λd [P(d, Juana)]

This degree value should be maximised, to denote the maximal degree of the property P possessed by Juana.

(81) λd [max{d: P(d, Juana)}]

This value is unique, and therefore can be expressed –as any definite expression– by Russell's (1905) iota operator, which binds the degree variable. This gives us the now familiar expression in (82).

(82) ιd [max{d: P(d, Juana)}]

(79) is a comparative of superiority. In any comparative, the standard value used to compare the degree of the first member is the second member of the comparison, which is (81). Assume that the MORE operator simply states that the maximal value of the first member is higher than the maximal value of the second member. This gives us (83), where MORE is ordering the comparison value as lower than the first member.

(83)   > ιd [max{d: P(d, Juana)}]

Now we add the first member.

(84) ιd [max{d: P(d, Juan)}] > ιd [max{d: P(d, Juana)}]

Excluding the adjective, this suggests a constituency along the lines of (85), where the second member of the comparison is the complement to the comparative operator.
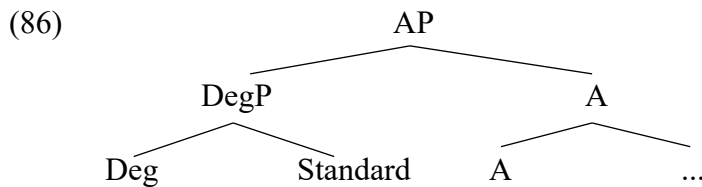
(85)   [más [{que / de lo que} Juana es]]

As we will immediately see in §3, this constituency has some syntactic advantages, but also quite a good number of problems, because several linguistic phenomena suggest that the complement to the degree operator should be the adjective, not the coda.

3. The syntax of degree: from specifiers to domains

In this section we will discuss the basic facts about degree in syntax. In short, there is a debate with respect to whether degree as a syntactic object takes the constituent expressing the standard of comparison as a complement or the adjective (AP) as such. In this section we will revise the main facts (§3.1-§3.3) and the history of the constituency relations proposed; we close the section with a discussion of the problem that too many categories combine with degree (§3.4).
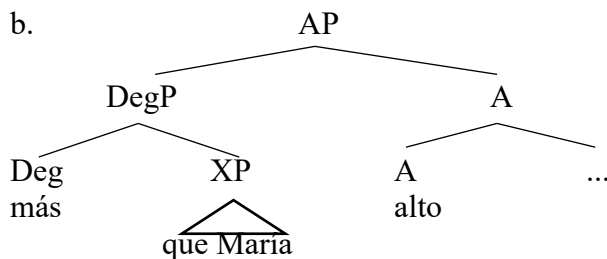
3.1. Specifiers and left-branch extraction

As we just saw in §2.5, the semantic analysis of how degree operators combine with the members introducing the standard of comparison that any gradable predicate requires suggests that they are in a head-complement relation. This would mean that the AP could not be treated as the complement of Degree (from now on, DegP). In fact, the first analyses of the structure (Chomsky 1965, Selkirk 1970, Bresnan 1973) the DegP is the specifier of the AP, an analysis that is still kept in several semantically oriented works, such as Heim (2000).

(86)

```
                      AP
              ┌───────┴───────┐
           DegP                A
        ┌────┴────┐         ┌───┴───┐
      Deg      Standard     A       ...
```

Illustrating this for comparatives of superiority, although we will see that positive degree adjectives would also have (arguably) a syntactically expressed standard (§5), we obtain (87).

(87)   a. Juan es más alto que María.
           Juan is more tall than María.

b.

```
                      AP
              ┌───────┴───────┐
           DegP                A
        ┌────┴────┐         ┌───┴───┐
      Deg        XP         A       ...
      más        ╱╲        alto
              que María
```

This analysis has several interesting points in favour. The first one is that it is more compatible with the semantic compositionality rule that comes from von Stechow (1984). The second one is that, syntactically, we know that the element used to introduce the comparative coda varies depending on the type of degree operator. In Spanish, comparisons of equality take one element and comparisons of difference take another element.

(88)   a. Juan es tan alto {como / *que} María.
           Juan is as tall   as   than María
        b. Juan es más alto {que / *como} María.
           Juan is more tall than   as   María

Also, when the standard of comparison can be expressed in positive degree, it is also introduced by a different element from any comparative degree operator.

(89) Juan es alto {para / #como / *que} un chico de tres años.
       Juan is tall   for   as   than a boy of three years
       'Juan is tall for a three year old boy'

The superlative introduces the comparison class with yet another element.

(90) Juan es el más alto {de / *para / *como / *que} todos los estudiantes.
       Juan is the most tall from for   as   than all the students
       'Juan is the tallest of all students'

These facts could be treated by the classical syntactic analysis as simple instances of complement selection: if the comparison element is the complement of the degree head, different degree heads select different types of complements.

At the same time, the analysis of DegP as the specifier of AP has obvious syntactic complications. Consider the case of adjectives whose morphological shape is affected by the type of degree they carry, such as irregular comparatives (91) in Spanish or cases where the degree operator is a suffix attached to the adjective, as in English (92).

(91) mejor, peor, mayor, menor
       better, worse, bigger, smaller
(92) tall-er, tall-est

Given the structure above, repeated here as (93), in order to combine the degree head and the adjective one has to assume movement from the head of an XP to the head of the specifier of XP, something that is totally not standard in syntax –in principle, this should be a movement operation that is not acceptable, in fact–.

(93) a.

b.
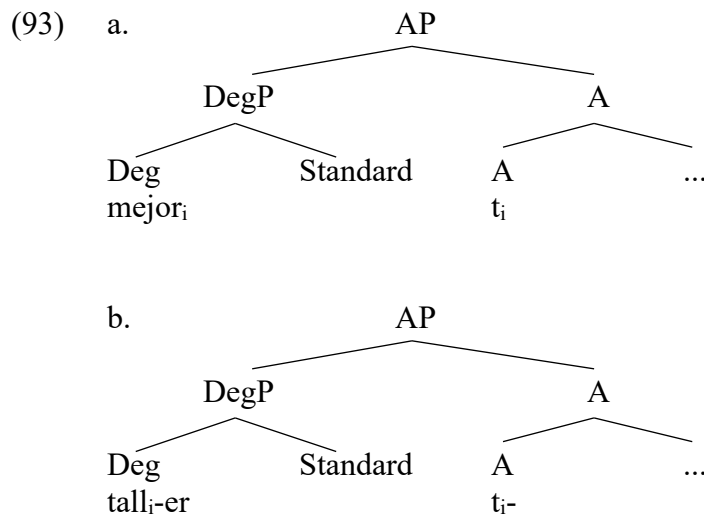
Second, despite the selectional restrictions between Deg and the comparison XP, the two elements do not seem to behave like constituents in syntax. For instance, this is not the case with movement operation (Sáez del Álamo & Sánchez López 2013).

(94)   a. Juan es más alto que María.
              Juan is more tall than María
         b. *¿Cuánto que María es Juan alto?
               how than María is Juan tall?

In fact, even if one assumes that the adjective must compulsorily move to Deg (despite 93), the movement of the degree operator does not pied-pipe the coda.

(95)   *¿Cómo de alto que María es Juan?
              how of tall than María is Juan

The same goes even if the interrogative is not the comparative degree itself.

(96)   *¿Cuánto más que María es alto Juan?
              how-much more than María is tall Juan?

The only construction that allows movement of the comparative coda also requires movement of the adjective.

(97)   ¿Cuánto más alto que María es Juan?
              how-much more tall than María is Juan?

But note that the comparative coda does not need to move in such case.

(98)   ¿Cuánto más alto es Juan que María?
              how.much more tall is Juan than María?

The same goes for other movement operations, such as simple topicalisation.

(99)   a. Más alto que María es Juan.
              More tall than María is Juan
         b. Más alto es Juan que María.
              more tall is Juan than María
         c. *Más que María es alto Juan.
               more than María is tall Juan

Coordination also suggests that the degree operator and the adjective form a constituent to the exclusion of the coda.

(100)   a. Juan es más alto y menos gordo que Pedro.
              Juan is more tall and less fat than Pedro
         b. *Juan es alto más que Pedro y menos que María.
               Juan is tall more than Pedro and less than María.

Ellipsis gives less clear results (see §7 for the complex facts about ellipsis in comparatives). It is possible to elide the group formed by the degree operator and the adjective to the exclusion of the coda.

(101)   Juan es más alto que Pedro, y María, que Juan.
              Juan is more tall than pedro, and María, than Juan

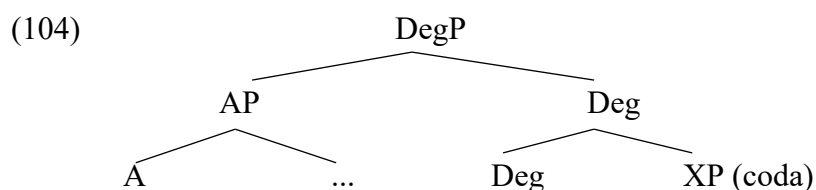The elipsis of the adjective to the exclusion of the degree operator and the coda is marginally acceptable.

(102)   ?Juan es más alto que Pedro, y María, menos que Luis.
        Juan is more tal than Pedro, and María, less than Luis

The elipsis of the degree operator and the coda to the exclusion of the adjective is ungrammatical.

(103)   *Juan es más alto que Luis, y María, guapa.
        Juan is more tall than Luis, and María, pretty
        Intended: 'Juan is taller than Luis, and María is prettier than Luis'

Thus, the constituency in terms of movement suggests that the adjective and the degree operator form a constituent to the exclusion of the comparative coda. This is at odds with the semantic compositionality facts.
Larson (2014: 470-471) provides an interesting variation on this analysis, where the degree operator and the adjective are in a spec-head relation, but now reversing the containment relation: the adjective is in the specifier of DegP.

(104)

```
                        DegP
              _____|_____
            AP                          Deg
          ___|___                    ____|____
         A       ...               Deg       XP (coda)
```

Thus, the adjective is base-generated as the specifier of Deg, providing it with the dimension where the measurement is applied. (105a) represents a comparative of equality, and (105b), one of difference, under this analysis.

(105)   a. tan alto como María
           as tall as   María

```
                          DegP
                _____|_____
              AP                          Deg
            ___|___                    ____|____
           A       ...               Deg       XP (coda)
         alto                        tan       como María
```
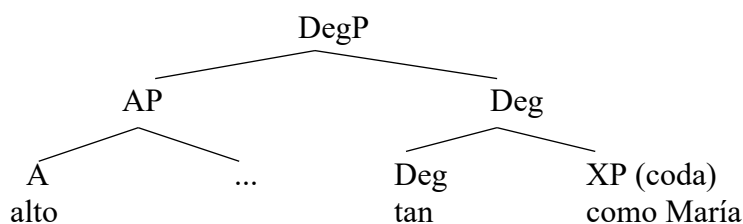
        b. más / menos alto que María
           more / less tall than María

```
                          DegP
                _____|_____
              AP                          Deg
            ___|___                    ____|____
           A       ...               Deg        XP (coda)
         alto                       más /menos  que María
```
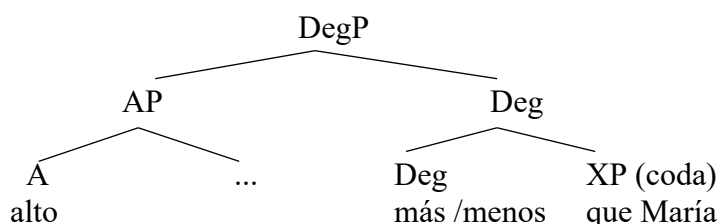
Larson proposes a second shell within Deg; this second Deg projection has an empty degree head and uses the specifier to introduce the first member of the comparison –in his analysis, a pronominal element; we here represent it as a DP for the sake of clarity–. The low degree head head-moves to the high degree head, obtaining the right linear order.

(106) a.
```
           DegP
          /    \
       Juan     Deg
               /    \
            Deg       DegP
            tan      /    \
                   AP      Deg
                   alto   /    \
                       Deg       XP
                       t̶a̶n̶     como María
```

b.
```
           DegP
          /    \
       Juan     Deg
               /        \
            Deg           DegP
            más/menos    /    \
                       AP      Deg
                       alto   /      \
                          Deg          XP
                          m̶á̶s̶/̶m̶e̶n̶o̶s̶   como María
```
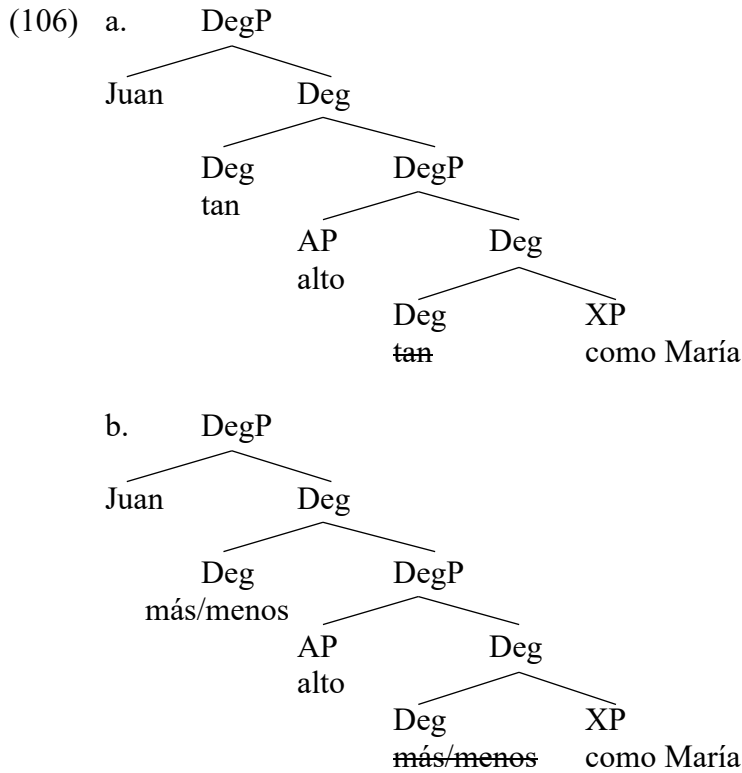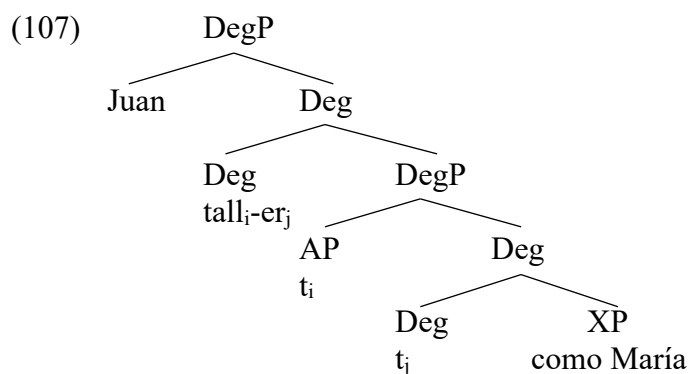
Larson's analysis has several advantages over the traditional analysis. Like Chomsky (1965), it can capture the fact that the shape of the coda is conditioned by the type of degree operator used. The problematic constituency facts are less problematic in this account, because the AP is base-introduced as the specifier of Deg: at no point is there a constituent which contains AP and not Deg –even after movement, the deg head leaves a copy behind–. The coda is in a complement position not trapped within a specifier, which means that in principle it could be proposed that the XP moves out, leaving behind only the degree operator and the adjective to form a constituent. In principle, then, the coda would be able to leave the constiuent before wh-movement or other operations, an option that was not available in the traditional analysis.

However, this analysis still has the problem of how to explain the cases where the degree operator is a suffix or the adjective adopts a morphologically marked form in the comparative or superlative. As represented in (107), this movement –which Larson in fact claims is necessary– involves moving the head of a specifier to the head position of the projection above it –alternatively, it would imply lowering the specifier head to the head of the projection where the specifier is contained–.

(107)

```
                    DegP
            ┌────────┴────────┐
          Juan              Deg
                     ┌────────┴────────┐
                   Deg              DegP
                   tallᵢ-erⱼ    ┌─────┴──────┐
                              AP           Deg
                              tᵢ      ┌──────┴──────┐
                                    Deg            XP
                                    tⱼ        como María
```

Like Larson, most syntactic analyses of degree have treated Deg as a head that projects its label to the spine of the syntactic tree. But unlike Larson, these analyses have assumed that DegP projects above AP.

3.2. DegP as an extended projection of AP

These analyses treat DegP on a par with quantifiers in NPs: as a functional projection that selects an adjective or another gradable predicate as its complement. In essence, this views degree as a natural extended projection of the adjective (Grimshaw 2005) which satisfies one property of the lexical category: specifically, the fact that it is a gradable predicate.

(108)

```
                 DegP
          ┌───────┴───────┐
         XP             Deg
                   ┌──────┴──────┐
                 Deg            AP
```
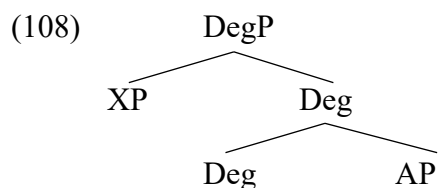
In this type of analysis, the degree operator acts as a head that binds the degree variable that the gradable predicate, here an adjective, carries, assigning reference to it –eg., higher or equal than a standard value–. This analysis is adopted, among others, in Abney (1987), Corver (1991), Zwarts (1993), Pastor (2004, 2008). As a secondary effect that the complement of Deg is the gradable predicate, the coda or the element that introduces other types of comparison standards must be introduced not earlier than the specifier of DegP –as a second argument of the degree head–. Even though there is no head-complement relation between coda and degree operator, if they are introduced in the same phrase one could still explain the selectional restrictions noted in (88)-(90) above as local selection between the head and the specifier. This approach has both advantages and disadvantages with respect to the previous approach.

Let us first look at the advantages: the syntactic constituency seems to be better captured. The degree operator and the comparative coda form a constituent in the absence of the coda, as required by the movement operations and coordinations that were revised before. This approach, also, has the advantage that it captures directly how a whole AP can move leaving behind both the coda and the comparative, as in (109).
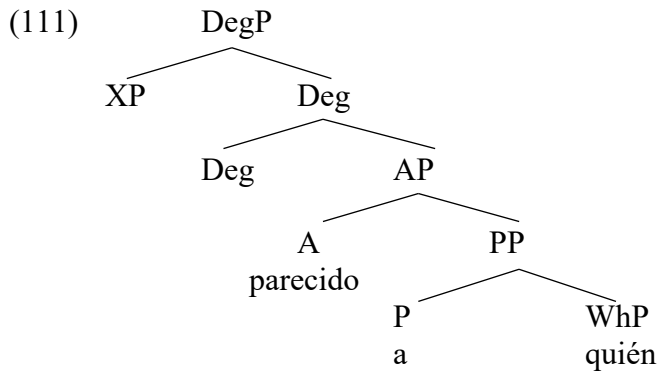
(109)   [AP difícil de leer], este libro lo es más que tu novela.
        difficult to read, this book so is more than your novel

In the non-Larsonian approaches discussed in §3.1, the adjectival head moved to Deg, and any movement of the AP would have to drag with it the DegP, containing the coda. In the approach in (108), the AP can move leaving behind the whole coda.
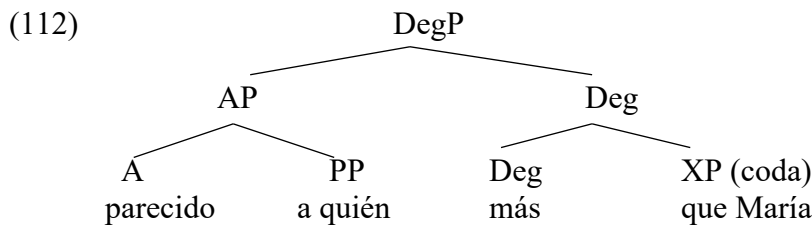
Larson's (2014) proposal would also account for (109), because there the AP is a specifier within the low DegP. However, Larson's account cannot explain a fact like (110), where only the PP complement of the adjective is wh-moved.

(110)   ¿A quién es más parecido Juan que María?
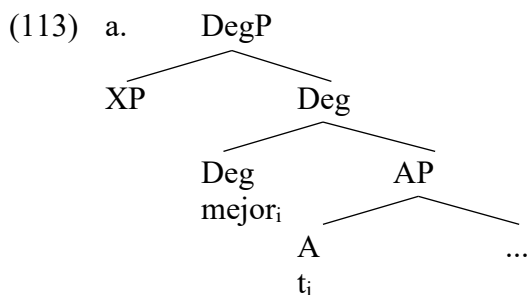   to whom is more similar Juan than María?

In the analysis in (108), this involves simply extracting the PP complement from the AP that is in a complement position, a movement that is expected to be –ceteris paribus– licit.

(111)

```
                DegP
             ╱      ╲
          XP          Deg
                    ╱     ╲
                 Deg        AP
                         ╱     ╲
                       A          PP
                    parecido    ╱    ╲
                              P       WhP
                              a       quién
```

In the Larsonian analysis, the AP is a complex specifier, so one expects that subextracting elements from within it is ungrammatical. If the specifier is an island for movement, as standardly assumed since Ross (1967), (110) should be ungrammatical.

(112)

```
                        DegP
                   ╱            ╲
                AP                Deg
             ╱     ╲           ╱      ╲
           A         PP      Deg       XP (coda)
        parecido   a quién   más       que María
```

Thus, the view of DegP as the head taking AP as a complement seems to explain better the syntactic constituency facts. It also is more directly compatible with our assumptions about head movement, necessary to explain the morphological comparatives.

(113)   a.

```
          DegP
       ╱      ╲
     XP         Deg
             ╱      ╲
          Deg         AP
        mejor_i     ╱    ╲
                  A        ...
                  t_i
```

b.   DegP

XP   Deg

Deg   AP
tall$_i$-er

A   ...
t$_i$
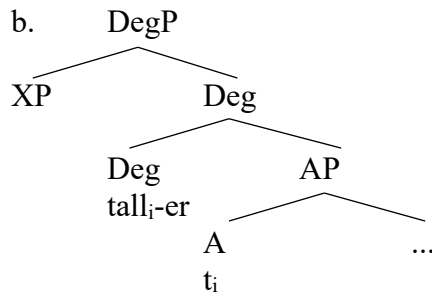
This has, however, some problems. The first one is that the syntactic structure proposed does not express the standard semantics of degree structures as straightforwardly as the analysis of DegP as a specifier or Larson's mixed view. Remember that the degree operator essentially assigns reference to the degree variable of the predicate by ordering it with respect to a standard of comparison. Deg, in Larson's analysis, is a clearly relational head that orders the (degree possessed by the) subject of predication with respect to the (degree possesed by the) second member of the comparison; from that perspective, the role of the AP is simply to provide a dimension to compute the different values that Deg orders. In the structure in (107), in contrast, Deg assigns first a value to the gradable predicate; then the standard of comparison is introduced, and finally another projection introduces the subject of predication. Clearly, this is not a compositional ordering from the perspective of the semantics of the construction. This can already be a serious problem, but again how serious it is would depend on what one assumes to be, more generally, the relation between syntax and semantics, that is, how isomorphic to each other they should be and, conversely, how many LF operations one allows when moving from syntax to the semantic formula denoted by the structure.

A more serious set of problems is triggered by the distribution of adjectival constructions. In the traditional analysis of Bresnan (1973), the AP is the head of the whole structure, while in (107) the head of the whole structure is DegP. One should ask, then, if there are contexts in which an adjective carrying an (overt) degree modifier distributes differently than one without it.

This test is not easy to run because adjectives are generally used in positive degree, when they lack an overt degree operator, but positive degree –as we said before– is already a projection of DegP. With this caveat in mind –to which we will return almost immediately– there are no apparent contexts where another head selects specifically DegP. Copulative verbs and verbs of judgement select either:

(114)   a. Juan es (muy) alto.
                Juan is very tall
           b. Lo considero (muy) alto.
                him consider.1sg very tall
           c. Parece (muy) alto.
                seems very tall

Similarly, within NPs, used as modifiers, there are no clear distinctions either.

(115)   a. esa important(-ísima) contribución
                that important-splt contribution
           b. esa contribución important-ísima
                the contribution important-splt

There are some cases, though, where specific degree modifiers seem to allow an adjective to appear in a position, or ban it. One restriction is that comparative adjectives cannot be prenominal, while superlatives can:

(116)   a. *D más importante contribución que aquella
            D more important contribution than that.one
        Intended: 'a contribution that is more important than that one'
        b. D más importante contribución del grupo
            D most important contribution of.the group
        'the most important contribution within the group'

Similarly, in exclamative nominal phrases the postnominal position for the adjective normally requires the presence of a deictic degree modifier. (117b) is acceptable in some American varieties:
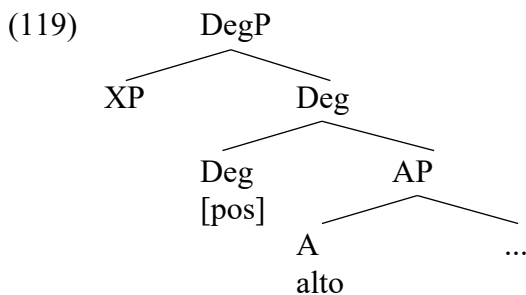
(117)   a. ¡Qué libro *(tan) interesante!
            what book so interesting
        b. %¡Qué (*tan) interesante libro!
            what so interesting book

However, in these cases there is no obvious explanation in terms of categorial selection; it is unclear what heads would be the ones responsible for selecting specifically these degree modifiers to license the adjective before or after the noun.

These results are in principle problematic for the proposal that DegP is a head. If Deg is the equivalent of QP in the nominal domain, it is pretty clear that some predicates select QP instead of DP or NP in the nominal domain. For instance, stative verbs of measuring:

(118)   a. pesar *(dos) kilos
            weight two kilos
        b. medir *(dos) metros
            measure two meters
        c. caber *(dos) litros
            fit   two liters

One could argue that adjectives on the surface have the same distribution as DegP because in the positive degree they are already projections of DegP.

(119)   DegP
          ⁄   ＼
        XP   Deg
                 ⁄   ＼
               Deg   AP
               [pos]   ⁄ ＼
                      A   ...
                      alto

However, this answer is partially unsatisfactory. The question then is why there are no predicates that select plain AP, as a gradable adjective, as opposed to DegP. At least

it has been proposed that some predicates do select for plain NPs even deprived of number (Cyrino & Espinal 2015):

(120)   tener novio
        to.have boyfriend

The problem becomes more acute when we realise that, in theory, AP alone within this set of proposals should have a different denotation than DegP: one where it denotes a scale, as a vague predicate where no specific value has been set as a standard of comparison. If it turns out that no syntactic context can fit a bare AP, this could connect with the general problem of whether languages allow unresolved vagueness (cf. §2.2 above): bare AP might not be allowed simply because the unresolved denotation of the predicate cannot be accommodated within the grammar. This would mean that in order to compose with another constituent in the syntax, the minimal size of a gradable predicate would be DegP. In any case, this would be an asymmetry between AP and NP whose ultimate syntactic reason would be unclear.

3.3. A split DegP

Despite these problems, the proposal that DegP projects as a head has become popular within syntactic studies, and in fact degree has been expanded into two sets of heads. In Corver (1997) it is in fact proposed that DegP does not always correspond to QP within the nominal domain. Just like some elements in the nominal domain are introduced as QP heads (122) and others are introduced as DP heads (121), two degree heads have to be differentiated depending on whether they act as quantifiers or as definite determiners.

(121)   este 'this', ese 'that'
(122)   un 'a', muchos 'many'

In Corver's proposal, DegP proper acts in a way similar to DP, assigning a reference to the degree variable and perhaps even acting as a deictic element that refers to some contextual value. The degree operators that are quantifiers are hosted in a degree projection labeled QP.

(123)
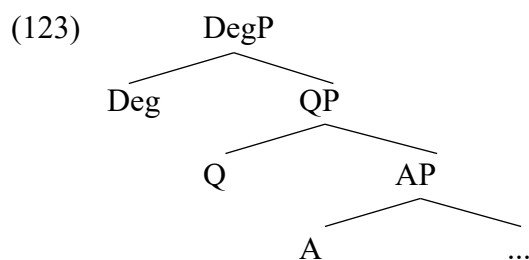
Degree operators like *más* 'more', *menos* 'less' or *muy* 'very' are placed in QP because they pick sets of degrees that correspond to some specific description –higher than a standard, lower than a standard–; most degree operators belong to this class, because most of them pick sets of degrees that are ordered with respect to the standard value. In contrast, degree operators that identify the specific degree as identical to a standard of comparison (*tan* or *igual de* 'as'), refer deictically to a degree value specified in the context (also *así de* in Spanish, now corresponding to 'so') or ask for the identity of the

value (*cuán*, *cómo de* or other expressions equivalent to 'how (much)') are placed in the higher DegP, corresponding to DP.

Thus, Corver's proposal makes a division between comparative degree operators: identity comparative constructions involve DegP, while comparatives of difference involve operators located in QP. The reason is 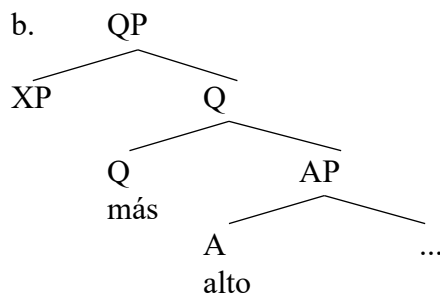that identity comparatives identify the degree value as carrying the same reference as the comparison value, while the others range over all the degree values higher or lower than the comparison value.

(124)   a. tan alto como Juan
      as   tall as   Juan

b.

```
          DegP
         /    \
       XP      Deg
              /   \
           Deg      AP
           tan     /  \
                  A     ...
                 alto
```
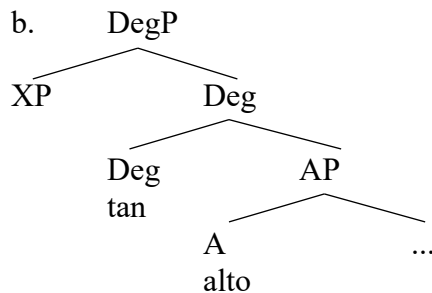
(125)   a. más alto que Juan
      more tall than Juan

b.

```
          QP
         /  \
       XP     Q
             /  \
           Q      AP
          más    /  \
                A     ...
               alto
```

In principle, one could think that the different nature of the comparative codas involved in each type of comparative construction could depend on whether the coda is introduced in the QP or the DegP layer. If one assumes that the DegP head is always present, the word order in difference comparatives might be explained assuming head-movement from Q to Deg. This option, however, is not open in the case of identity comparatives, because under that hypothesis the coda would be introduced in spec, DegP and the degree operator would linearise after it, unless one posits a third layer for the operator to move.

A second problem is that it cannot be simply said that the nature of the comparative coda depends only on whether the coda is introduced in QP or DegP. Even though both operators identify a degree and therefore would be generated within DegP, note that in (126) the codas are different –in fact, the second is like we would expect in a comparative of difference–.

(126)   a. tan alto <u>como Juan</u>
      as tall as Juan
    b. igual de alto <u>que Juan</u>
      equal of tall than Juan

'as tall as Juan'

3.4. The selection problem: degree in too many places

In these accounts, degree is part of the extended functional projection of adjectives, taken as the most clear case of gradable predicate. However, this approach finds another problem when one examines the distribution of degree expressions: there are too many grammatical categories that can combine with degree. If Deg is a functional head like Aspect or Determiner, we expect it to select only one lexical category, but this is not what the data tell us.

Here are some of the grammatical categories that can combine with degree operators, in addition to gradable adjectives. First of all, several nouns can accept degree operators without becoming morphological adjectives –for instance, this does not make them exhibit agreement with a noun–.

(127) a. herman-ísimo
           brother-splt
       'the most important brother'
       b. muy hombre
           very man
       'very manly'
       c. muy niño
           very child
       'very childish'

Second, verbs –in particular stative verbs that are psychological predicates– can also assign a degree reading to operators.

(128) a. gustar mucho
           like a.lot
       b. odiar mucho
           hate a.lot
       c. conocer mucho
           know a.lot
       d. enfadar mucho
           anger a.lot

Note that even though change-of-state verbs can typically also assign a degree reading to quantifiers, in most of such cases there is an adjective that acts as its morphological base, so one could argue that the operator is in fact generated as part of the extended projection of AP.

(129) a. en-gord-ar mucho
           in-fat-ThV a.lot
       b. gordo
           fat

There are, however, verbs without any plausible morphological base that corresponds to an adjective.

(130)   crecer mucho
        grow a.lot

Several prepositional phrases also allow degree, particularly when they are used to describe properties of an entity.

(131)   a. ser muy de su casa
           be very of his house
        'be very homy'
        b. ser muy de Madrid
           be very from Madrid
        'be prototypically from Madrid'

Of course, several adverbs also allow it, but the category of adverbs is anyways eclectic.

(132)   a. muy lejos
           very far
        b. muy bien
            very well
        c. muy claramente
           very clearly

Syntactically, the conclusion is that DegP does not have one single type of complement with which it combines. NPs, VPs and PPs are also among the lexical categories that can combine with them, with the only restriction that they must allow different values for the property that they denote. In consequence, treating DegP as a functional extended projection of AP cannot be right, empirically –unless one proposes covert adjectives in the structures that are exemplified above–. An alternative has to be identified.

In this article, and starting from the next section, we will propose an alternative view of degree that is more compatible with this nature: degree is one of the possible linguistic manifestations of a more basic entity, paths, which can be instantiated in any grammatical category. Gradable predicates denote scales, that are paths –sets of ordered points– defined over values of properties. Degree operators quantify over those paths, independently of the grammatical category that instantiates them. As we will see, this will lead to the conclusion that scalar structure in adjectives and other gradable predicates should be viewed as the equivalent of Aktionsart in the verbal domain, while DegP, assigning a perspective over those paths, should be viewed as the equivalent of external or grammatical aspect in the verbal domain. Let us start now with the nature of scales.

4. Scales

In the literature, there is general agreement that degree operators are assigning a value to the degree variable that is open in a gradable predicate, which is therefore vague in its meaning before that value is fixed. In order for the predicate to have a degree variable, it must allow for different values or extents that are meaningful applied to the property that they denote. Those values are ordered, as we have seen in §2.3, in a structue that is called 'scale'.

This section discusses scales, their types, how to test their nature and whether some qualifying adjectives are non scalar. We will also briefly argue that scales should be

viewed as paths, and as a consequence of that we will propose that scales should be viewed as the equivalent in the adjectival domain to the notion of Aktionsart or lexical aspect in the verbal domain.

4.1. Types of scales

Research on scalar structure is relatively recent, but has already produced an important volume of literature (Bolinger 1972, Lehrer 1985, Cruse 1986, Hay 1998, Doetjes 1997, Kennedy & McNally 1999, 2005, Paradis 2001, Vanden Wyngaerd 2001, Rotstein & Winter 2004, Syrett 2007, Sassoon & Toledo 2011, among others). The main intuition underlying this line of research is that scales –as sets of exhaustively ordered values– can exhibit different structures, depending on whether they have a minimal value, a maximal value, both or none. These four kinds of scales partially depend on the conceptual nature of the property that they express and can be diagnosed by the entailment patterns under comparison. The distribution of certain degree operators and the different ways of defining the standard value within the scale depend on the nature of the scale.

The most influential piece of work on this topic is Kennedy & McNally (2005). Their proposal is that there are four types of scales, represented below in a diagram: open scales (133a), lower closed scales (133b) –with a minimal value, but no bounded maximal value–, upper closed scales (133c) and closed scales (133d)–with both a maximal and a minimal value–.

(133)   a. ...---------------...
        b. [-------------....
        c. ...------------]
        d. [------------]

In order to illustrate these four types of scales, we will provide typical examples of each one of the classes, in the same order as the scales were presented in (133).

(134)   a. guapo   ...---------------...
        pretty
        b. sucio   [-------------....
        dirty
        c. recto   ...------------]
        straight
        d. desnudo   [------------]
        naked

The scale that is built on the property of 'pretty' is open in both extremes, meaning that there is no upper or lower limit to that. This can be diagnosable by the entailments under comparative structures. The superiority comparative does not entail that X has the property of 'pretty', and the inferiority comparative does not make any entailments either. Juana can be prettier or less pretty than Marta, and this does not mean that Juana or Marta are pretty enough for any standard.

(135)   Juana es más guapa que Marta, pero ninguna es guapa.
        Juana is more pretty than Marta, but none is pretty
(136)   Juana es menos guapa que Marta, pero ninguna es guapa.
        Juana is less pretty than Marta, but none is pretty

The scale built over 'dirty' has a lower boundary, essentially meaning that any quantity of dirt, no matter how small, is enough to define an entity as 'dirty'; there is no maximal value of dirt. A superiority comparative entails that the first member is 'dirty', unlike the open scale adjective above. The inferiority comparative entails that the second member is dirty.

(137)   La mesa está más sucia que la ventana, #pero la mesa no está sucia.
        the table is more dirty than the window, the the table is not dirty
(138)   La mesa está menos sucia que la ventana, #pero la ventana no está sucia.
        the table is less dirty than the window, but the window is not dirty

The scale associated to 'straight' is closed in the upper boundary, meaning that for an object to be straight it must have a maximal straightness value –while it can be as bent as one wants–. The inferiority comparative entails that the first member of the comparison is not straight, and does not entail that the second member is straight.

(139)   La barra está más recta que la regla, pero ninguna está recta.
        the bar is more straight than the ruler, but none is straight
(140)   La barra está menos recta que la regla, #pero la barra está recta.
        the bar is less straight than the ruler, but the bar is straight

Finally, an adjective like 'naked' has both a minimal and a maximal boundary. One can conceive a maximal value of nakedness –one has no clothes– and a minimal value –one exhibits only a minimal portion of skin–. Here the superiority comparative entails that the first member is naked, and the inferiority comparative entails that the second member is naked.

(141)   Juan está más desnudo que Pedro, pero ninguno lo está.
        Juan is more naked than Pedro, but none so is.
(142)   Juan está menos desnudo que Pedro, pero los dos lo están.
        Juan is less naked than Pedro, but both so are.

As noted in the literature above, proportional degree modifiers such as those in (143) are compatible only with scales that are at least partially closed.

(143)   a. completamente 'completely'
        b. del todo 'fully'
        c. parcialmente 'partially'
        d. totalmente 'completely'
        e. ligeramente 'slightly'

Specifically for Spanish, *ligeramente* 'slightly' identifies the minimal value of the scale, and is therefore only allowed by adjectives that denote lower closed scales or those that involve completely closed scales. In order to avoid extensional readings of the modifiers –the property applies only to a part or to the whole of the extension of a physical object– we use, when appropriate, non-physical subjects.

(144)   a. *Juan es ligeramente guapo
            Juan is slightly pretty

    b. El juego es ligeramente sucio.
      the play is slightly dirty
    c. *Su actitud es ligeramente recta.
      his attitude is slightly straight
    d. Juan está ligeramente desnudo.
      Juan is slightly naked

Completamente 'completely' and *del todo* 'fully' identify the maximal value of the scale, so they are compatible with predicates that denote upper closed scales or completely closed scales.

(145) a. *Juan es completamente guapo.
      Juan is completely pretty
    b. *El juego es completamente sucio.
      the game is completely dirty
    c. Su actitud es completalmente recta.
      his attitude is completely straight
    d. Juan está completamente desnudo.
      Juan is completely naked

Modifiers like *parcialmente* 'partially' and *al 50%* 'in 50%' only produce natural readings with adjectives corresponding to scales that are completely closed, as they require both a maximal and a minimal value to have their meaning satisfied.

(146) a. *Juan es parcialmente guapo.
      Juan is partially pretty
    b. ??El juego es parcialmente sucio.
      the play is partially dirty
    c. ??Su actitud es parcialmente recta.
      his attitude is partially straight
    d. Juan está parcialmente desnudo.
      Juan is partially naked

Gradable predicates which denote completely open scales are traditionally referred to in the literature as 'relative adjectives', specifically meaning that their standard value has to be set contextually –either through conceptual means or with a syntactic constituent that defines that value or the class of comparison, as the underlined constituents do in (147).

(147) Juan es guapo <u>para la gente de su edad</u>.
      Juan is pretty for the people of his age

Scales that are at least partially closed are traditionally considered 'absolute adjectives'. The reason is that, by default, they set the standard of comparison in the maximal or the minimal value, so the scale already provides information about what counts as P-enough to predicate the adjective from an individual.

An adjective that is a lower closed scale would set the minimal value as the standard value, meaning that any extent of the property qualifies as enough. This is reflected – in Spanish– in the unavailability of syntactic constituents such as those in (147) for such adjectives.

(148)   Este objeto está sucio (*para un bisturí).
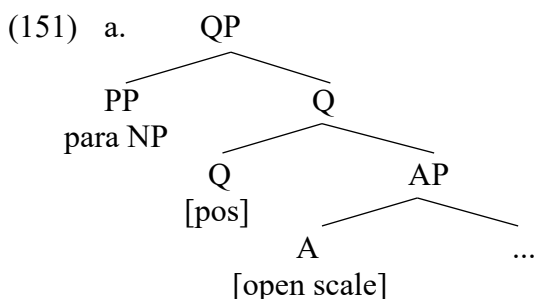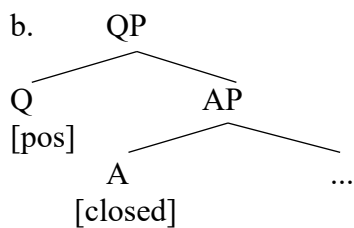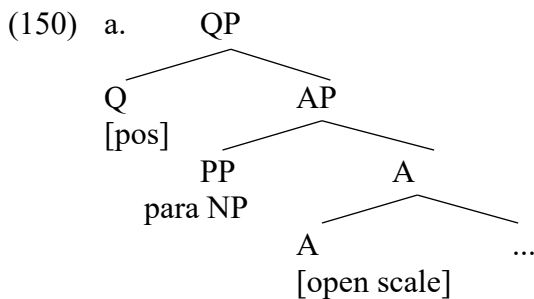   this object is dirty for a scalpel

The same goes for an upper closed scale adjective, where the standard is by default the maximal value.

(148)   Este objeto está recto (*para una rama de árbol).
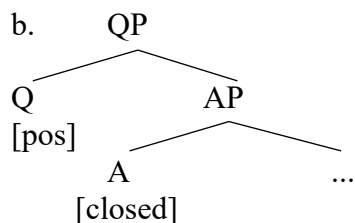   this object is straight for the branch of a tree

In the case of completely closed scales, there are two potential values that can be used as standard; by default, the standard is identified with the maximal value.

(149)   Esta persona está desnuda (*para un feligrés).
        this person is naked for a parishioner

Thus, it seems that the nature of the scale in Spanish gradable predicates has syntactic consequences: only relative adjectives allow for the projection of a syntactic constituent that assigns an overt value to the standard of comparison (Fábregas & Marín 2018). Assuming a Corver-style syntax for degree, this seems to suggest that the standard of comparison in adjectives in the positive degree is either introduced already at the level of the lexical adjective (150) or within QP (151). In this second case, however, the Q head must be sensitive to the type of scale that AP introduces, as the projection of this syntactic constituent depends on whether the scale is completely open or at least partially closed.

(150)   a.   QP
              /   \
            Q   AP
           [pos]   /   \
                   PP   A
                 para NP / \
                         A   ...
                      [open scale]

        b.   QP
              /   \
            Q   AP
           [pos]   /   \
                    A   ...
                 [closed]

(151)   a.   QP
              /   \
            PP   Q
          para NP   /   \
                   Q   AP
                 [pos] / \
                       A   ...
                   [open scale]

b.   QP

Q   AP
[pos]
         A   ...
      [closed]

Adjectives can form opposition pairs within the same dimension, each one denoting opposite values within the scale (*tall-short, pretty-ugly*, etc.). It is tempting to expect that if one of the adjectives is closed in the lower side of the scale, its opposite will be closed in the upper side of the scale. This in fact is the case in some cases:

(152)   a. {completamente / *ligeramente}   limpio
               completely   slightly   clean
          b. {ligeramente / completamente}   sucio
               slightly   completely   dirty
(153)   a. {completamente / *ligeramente}   recto
               completely   slightly   straight
          b. {ligeramente / *completamente}   torcido
               slightly   completely   bent
(154)   a. {completamente / *ligeramente}   cerrado
               completely   slightly   closed
          b. {ligeramente / *completamente}   abierto
               slightly   completely   open
(155)   a. {completamente / *ligeramente}   seguro
               completely   slightly   safe
          b. {ligeramente / *completamente}   peligroso
               slightly   completely   dangerous
(156)   a. {completamente / *ligeramente}   recto
               completely   slightly   straight
          b. {ligeramente / *completamente}   torcido
               slightly   completely   bent
(157)   a. {completamente / *ligeramente}   inútil
               completely   slightly   useless
          b. {ligeramente / *completamente}   útil
               slightly   completely   useful
(158)   a. {completamente / *ligeramente}   opaco
               completely   slightly   opaque
          b. {*completamente / ligeramente}   transparente
               completely   slightly   covered

Typically, when one of the members of the opposition is a completely open scale, the other member still is a completely open scale.

(159)   a. {*completamente / *ligeramente} alto
               completely   slightly   tall
          b. {*completamente / *ligeramente} bajo
               completely   slightly   short
(160)   a. {*completamente / *ligeramente} gordo

```
                completely      slightly      fat
        b. {*completamente / *ligeramente}  delgado
                completely      slightly      thin
(161)   a. {*completamente / *ligeramente}  amable
                completely      slightly      nice
        b. {*completamente / *ligeramente}  antipático
                completely      slightly      nasty
```

By the same logic, we would expect that completely closed scale adjectives in opposition to each other would behave in the same way: the scale is closed in the two extremes, and one can argue that each adjective only reverses the directionality of the scalar values (from higher to lower; from lower to higher) within the same dimension.

```
(162)   a. {completamente / ligeramente}   oculto
                completely      slightly      hidden
        b. {completamente / ligeramente}    visible
                completely      slightly      visible
(163)   a. {completamente / ligeramente}    desnudo
                completely      slightly      naked
        b. {completamente / ligeramente}    tapado
                completely      slightly      covered
```

However, all these are tendencies, at best. On a bona fide identification of the relevant dimensions where pairs of adjectives would designate opposites, we find cases where one adjective is completely open and the other is bound in the lower end:

```
(164)   a. {*completamente / *ligeramente}  ancho
                completely      slightly      wide
        b. {*completamente / ligeramente}   estrecho
                completely      slightly      narrow
(165)   a. {*completamente / *ligeramente}  sabroso
                completely      slightly      tasty
        b. {*completamente / ligeramente}   soso
                completely      slightly      tasteless
```

One, intuitively, might want to say that the negative members of these pairs refer to 'lacking enough X' –eg., (165b) could mean 'lacking enough flavour'– but the same could have been said for instance for (160b) ('lacking enough fat'). We identify also other cases where the opposite of a completely open scale is upper bound:

```
(166)   a. {*completamente / *ligeramente}  posible
                completely      slightly      possible
        b. {completamente / *ligeramente}   imposible
                completely      slightly      impossible
```

It is not difficult either to find cases where both adjectives in a bona fide oppositon are equally bound in the same extreme of the scale:

```
(167)   a. {completamente / *ligeramente}   cierto
                completely      slightly      true
```

     b. {completamente / *ligeramente}   falso
       completely   slightly   false

(168) is an example of an opposition between a completely closed adjective and one that is only bound in the upper end.

(168) a. {completamente / ligeramente}   borracho
         completely   slightly   drunk
      b. {completamente / *ligeramente}   sobrio
         completely   slightly   sober

And, finally, (169) is a case where the completely open scale adjective contrasts with an adjective that is bound only in the lower end.

(169) a. {*completamente / ligeramente}   pobre
         completely   slightly   poor
      b. {*ligeramente / *completamente} rico
         slightly   completely   rich

The reader might have already noticed that these judgements about the combination with degree modifiers and about which adjectives should be picked as the dimensional opposites of the other member within the same scale are not always clear-cut. In fact, these two issues reflect potential problems of the scalar approach.
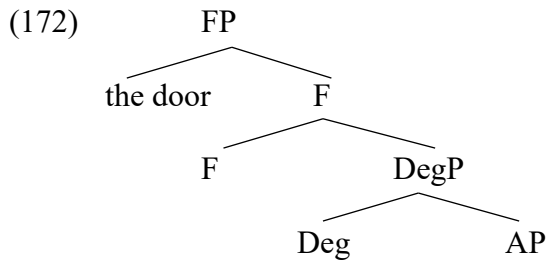
One observation that must be done is that the nature of the scale depends partially of the type of subject of predication that the gradable predicate takes. Consider in this sense *abierto* 'open'. Out of context, we understand that a minimal value of openness already is enough to say that something is open, and not closed, and this is in fact what we see for instance when we predicate the adjective from a noun like 'mentality':

(170) una mentalidad {ligeramente / *completamente} abierta
      a   mentality   slightly   completely   open

However, if we predicate the same adjective from windows or doors we immediately see that now the adjective acts as a completely closed scale adjective.

(171) La puerta estaba {ligeramente / completamente} abierta.
      the door was   slightly   completely   open

The reason seems to be related to the conceptual semantics, that is, our world knowledge, that tells us that windows and doors are bounded in their movement by other physical objects: the door has a maximal value of openness, which is when the extent that is not covered by the door is identical to the gap where the door fits. Thus, this seems to be a potential problem for any syntactic approach –and remember that Kennedy & McNally (2005) present their proposal as semantic, not syntactic–, because the nature of the scale associated to the adjective seems to depend on the conceptual reading of the subject, but that subject is introduced, by hypothesis, outside the lexical layer of the AP, in particular above DegP, which already presupposes a particular value for the scale.

(172)
```
              FP
            /    \
     the door     F
                /    \
              F       DegP
                    /      \
                 Deg        AP
```

The obvious syntactic alternative –introducing the subject of predication of the adjective within AP– has two problems: (i) there are syntactic reasons to believe that the subject of adjectives is introduced by a functional projection above AP (Baker 2002) and (ii) compositionally, one wants to say that what is predicated of the subject is not the property, but having a particular extent of that property, so if the adjective has not had its degree variable identified already, combining the subject and the predicate do not produce a truth value.

Thus, the subject is introduced above degree, as Kennedy (1997) or Larson (2014) assume. However, this means that the nature of the scale has to be viewed as a property of a global chunk of structure, not just of a head contained within the syntactic representation, or at least that the compatibility of the dimension with a particular type of scale has to wait until the subject has been introduced to be evaluated.

The second problem also emerges from the conceptual semantic nature of the original proposal: how can we be certain of which adjective should be used as the opposite dimensional pole within the scale? Within a few dimensions, the choice seems to be easy, but it is not so clear in other cases. Consider for instance (173).

(173)   oscuro
        'dark'

In some contexts, the opposite seems to be *claro* 'light':

(174)   una respuesta {oscura / clara}.
        an answer dark / clear
        'an obscure answer / a clear answer'
(175)   un color {oscuro / claro}
        a colour dark   light
        'a {dark / light} colour'

In other contexts, however, the opposite is rather *luminoso* 'bright' or *iluminado* 'illuminated'.

(175)   una habitación {oscura / luminosa / iluminada}
        a   room   dark   bright   illuminated
        'a {dark / bright / illuminated} room'

Despite these complication, the research on scales has shown that there are interesting generalisations that can be made with respect to the grammatical behaviour of gradable predicates in interaction with the nature of the scale that underlies them.

4.2. Scales and paths

At this point, we can go back to a problem that emerged in §3, with respect to the syntactic nature of DegP. We saw in §3.5 that an argument against treating Deg as an extended functional projection of adjectives is that degree is a notion that combines with any gradable predicate, irrespective of its grammatical category, including nouns, prepositional phrases and verbs.

The research on scales opens a possibility to understand the cross-categorial nature of degree. Degree, put simply, is quantification or identification of the value for the degree variable within an adjective, and that variable is made possible because there is a scale that underlies the predicate. Degree appears in many syntactic categories because the notion of scale, which is semantic, can be instantiated in a good number of syntactic categories.

What is a scale, abstractly? The literature above defines a scale as a set of ordered values within one same dimension or domain. Importantly, this definition is strikingly close to what the semantic literature has used to define another notion, path (see specifically Bierwisch 1988, Verkuyl & Zwarts 1992, Zwarts 2005). Paths, in their prototypical space manifestation (176), are derived objects that are constructed out of ordered sequences of space points.

(176)   a. go to the swimming pool
         b. go towards the swimming pool

Paths are ordered; the different places that one traverses when moving across a path are strictly ordered with respect to each other, and concatenated so that there are no gaps within the path. It is clear that our definition of scale is essentially the same one, only that scales are paths that (typically) do not use the spatial dimension to assign content to the sequence of values.

Paths have also been used, in an abstract sense, to express aspectual relation within verbal objects (Krifka 1989). In the same way that a spatial path defines a stretch of space, constructed by the ordered sequence of individual space points, the running time of an eventuality, with its internal phases, has been constructed as a stretch of time where there is a cumulative progression of the event through time. In fact, in the same way that there are bounded (176a) and unbounded (176b) spatial paths, these temporal paths can similarly be bounded or unbounded, crucially depending on the referential nature of the internal argument (or at least, some internal arguments, cf. Ramchand 2008).

(177)   a. eat an apple
         b. eat rice

The boundedness of a prototypical spatial path composes with the boundedness of the temporal path that we call verbal lexical aspect, in fact. In (176), it is not just the paths that are bounded or unbounded, but as a result the verbal predicate where they appear are also bounded or unbounded. There are, then, at least two manifestations of path: the spatial one via locative prepositions, and the temporal one via lexical aspect within the internal composition of a verbal predicate.

By parity of reasoning, (177) should also show compositionality in boundedness depending on the type of internal argument used. (177a) is telic, bounded, because the internal argument is a count noun denoting an entity with physical boundaries, while (177b) is atelic because the internal argument is a mass noun which is not physically

bounded. There is an isomorphism between the running time of the event and the parts of the internal argument that are consumed in the eating process, so that both develop in parallel. Thus, the parts of the noun become internally ordered when combined with the verbal predicate, establishing yet another manifestation of path.

Hay, Kennedy & Levin (1999) show that the same goes for adjectives with their scale denotation. They show that a verb derived from an adjective that has an open scale (178) can be atelic, unbounded, and suggest that this is so because in principle that open scale defines an unbounded set of values for that particular property. In contrast (179-180), adjectives with a closed scale, at least partially, define telic events, because their scale is bounded.
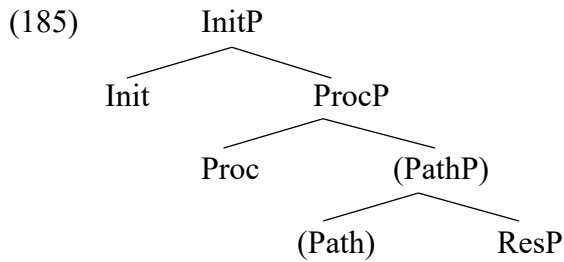
(178)   a. *completamente   gordo
              completely   fat
        b. *engordar del todo
              en-fatt-en of-the whole
        Intended: 'to get completely fat'
(179)   completamente borracho
        completely   drunk
(180)   emborracharse del todo
        en-drunk-en of.the whole
        'to get completely drunk'

Consequently, in the scale domain we also get the type of boundedness communication between the verbal aspect and the scale as we see with spatial paths and temporal paths, making it plausible that scales are just the name that we give to paths when they are manifested within adjectives and other gradable predicates. But there are other reasons to believe in this type of characterisation.
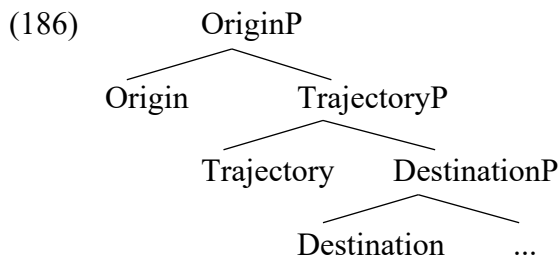
In the same way that spatial paths can define only the origin (181), only the destination (182), none (183) or both (184), we have seen that there are four types of scales depending on which one of the values, if any, is bounded.

(181)   desde tu casa
        from your house
(182)   hasta tu casa
        to your house
(183)   por tu casa
        around your house
(184)   dos kilómetros
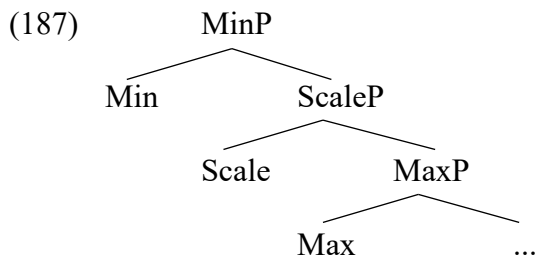   two kilometers

Pancheva (2011) proposed to extend the syntactic decomposition of Ramchand (2008) for verbs to paths. In Ramchand, the main head that within the lexical verb defines the path is ProcessP, which defines the eventive part of the eventuality, when there is any. That temporal path can get a starting point defined –its initiation or causation– by a head InitiationP, and an endpoint either by a particular type of internal argument or through an aspectual head which defines a result, ResultP.

(185)
```
              InitP
             /    \
          Init     ProcP
                  /    \
               Proc    (PathP)
                       /    \
                  (Path)     ResP
```
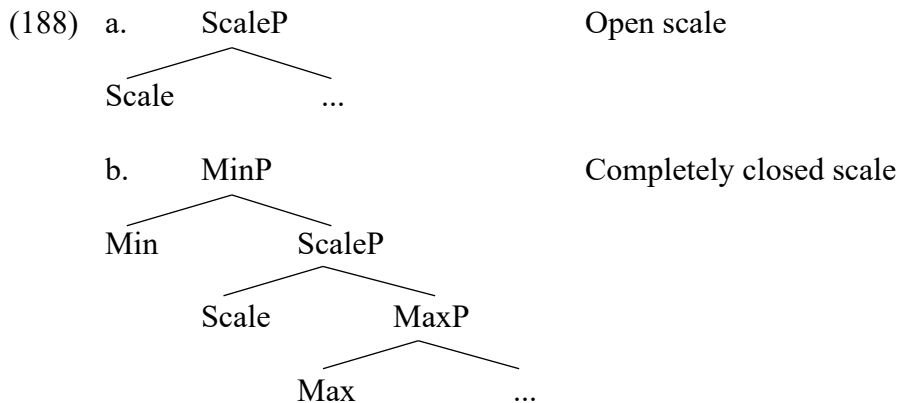
Pancheva (2011) extends this to the spatial path domain, basically suggesting that (185) is nothing but the category-specific instantiation of a basic syntactico-semantic structure.

(186)
```
              OriginP
             /     \
        Origin     TrajectoryP
                   /       \
            Trajectory     DestinationP
                           /        \
                    Destination      ...
```
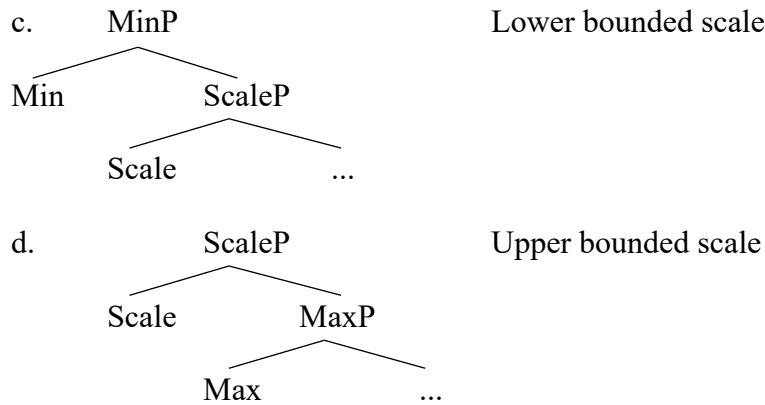
At this point, it is tempting to treat scalar structure essentially in the same way. We can have three heads: ScaleP, simply put, defining a set of ordered values; MinP, defining a lower boundary, and MaxP, defining an upper boundary.

(187)
```
           MinP
          /    \
        Min     ScaleP
               /     \
           Scale     MaxP
                    /    \
                 Max      ...
```

The typology of scales for AP would look, then, as follows.

(188) a.
```
        ScaleP                      Open scale
       /     \
    Scale     ...
```

   b.
```
        MinP                        Completely closed scale
       /    \
     Min     ScaleP
            /     \
        Scale      MaxP
                  /    \
               Max      ...
```

c.   MinP   Lower bounded scale

```
        MinP
       /    \
     Min    ScaleP
           /    \
        Scale   ...
```

d.   ScaleP   Upper bounded scale

```
        ScaleP
       /     \
    Scale    MaxP
            /   \
          Max   ...
```

If the type of structure that underlies a scale, and therefore gradation, is the manifestation of a more abstract semantic object –path–, then it is not a surprise that different categories can instantiate this type of structure. The only thing that we need for that is that the path is defined along a particular quality, not along space or time. Different lexical categories could combine with this. Also, if scales are paths that are not projected in time, specifically, we can explain why most verbs that denote degree are stative (such as 'love', 'hate', and the like): their stative nature prevents that the path is taken as measuring the progression of any activity, and therefore it can be reused to define values of intensity of a quality.

The consequence of this, then, is that scalar structure should be viewed as the equivalent of lexical aspect in the verbal domain. The next question is what degree quantification does; we will in fact support in §6 the view that what degree quantification does is precisely to act as grammatical aspect does, providing viewpoints over the relevant sets of values within the scale.

5. Positive degree and its manifestations

The positive degree is the unmarked form of the adjective. There are three main questions about positive degree, and we have already advanced two of them: the difference between an adjective in the positive degree and an adjective without degree information (§5.1), the syntactic configuration that underlies the standard of comparison that is introduced by adjectives in the positive degree and other constructions (§5.2) and the different types of evaluative degree modifiers, such as those in (189), that might appear next to an adjective in the positive degree.

(189)   muy 'very', poco 'little', bastante 'quite', demasiado 'too', suficiente 'enough'

5.1. The positive degree vs. the lexical AP

As we saw in §4, a gradable predicate has an extra open variable in addition to those devoted to participants: degree. The open degree value is related to a scalar value, and the range of values is restricted by the properties of the scale that underlie the adjective. In its simplest form, this can be represented as follows, for a gradable adjective which only has one participant.

(190) $[[\text{seguro}^{AP}]] = \lambda d \lambda x [\text{SAFETY}(x,d)]$

A positive degree adjective is already a projection of DegP –QP in Corver (1997)– which establishes a relation between degree intervals in order to assign a value to the

open variable of the adjective. Remember the general shape of the degree modifiers in Kennedy & McNally (2005).

(191) $[[Deg]] = \lambda G\lambda x. \exists d[R(d) \& G(d)(x)]$

The positive degree would state that the maximal degree exhibited by a participant of a certain property is equal or higher than the standard degree:

(192) $[[Deg^{Pos}]] = \lambda G\lambda x. \exists d,d_{standard}[\max\{d: G(x,d)\} \geq d_{standard}]$

Thus, when we apply this degree to an adjective like (190), we obtain (193).

(193) $[[safe^{Pos}]] = \lambda x. \exists d,d_{standard}[\max\{d: SAFETY(x,d)\} \geq d_{standard}]$

Some theories, such as Heim (2000), shorten the semantics of a positive adjective as an AP in the form of (194), which does not allow to see the difference in denotation between AP and positive degree, to the extent that the AP already establishes a relation between degrees:
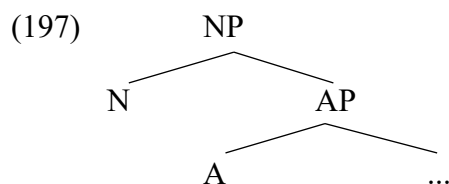
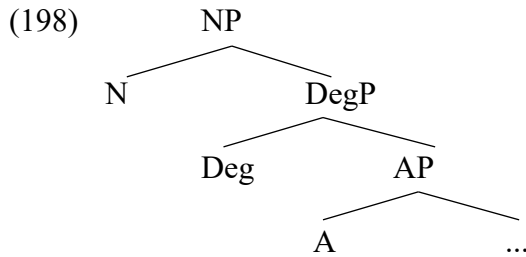(194) $[[tall^{pos}]] = \lambda d\lambda x[height(x) \geq d]$

There is, however, evidence that the AP and the positive degree should be differentiated structurally. Fábregas (2016) notes that some deadjectival nominalisations denote a dimension –that is, the whole scale– not presupposing whether the value of the property is higher, equal or smaller than a standard value that, anyways, is not presupposed or specified in the context.
    In (195) the nominalisation denotes the scale: the set of all values of height, that later on can be specified. In (196), in contrast, the nominalisation entails that the participant exhibits that property in a degree that is equal or higher to a standard value.

(195)   a. La altura del edificio es de 20 metros.
             the height of.the building is of 20 meters
         b. Este objeto mide la altura del edificio.
             this object measures the height of.the building
(196)   a. La altura del edificio nos sorprendió.
             the height of.the building us surprised
             'The height of the building surprised us'
         b. La altura de Juan le permite jugar en el equipo.
             the height of Juan him allows to.play in the team

Fábregas (2016) proposes that this distinction is obtained if the nominaliser selects different layers of structural complexity of the adjective. In the scalar nominalisations of (195), the nominaliser directly selects AP, while in (196) the layer embedded under NP is already DegP, and introduces the standard of comparison.

(197)   NP
              ╱   ╲
          N   AP
                   ╱   ╲
                 A   ...

(198)

```
                NP
           ____|_____
          N        DegP
                ____|_____
              Deg        AP
                      ____|____
                     A       ...
```

This is in contrast to syntactic contexts, which as we saw above (§3) do not seem to be differentiating between distributions that are exclusive of AP vs. those that are exclusive of an adjective with DegP. At least word formation seems to be sensitive to cases where AP can be merged in opposition to DegP, even if it seems to be the case that the structurally more complex syntactic configurations seem to be always requiring the presence of DegP above AP, and perhaps any other gradable predicate.

The denotation of the positive degree, beyond this, faces a problem when we consider not just positive adjectives, but also negative ones. Remember that in §4 we mentioned that scalar structure predicts that some dimensions will be lexicalised with two different adjectives, one directed towards the positive values and another directed towards the negative values.

(199)   a. alto ~ bajo
            tall   short
        b. seguro ~ peligroso
            safe   dangerous
        c. recto ~ torcido
            straight bent

Note that the semantics of the adjective in the positive degree is defined as the degree of a dimension, and that dimension is in principle shared by the two adjectives that form an opposition.

(200)   a. $[[\text{seguro}^{AP}]] = \lambda d\lambda x[\text{SAFETY}(x,d)]$
        b. $[[\text{peligroso}^{AP}]] = \lambda d\lambda x[\text{SAFETY}(x,d)]$

The problem is that if we define positive degree as 'equal or higher to a standard value', this will not give us the right semantics of an adjective such as 'dangerous'.

(201) $[[\text{peligroso}^{Pos}]] = \lambda x. \exists d,d_{standard}[\max\{d: \text{SAFETY}(x,d)\} \geq d_{standard}]$

What we want to say is that the value of safety is below a standard value in order to say that something is dangerous. How can we solve this problem? There are essentially three views.

The first view forces us to consider that adjectives oriented to the negative part of the scale combine with a positive degree operator that has the opposite semantics, that is, below the standard value of safety. (202a) would be the positive degree denotation for a positive adjective and (202b) would be the positive degree denotation for a negative adjective.

(202)   a. $[[\text{Deg}^{Pos}]] = \lambda G.\lambda x. \exists d,d_{standard}[\max\{d: G(x,d)\} \geq d_{standard}]$

b. $[[\text{Deg}^{\text{'Pos}}]] = \lambda G.\lambda x. \exists d,d_{\text{standard}}[\max\{d: G(x,d)\} < d_{\text{standard}}]$

This is in principle possible, but clearly not very desirable. For starters, we would like to know what ensures that some adjectives only combine with one of the values and not the other. If we apply the wrong positive degree to an AP we will end up denoting that something with no safety is safe, or that something with a very high value of safety is dangerous. It is very difficult to find any type of principle that will ensure this. Of course, stating that the lexical adjective, as AP, already defines the relation between degree values would solve this problem, but at the cost of not distinguishing between the scale denotation and the denotation where some interval of values within the scale is already selected, which we have seen is necessary at least in some contexts.

A second option is to use negation, in order to obtain the right relation between the intervals. There is some evidence (Kennedy 1999) that the negative adjectives, or at least some of them, contain a syntactic and semantic negation. Compare (203a) and (203b), where the second accepts for many speakers licensing of the negative polarity item.

(203)   a. *Es seguro ir por ninguna calle.
              is safe to.go for any street
          Intended: 'It is safe to pass by whichever street you want'
          b. ?Es peligroso ir por ninguna calle.
              is dangerous to.go for any street
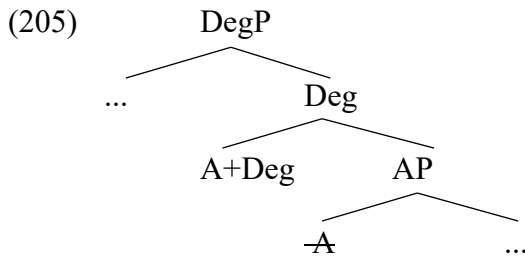   'It is dangerous to pass by any street'

The contrast is between the licensing of a negative polarity item or not: the positive adjective in (203a) does not license a negative polarity item *ninguna* in the infinitival clause, while the negative adjective in (203b) seems to be able to do so. Of course, (203a) becomes grammatical as soon as we add the overt negation.

(204)   No es seguro ir por ninguna calle.
          not is safe to.go for any street
          'It is not safe to pass by any street'

The comparison between (204) and (203a) suggests as a possible explanation of (203b) that the negative adjective actually incorporates in its syntactic structure a negation –meaning, almost literally, that 'dangerous' is 'not-safe'–. If this is true, then the standard semantics of negation, which is to obtain the complementary set of the positive version, would give us the right denotation: instead of selecting the interval from the standard value up, with a negative adjective the interval selected would be the complementary one, below the standard value. However, this has two problems.

The first problem is that in order to do this, the negation would have to take scope above the DegP, even if lexically this negation is supposed to be part of the lexical meaning of the adjective ('dangerous' vs. 'safe'). Note that what we want to reverse is not the dimension, but rather the 'equal or higher than' relation that is introduced in the positive Deg head, in order to obtain 'not equal or higher than'.

This is not impossible, in principle: if the head of the AP rises to Deg, this could be possible –albeit with the problem that generally head movement does not have incidence in semantics (Travis 1984)–.

(205)

```
                    DegP
            _____/‾‾‾‾‾‾‾‾
          ...              Deg
                     _____/‾‾‾‾‾‾‾
                  A+Deg          AP
                            _____/‾‾‾‾‾‾
                           A            ...
```

The second problem is, however, more serious: not every adjective that we should analyse as 'negative' from the perspective of the set of degrees within the scale that satisfy its denotation is able to license negative polarity items. In fact, this includes some adjectives that overtly carry negative prefixes.

(206)   a. *Es afortunado encontrar ningún trabajo.
             is fortunate to.find any job
        b. *Es desafortunado encontrar ningún trabajo.
             is unfortunate to.find any job
(207)   a. *Es bonito ir juntos de vacaciones a ningún sitio.
             is beautiful to.go together on holidays to any place
        b. *Es feo ir juntos de vacaciones a ningún sitio.
             is ugly to.go together on holidays to any place

Thus, the incorporated-negation solution would work only for some negative adjectives, while we would still have the problem with many others. In fact, it seems that some adjectives are really the grammatical negation of others, while other adjectives are negative versions only from the perspective of conceptual semantics, but incorporate no negative element in their structure.

The third solution would be simply to drop the idea that the scale defines a dimension that must be shared by both positively oriented and negatively oriented adjectives. If one thinks about it, the scalar theory prefers a system where adjectives that are opposed to each other distribute in a complementary way the scales that underlie the same dimension, but we already saw in §4 that it is not true that the scales underlying those pairs of adjectives really have the properties that we would expect: for instance, the 'negative' of some positive adjectives closed on the lower point of the scale are not really closed on the highest point of the scale, as one would expect if the negative is always the reverse of the scale within the dimension. These mismatches suggest that perhaps the connection between two adjectives expressing opposite values is not grammatical, but conceptual: our world knowledge, not the lexical denotation of the adjective, is the factor that makes us relate adjectives such as 'pretty' and 'ugly' as 'talking of the same type of concept'. This also explains why different meanings of one adjective might relate it to different dimensions, as we discussed also in the previous section.

If this is true, then the dimensions will not be shared between the two opposed adjectives, in terms of their structural semantics. Each one of the adjectives would have their own scale and their own dimension, and within each one of the dimensions the same relation between degrees would be expressed.

(208)   a. $[[\text{bonito}^{AP}]] = \lambda d\lambda x[\text{BEAUTY}(x,d)]$
        b. $[[\text{feo}^{AP}]] = \lambda d\lambda x[\text{UGLINESS}(x,d)]$

The denotation of the positive degree operator would then be identical in both cases: something ugly is not something that has a degree of beauty below the standard, but something that has a degree of ugliness that is equal or higher than the standard.

(209)   a. $[[bonito^{Pos}]] = \lambda x. \exists d, d_{standard}[max\{d: BEAUTY(x,d)\} \geq d_{standard}]$
        b. $[[feo^{Pos}]] = \lambda x. \exists d, d_{standard}[max\{d: UGLINESS(x,d)\} \geq d_{standard}]$

This is, we believe, the solution that best fits with the conceptual problems about scales mentioned in §4, and has the automatic good consequence that it allows us to have a single denotation for positive degree, applied to positive or negative adjectives. Most negative adjectives, then, are negative just in terms of the conceptual semantics that they express.

5.2. The syntactic expression of the standard value
    We already mentioned that the positive degree allows for the syntactic expression of the class that defines the standard value in Spanish.

(210)   a. Juan es alto para un chico de su edad.
            Juan is tall for a boy of his age
        b. María está gorda para una bailarina.
            María is fat for a ballerina

We also saw that in Spanish this syntactic constituent can appear only with a particular type of scale, the open scales that define relative adjectives.

(211)   a. Juan está borracho (*para un piloto de avión).
            Juan is drunk for a pilot of airplane
        b. María está desnuda (*para una monja)
            María is naked for a nun

It is important that these constituents are not confused with those displayed by infinitival constituents that are related to some modifiers like *demasiado* 'too', as illustrated in (212).
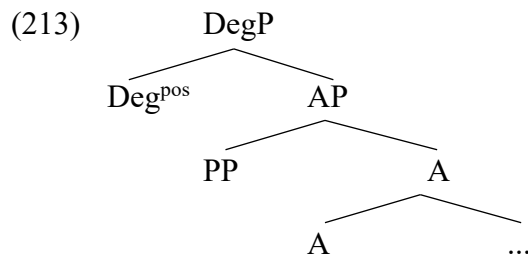
(212)   a. Juan está borracho para pilotar un avión.
            Juan is drunk to pilot a plane
            'Juan is too drunk to pilot a plane'
        b. María está gorda para bailar ballet.
            María is fat to dance ballet.
            'María is too fat to dance ballet'.

In (212) the infinitival clause does not denote the class of comparison that sets a standard value that makes Juan count as drunk or María as fat, but rather expresses a particular function that the current value of drunkness or fatness is too high to satisfy; in a sense these constituents are related to particular evaluative degree modifiers, and will be discussed in §5.3.
    The problem that the contrast between (210) and (211) produces, as we already mentioned, is that it is unclear how one could relate the presence or absence of the standard of comparison with the positive degree and, at the same time, with the scale denoted by AP.

The problem is as follows: the comparison with the standard value is a semantic property of the positive degree, as we saw above, but the presence or absence of this constituent in syntax depends on the nature of the scale, which by hypothesis is defined by the gradable predicate as a lexical element (AP if the predicate is an adjective).

Introducing the standard of comparison in the AP implies some form of look-forward or, alternative, a non monotonic syntactic derivation.

(213)

```
                DegP
              /      \
        Deg^pos       AP
                    /    \
                  PP       A
                         /    \
                       A        ...
```

Here the adjective, as a scale, determines whether we have a possible element setting the standard value: if A denotes a relative adjective, the AP allows for the introduction of this constituent, and if it denotes an absolute adjective, the AP cannot license it. Now, the syntactic shape of the standard value depends on the type of degree that one has, and even on whether one has degree. Remember that in a comparative degree the second member of the comparison plays the same role as the standard of comparison here – setting the value which relationally defines the interval of degrees associated to the predicate–, but the syntactic shape is different.

(214)   a. Juan es alto {para / *que} un chico de su edad.
           Juan is tall for/than a boy of his age
   b. [max{d: TALLNESS(Juan,d)} ≥ {d_{st}: TALLNESS(boys his age, d_{st})}

Compare this with a superiority comparative.

(215)   a. Juan es más alto {*para / que} los chicos de su edad.
           Juan is taller for/than boys of his age
   b. [max{d: TALLNESS(Juan,d)} > {d': TALLNESS(boys his age, d')}

Thus it has to be the positive degree that licenses the standard value, syntactically, as the nature of degree determines its syntactic shape. If that PP is introduced already in AP, it will have to be checked later by the DegP, or it would have to be introduced counter-cyclically into the derivation within AP once the Deg head is introduced.

It is not completely impossible to go for a solution like the first one. We could say that the standard of comparison could be introduced within AP but in an uninterpretable version, waiting for DegP to license it. If DegP is not merged, the structure would be filtered at the interfaces. The derivation could go as follows.
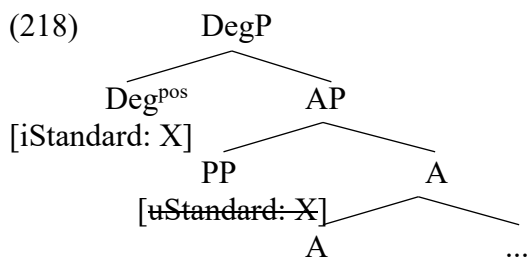
First, the AP is able to project a PP denoting a standard of comparison; this is projected or not depending on the nature of the AP, namely what type of scale it denotes. Within the AP, the standard of comparison is uninterpretable –although, assuming Pesetsky & Torrego (2004), we could say that it is valued, as manifested by the choice of PP–.

(216)

```
              AP
           ___/\___
         PP          A
    [uStandard: X]  __/\__
                   A      ...
```
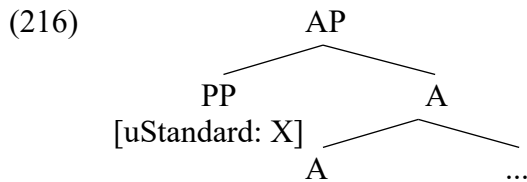
Then the DegP is introduced; if that Deg has a positive degree semantics, then it would be looking for a value to assign to the standard, which is interpretable.
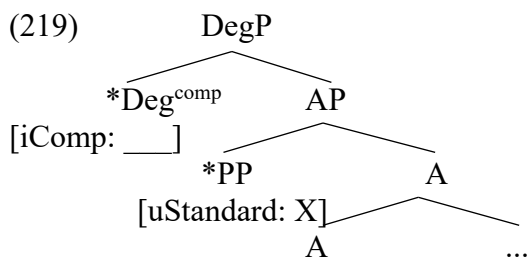
(217)

```
           DegP
          __/\__
      Deg^pos
      [iStandard: ___ ]
```
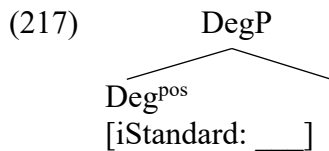
The combination is symbiotic: the positive Deg head makes the standard interpretable, and the PP in AP assigns a value to that standard.

(218)

```
              DegP
           ___/\___
      Deg^pos         AP
   [iStandard: X]   __/\__
                  PP         A
              [uStandard: X] __/\__
                           A      ...
```

The formal relation between Deg and the PP might be what explains that, on the surface, the type of preposition used depends on the type of degree that is being introduced in the derivation: it could very well be that different types of Ps are defining different types of semantic notions that need to get a value assigned.

It is not inconceivable that this 'filtering' is in action as a solution for these cases. In any context where the PP is projected and positive degree is not merged, the derivation would be ungrammatical because (i) the PP is still uninterpretable and (ii) the PP does not provide the Deg head with an appropriate value. Imagine, for instance, that comparative degree had been merged.

(219)

```
              DegP
           ___/\___
      *Deg^comp        AP
   [iComp: ___ ]    __/\__
                 *PP        A
              [uStandard: X] __/\__
                           A      ...
```

An argument in favour of this general view –the degree interval used as reference point is introduced in AP but can be filtered whenever the DegP layer does not license it– is that all adjectives, absolute or relative, do license comparative codas.

(220) a. Juan es más alto que Pedro.
          Juan is more tall than Pedro
       b. Juan está más borracho que Pedro

Juan is more drunk than Pedro

The distinction between relative and absolute adjectives in the PP introduced in the positive degree, then, dissolves in the comparative degree, which suggests that in such cases the PP cannot be introduced within the AP structure, but actually in a structurally higher position. Importantly, in such cases the standard value cannot be expressed syntactically.

(221)   *Juan es más alto para un chico de su edad que Pedro.
        Juan is more tall for a boy of his age than Pedro

This structure would correspond to (219), with the additional structural complexity required to introduce the second member of the comparison, which is not introduced in (219).

5.3. Evaluative degree modifiers in the positive degree
This is the right moment to discuss different degree modifiers that have an evaluative nature, as they must always combine with adjectives in the positive degree. We can show this by two properties: they are compatible with the PP denoting the standard of comparison –if the adjective is relative, of course– and they reject DegPs that contain a comparative degree modifier.

(222)   a. Juan es muy (*más) alto para un chico de su edad.
           Juan is very   more tall for a boy of his age
        b. Juan es un poco (*más) alto para un chico de su edad.
           Juan is a bit   more tall for a boy of his age
        c. Juan es poco (*más) alto para un chico de su edad.
           Juan is little   more tall for a boy of his age
        d. Juan es bastante (*más) alto para un chico de su edad.
           Juan is quite   more tall for a boy of his age
        e. Juan es demasiado (*más) alto para un chico de su edad.
           Juan is too   more tall for a boy of his age
        f. Juan es suficientemente (*más) alto para un chico de su edad.
           Juan is enough   more tall for a boy of his age

The role of these modifiers within these structures –which Kennedy (1999: 225) calls 'deviation constructions'–, however, is not as well studied as the positive degree constructions themselves, or the comparative degree constructions. Intuitively, but with many differences that we will point out as we proceed, these modifiers seem to further restrict the degree interval that has already been fixed by the positive degree structure.
The most intuitive of the six, and the one that best allows us to evaluate the role of these modifiers is *muy* 'very'. Compare (223a) with (223b).

(223)   a. Juan es alto para un chico de su edad.
           Juan is tall for a boy of his age
        b. Juan es muy alto para un chico de su edad.
           Juan is very tall for a boy of his age

(223a), as we saw before, defines the degree variable of the adjective as the interval of degrees which is equal to the normal value for a boy his age, or exceeds it. If boys

his age are typically 1'5 meters, then Juan is 1,5 meters tall, or more. (223b), however, further specifies the relevant interval: Juan is not 1,5 meters tall, if that is the normal value for boys his age, because he must exceed that value to a large extent. What counts as large is subject to the context, again, but what the modifier does is to restrict the interval further, excluding at least the value that is equal to the standard, and those that are higher but too close to it.

Pastor (2008, 2011) in fact proposes this type of division: degree heads are used to designate the relation between two degree intervals, while degree modifiers take the resulting interval and modify it, with the effect that they restrict it. For Pastor (2011), the degree heads are positive degree and the comparative elements *más* 'more', *menos* 'less' and *tan* 'as much', while the rest are modifiers –that is, at least all the items that we will mention in this section–. We will go back to this question repeatedly in §6 and §7.

From this perspective, and with appropriate qualifications that we will soon make, the other evaluative modifiers essentially perform the same operation, further restricting the degree interval set within positive degree. This is the general case for modifiers such as *considerablemente* 'considerably', *extraordinariamente* 'extraordinarily', *extremadamente* 'extremely', *increíblemente* 'incredibly' and similar ones (RAE & ASALE 2009: §30.4e), which ponder the deviation from the standard. Remember also from the previous section that we used the adverbs *ligeramente* 'slightly' and *completamente* 'completely', among others, to identify the type of scale. From the perspective adopted here now, it is easy to understand why: over the denotation of the positive degree, the first is restricting the interval to the lowest value on the scale –thus, there must be one– and the second restricts it to the highest value.

The modifier *un poco* 'a bit' restricts the interval to values that are close to the standard value, although still exceed it. In (224) we understand that Juan is taller than 1,5 meters, but not by much.

(224)   Juan es un poco alto para un chico de su edad.
        Juan is a bot tall for a boy of his age

As RAE & ASALE (2009: §20.5) note, *bastante* 'quite' has two meanings that restrict the interval in different ways. In its first meaning it means, like *suficientemente* 'enough', that the standard value is reached –probably, then, Juan is 1,5 meters tall–.

(225)   a. Juan es suficientemente alto para un chico de su edad.
           Juan is enough   tall for a boy of his age
        b. Juan es bastante alto para un chico de su edad.
           Juan is quite tall for a boy of his age

This reading contrasts with the expression of an interval that is somehow intermediate between the intervals expressed by *muy* and *un poco*, respectively: some value that exceeds the standard, but not in a large extent. This second meaning is perhaps the one that is most common in texts. The first use (225a) is actually expressed more often with *lo bastante*.

(226)   Juan es lo bastante alto para un chico de su edad.
        Juan is the enough tall for a boy of his age

RAE & ASALE (2009: §20.5c) note that, when *bastante* is used as a nominal quantifier, several grammatical elements favour the first use, where it is essentially equal to *suficiente* 'enough'; let's reproduce those uses for adjectives here. The first one is the presence of the adverb *ya* 'already', that suggests that a particular situation has been reached –in our case, a particular degree interval–.

(227)   Juan ya es (lo) bastante alto para un chico de su edad.
        Juan already is quite tall for a boy of his age

The second one is negation:

(228)   Juan no es lo bastante alto para un chico de su edad.
        Juan not is the quite tall for a boy of his age

The third one is not possible to reproduce here, but we will mention it because it shows that these evaluative uses license a second type of PP introduced with *para*. RAE & ASALE (2009) note that in nominal contexts, this evaluative quantifier forces the first reading when used postnominally:

(229)   Juan tenía libros bastantes para repartir entre todos.
        Juan has books quite to distribute among everybody
        'Juan had enough books to distribute among everybody'

This is impossible to reproduce when used as a degree adverb (230), but we mention it because it connects with the presence of the infinitival structure introduced with *para*.

(230)   *Juan es alto bastante <u>para jugar en la liga</u>.
         Juan is tall quite to play in the league
        'Juan is tall enough to play in the league'.

This infinitival construction designates a particular event or situation which requires a particular degree interval of the property. Depending on the evaluation of the degree interval that the individual actually exhibits, participation in that situation might be possible or impossible. Note that the infinitival clause is not used to define the degree interval, which is already defined by the positive degree and further specified by the evaluative modifier: the infinitival clause defines its own degree interval, and the evaluative modifier compares it with the one that the individual has, to determine if it is enough, not enough, or too much.

The evaluations that typically license this type of clause are those refering to enough and too much (Meier 2003), because the meaning is related to the notions of sufficiency and excess. *Bastante* –in its first use– and *suficientemente* denote sufficiency with respect to that situation.

(231)   a. Juan es lo bastante alto para jugar al baloncesto.
            Juan is the quite tall to play to.the baketball
        b. Juan es suficientemente alto para jugar al baloncesto.
            Juan is enough   tall to play to.the basketball

Excess is expressed through *demasiado* (RAE & ASALE 2009: §20.5b). Without this type of infinitival clause, 'too much' restricts the interval to those degrees that

exceed the standard value to a point that violates a particular expectation or norm (232), and when combined with these infinitival clauses it indicates that the degree interval displayed by the individual is more than what it considered acceptable within that situation.

(232)   a. Juan es demasiado alto para un chico de su edad.
            Juan is too   tall for a boy of his age
        b. Juan es demasiado alto para jugar al tenis.
            Juan is too   tall to play to.the tennis

The intuition is that the structure of modifiers that indicate excess or sufficiency is more complex than the others because they contain a modal component. The idea is that (231) and (232) do not simply compare a standard value with the actual value of the subject, but they compare the value of the subject with the value that –according to some norms– is required to perform a particular action.

In contrast with 'very' or 'a little', which simply specify the degree interval, being sufficient or being excessive require the evaluation of a system of norms or expectations: enough for a particular purpose or too much for a particular purpose have to do with modal expressions like 'be allowed', 'be able to', etc. In fact, the infinitival clause can be supplemented, without change in meaning, with an overt modal verb.

(233)   a. Juan es demasiado alto para poder jugar al tenis.
            Juan is too   tall to be.able to.play to.the tennis
        b. Juan es lo bastante alto para poder jugar al tenis.
            Juan is the quite tall to be.able to.play to.the tennis

Thus, excess and sufficiency degree modifiers would introduce a modalised infinitival clause as part of their syntactic structure –and therefore would be forced to project as heads in the structure– (Hacquard 2005).

Consider from this perspective the presence of these infinitival clauses in contexts without an overt excess or sufficiency operator. In (234) we see that there are contexts where the mere presence of the infinitival clause makes us deduce the excess or sufficiency semantics.

(234)   a. Juan es inteligente para responder a esto.
            Juan is intelligent to answer this
        'Juan is intelligent enough to answer this'
        b. Juan está borracho para conducir.
            Juan is drunk to drive
        'Juan is too drunk to drive'

In such cases, whether we interpret sufficiency or excess has to do with our normative knowledge of reality, and what is an appropriate degree of each property for the situation described: we know that drunkness is normatively incompatible with driving, so any value of drunkness equal or higher than a standard would be excessive; we know intelligence is normatively required with solving problems, so a value of intelligence equal or higher than the standard is sufficient for this purpose. The important thing is that the normative meaning is necessary to reconstruct the meaning of these sentences, which suggests that even though phonologically silent, the evaluative modifier that introduces the modal expression is still present in this structure.

The second subcase is the situations where the excess or sufficiency meaning appears with an evaluative modifier that is not, in itself, meaning this modal notion.

(235)   a. Juan es muy alto para jugar al tenis.
            Juan is very tall to play to.the tennis
        b. Juan es un poco alto para jugar al tenis.
            Juan is a bit tall to play to.the tennis

Interestingly, it does seem that here the excess reading is kept in the same way as it was kept in (234b), and that here the evaluative degree modifiers are measuring not the extent of the property, but rather the extent of the excess of the property. (235a) says that the tallness of Juan exceeds by a lot what is normatively expected as tallness in the context of playing tennis, and (235b) is stating that the excess is not too much. What the degree modifiers are doing here, then, seems to be a second order operation, one already built on the semantics of (234), which is similar to the one of (233).

All these facts suggest to us that excess and sufficiency are notions which should be distinguished from the other evaluative modifiers not just semantically, but also syntactically: in particular, it seems that the modifiers that express excess or sufficiency should be treated as heads that have the capacity to introduce modalised infinitival clauses, as in (236), while the other modifiers are viewed better as simple modifiers – perhaps specifiers– that simply restrict the interval on the denotation of positive degree. Although the proposal that we will put forth now should not be viewed as a full account, we believe that it is an interesting hypothesis that deserves to be stated explicitly.

The positive degree head has two versions: one neutral, and one that is modalised to designate excess or sufficiency. Only the second is able to license an infinitival which is related to ability or not to participate in a specific situation, according to the comparison with a system of norms; the first can only license non-infinitival PPs.

(236)   a. [DegP   Deg^{pos} [AP   [PP   ]   A...]]
        b. [DegP [Modal Inf]   Deg$^{pos-mod}$ [AP   A...]]

The infinitival and the standard of comparison PP cannot co-occur together, but we claim that this is not due to they being generated in the same position (as the modalised infinitive does not depend on the type of AP merged, but on the type of degree used).

(237)   *Juan es demasiado alto para un chico de su edad para jugar al tenis.
          Juan is too   tall for a boy of his age to play tennis

The reason is rather that in excess or sufficiency, the PP denoting a standard of comparison is reinterpreted as the entity that sets a system of rules –what counts as normative or not with that class of entities–: thus, semantically an infinitival modal would introduce in such cases a second set of norms and rules, making the resulting semantics uninterpretable.

Suficientemente 'enough' and *demasiado* 'too' are members of (236b), next to the zero manifiestation that underlies (234), and the sufficiency reading of *poco*, which we will discuss later due to its complexity. In contrast to these, *muy* 'very', *bastante* in its non-sufficiency reading and *un poco* 'a bit' are members of the non-modal DegP. Other modifiers with similar meaning to 'very' are *bien* 'well' in the non-manner reading and *sobremanera*.

On top of this it seems that it is possible to pile up the modal degree head and the non-modal one. This is what we argue happens in (235), where the higher modifier is measuring the excess that the lower one defines.

(238)   [DegP [very] Deg   [DegModP   [to play]   DegMod<ø>...]

For this reason, it is possible to have two overt heads. Remember that *lo bastante* forces the sufficiency reading, while *bastante* is related to the standard evaluative reading 'quite a lot':

(239)   Juan es lo bastante bastante alto para jugar al baloncesto.
        Juan is the quite quite tall to play basketball
        'Juan sufficiently exceeds the standard of tallness to play basket'

Thus, to (almost) conclude: evaluative modifiers are used to further restrict the degree interval defined by positive degree, in two ways: either they restrict to interval to a particular subinterval or they introduce a normative evaluation of whether the actual degree interval exhibited by the individual is enough or not, and excessive or not for a particular situation.
   The only modifier that seems to get away from this characterisation is *poco*.

(240)   Juan es poco alto para un chico de su edad.
        Juan is little tall for a boy of his age
        'Juan is not tall enough for a boy his age'

Apparently (240) falls outside the characterisation because it says that Juan is not tall. If the interval set by the positive degree of 'tall' is 'equal or higher than the degree of tallness of a boy his age', it seems that *poco* is not restricting or evaluating that interval, but rather reversing it.
   The problem disappears as soon as we realise that *poco* 'little' is a downward monotonic operator. Remember that this quantifier can trigger subjunctive in a relative clause, just like negation does:

(241)   a. Hay pocos que sepan esto.
            there.are few that know.sbj this
        b. *Hay muchos que sepan esto.
            there.are many that know.sbj this
        c. *Hay unos pocos que sepan esto.
            there.are a few that know.sbj this
        d. *Hay suficientes que sepan esto.
            there.are enogh that know.sbj this
        e. *No hay unos pocos que sepan esto.
            not there.are a few that know.sbj this
        f. No hay suficientes que sepan esto.
           not there.are enough that know.sbj this

If *poco* used in this sense is in fact the materialisation of the negation combined with 'enough', then the characterisation that we just presented can be maintained: the negation reverses the interval, but the modifier introduces an evaluation of that interval, in terms of sufficiency.

A similar observation can be made with respect to the modifier *nada* 'not at all' (242), which however requires licensing by a negation. Negation selects the degree values that are complementary to the positive degree interval –those below the standard value–, and the modifier restricts that interval to the lowest conceivable point –absence of any extent of the property–.

(242)   Juan no es nada alto.
        Juan not is nothing tall
        'Juan is not tall at all'

Let us now leave this matter here, and move to some morphological facts about the other two degrees in Spanish.

6. Comparative and superlative: morphological facts

Morphological facts have also played a significant role in the analysis of degree structures, and in particular with respect to three main issues: (i) what are the types of adjectives that allow comparative or superlative morphology, and whether Spanish has a morpheme that corresponds to a superiority comparative, within the discussion of how to differentiate degree heads and degree modifiers (§6.1); (ii) the absence of a morphological form for the inferiority comparative (§6.2); (iii) what is the nature of the suffix *-ísimo*, and specifically if it is superlative, and if not whether it is an inflectional or a derivational suffix and (iv) what types of relations are allowed, morphologically, among different classes of degree (§6.4) and which consequences it has for the structural representation of the comparative and the superlative, in contrast to the positive (§6.5). Let us look at each one of these questions in order.

6.1. Morphological degree and the distinction between heads and modifiers

In contrast to languages like English, the manifestation of degree in Spanish is mainly syntactic: the number of degree morphemes is pretty reduced, and subject to a good deal of controversy. Pastor (in press) and Kornfeld (in press) discuss the problem of whether prefixes such as those cited in (243) can be considered manifestations of degree.

(243)   a. super-conocido
            super-famous
        b. archi-famoso
            super-famous
        c. requete-guapo
            super-handsome
        d. sub-estándar
            sub-standard

It is clear that, if anything, these prefixes would be degree modifiers that operate above the denotation of positive degree, accordingly restricting the degree interval in the way that we saw in §5.3.

However, as Pastor (2011) discusses and we also saw in §5.3, there should be a division between degree heads and degree modifiers. For Pastor (2011), degree heads are elements such as those cited in (244), which define the relation between the standard and the actual degree interval corresponding to the subject.

(244)   a. Positive degree (equal or higher than the standard value)
        b. más (higher than the value of the second member of comparison)
        c. menos (lower than the value of the second member of comparison)
        d. tan (equal to the value of the second member of comparison)

In contrast, degree modifiers are those that delimit the resulting interval, as in §5.3 or the prefixes in (243). For Pastor (2011), then except for the elements in (244), the rest of the degree objects in Spanish are modifiers. There are two questions with respect to this: (i) whether there are independent criteria to determine this division, beyond the semantic role –which is not really determinant, given that a head could restrict the denotation of another head and some non-head operators can define relations– and (ii) whether the degree heads in Spanish can be expressed as morphemes, just like it is the case with degree modifiers.

The criteria are not so clear. Consider for instance ellipsis. It is generally assumed that an empty category can be licensed by heads, but not by modifiers (given the Empty Category Principle, Chomsky 1986). On the assumption (standard in syntax) that DegP takes AP as a complement, then if a degree element is a head, it should be able to license ellipsis of the AP, and if it is a modifier (even a modifier within DegP, with an empty head) it should not. However, from this perspective all the elements are non-heads, because none of them allows a zero manifestation of the adjective.

(245)   a. *Juan es alto, y María es muy.
          Juan is tall, and María is very
        b. *Juan es alto, y María es más.
          Juan is tall, and María is more
        c. *Juan es alto, y María es menos.
          Juan is tall, and María is less
        d. *Juan es alto, y María es tanto.
          Juan is tall, and María is as
        e. *Juan es alto, y María es bastante.
          Juan is tall, and María is quite
        f. *Juan es alto, y María es suficientemente.
          Juan is tall, and María is enough
        g. *Juan es alto, y María es demasiado.
          Juan is tall, and María is too much

From the perspective of which degree expressions allow pronominalisation of the complement, all of them except for *muy* 'very' and *bien* 'well' seem to allow it. One is tempted to propose that here, instead of a syntactic difference, we are diagnosing a phonological difference or a morphological one: *muy* and *bien* are two apocopated forms related with *mucho* and *bueno*.

(246)   a. Juan es alto, y María lo es más (que él).
          Juan is tall, and María so is more (than him)
        b. Juan es alto, y María lo es menos (que él).
          Juan is tall, and María so is less (than him)
        c. Juan es alto, y María lo es tanto como él.
          Juan is tall, and María so is as much as him
        d. Juan es alto, y María lo es bastante.
          Juan is tall, and María so is quite

    e. Juan es alto, y María lo es lo suficiente.
      Juan is tall, and María so is the enough
    f. Juan es alto, y María lo es demasiado.
      Juan is tall, and María so is too much
    g. Juan es alto, y María lo es sobremanera.
      Juan is tall, and María so is a lot
    h. Juan es alto, y María lo es increíblemente.
      Juan is tall, and María so is incredibly
(247) a. *Juan es alto, y María lo es muy.
      Juan is tall, and María so is very
    b. *Juan es alto, y María lo es bien.
      Juan is tall, and María so is well

An additional criterion is whether the different degree expressions can appear together or not. For instance, once we determine that *más* is a head, one reason to say that *bastante* 'quite' is a modifier is that it can co-occur with it.

(248) a. [DegP   [bastante]   Deg<más>   ...
      b. [DegP   [bastante]   Deg<menos> ...
      c. [DegP   [bastante]   Deg<Pos-Deg>   ...

This test is inconclusive, however, because of three reasons. First, it does not exclude that the combination of the two forms is in fact the result of two degree heads combining in two different layers, as we suggested for the sufficiency and excess expressions in combination with other evaluative modifiers. Second, the 'modifiers' themselves appear modified in other contexts, which shows that they should also be heads at some level of complexity:

(249) a. poco más alto
      little more tall
    b. poco menos alto
      little less tall
(250) a. muy poco alto
      very little tall
    b. bastante poco alto
      quite little tall
    c. demasiado poco alto
      too little tall

Funnily enough, the only elements that do not allow themselves modification are *muy* and degree *bien*, which are also the only two that do not allow pronominalisation of the adjective.

The third and final problem of this criterion is that the element diagnosed as the modifier here is the differential, which in some analyses is treated as a head –at least, it is base generated as a head– (Sáez del Álamo 1997, Brucart 2003, see §7.4).

One additional criterion to determine the distinction between modifier and head is morphological irregularity and suffix manifestation. Since Travis (1984) it has been proposed that suffixes correspond to heads that select the morphological base (251). Therefore, to be a suffix in principle one must be in a head-complement relation with the base.

(251) [XP   X<suffix>   [Y<base>]]

Similarly, a synthetic manifestation of a functional property –where one single exponent expresses a whole syntactic constituent– is also restricted to head-complement relations in a standard account: the operations of head-movement, fusion (Halle & Marantz 1993) and spanning (Ramchand 2008) are restricted all to head-complement relations. Therefore, it follows that if adjectives combined with a particular degree value express that value through a suffix or through a synthetic form, that degree value would have to be in a head-complement relation with the adjective, and thus will be diagnosed as a head.

From this perspective, Spanish only shows synthetic morphological degree expression in one case: the comparative of superiority. Moreover, this only happens in four forms.

(252) a. mejor
          better
       b. peor
          worse
       c. mayor
          bigger
       d. menor
          smaller

That there are only these four forms makes it implausible that here the ending *-or* could be segmented as a morphological suffix corresponding to the degree, even if historically it corresponded to a morphological comparative. In fact none of the other adjectives in *-or* coming from Latin behave as full comparatives, for instance with respect to the property of combining with *mucho*, not *muy* (RAE & ASALE 2009: §45.2l).

(253) a. mucho {mejor / peor / mayor / menor}
          much   better / worse / bigger / smaller
       b. muy {inferior / superior / anterior / posterior / ulterior}
          very inferior / superior / anterior / posterior / ulterior

It is true, however, that these forms can show the property of admitting multiplicative values, which is characteristic of comparatives.

(254) a. *tres veces alto
           three times tall
       b. tres veces más alto
          three times more tall
(255) tres veces {inferior / superior / anterior / posterior}
       three times inferior   superior   anterior   posterior

Moreover, the form *mayor* has become also a positive degree form, which can combine with *muy* and expresses something along the lines of 'old' (RAE & ASALE 2009: §45.2m).

(256) muy {mayor / *mejor}
　　　 very old　　/ better

Thus it is unlikely that, in a parallelism with English, we would want to decompose adjectives such as (252) as in (257).

(257) a. mej-or
　　　 b. bett-er

Let us agree, however, that even if there is no degree suffix to express comparative degree, the superiority comparative degree form does have some synthetic forms that support the idea that the degree element equivalent to 'more' is actually a syntactic head.

6.2. Lesslessness

But there are, again, several problems: specifically no language in the world seems to have a synthetic form for the inferiority comparative (Bobaljik 2012: 4, who calls this principle 'Lesslessness').

(258) a. MORE tall > tall-er
　　　 b. LESS tall > less tall

No language in the group of 300 languages that Bobaljik (2012) studies exhibits an irregular, synthetic or suffixal form for the inferiority comparative. From the perspective of the criterion that we follow here, this would mean that the inferiority comparative *menos* 'less' is not a head, but a modifier.

Bobaljik (212: 214-217) himself does not advocate for this idea, but rather associates it to a principle of complexity that sets an upper bound to how much information can be bundled inside one single exponent –a position that is not really standard within formal approaches to morphology that are not functionalism-inspired–. In his proposal, the inferiority comparative is structurally built from the superiority comparative through the combination of two heads: Comp(arative) and a head that reverses the polarity of a degree relation. Bobaljik notes that in some languages the inferiority comparative adverb shows this morphological decomposition, for instance German.

(259) wenig-er
　　　 few-comp
　　　 'less'

Given that the equivalent to LESS is already merging together two heads, the comparative and the polarity reversing head, the form is already too complex to merge in addition to it with the lexical adjective. From this perspective, then, the problem would not be that the inferiority comparative is not a head, but rather that the inferiority comparative already implies additional heads that create a higher level of complexity.

6.3. The alleged morphological manifestation of the superlative

There are of course morphemes that express notions that are traditionally called 'superlative', and these are the two forms in (260).

(260) a. buen-ísimo
　　　　 good-ISIMO

    b. buen-érrimo
      good-ERRIMO

The consensus right now is, however, that this form is not really superlative, but rather elative or simply belonging to the general class of appreciative morphology (Eguren 2001, Pastor in press, Kornfeld in press). Even though there are technically several irregular forms of this kind (261; RAE & ASALE 2009: §7.4h), the behaviour does not fit with the one expected from a superlative (remember §3 and see §8 later).

(261) a. óptimo
      good-ISIMO
    b. pésimo
      bad-ISIMO
    c. máximo
      big-ISIMO
    d. mínimo
      small-ISIMO
    e. crudel-ísimo
      cruel-ISIMO
    f. sapient-ísimo
     knowledgeable-ISIMO
    g. fidel-ísimo
      faithful-ISIMO
    h. frígido
      cold-ISIMO

These adjectives are rather elative, that is, they express a very high degree or the maximal conceivable degree within a particular property. The real form of the superlative in Spanish (262) is (i) restricted to definite noun phrases given the requisite of unicity that any superlative must satisfy (263) and (ii) able to introduce a superlative coda that defines the group where the subject exhibits the highest degree of the property.

(262) el chico más guapo <u>de la clase</u>
      the boy most handsome of the class
      'the most handsome boy of the class'
(263) *un chico más guapo de la clase
       a boy most handsome of the class

None of these properties is displayed by these adjectives traditionally called 'superlative' –a clear misnomer from a synchronic perspective–.

(264) un libro interesantísimo
      a book interesting-ISIMO
(265) *el libro interesantísimo de la lista
       the book interesting-ISIMO of the list

The elative morpheme has been discussed also from the perspective of whether it should be an inflectional or a derivational morpheme. Most current theories clearly go for the second option (cf. for instance Varela 2005, or RAE & ASALE 2009, who discuss the morpheme in the chapter devoted to adjectival derivation, not the one on

the inflection of adjectives). The inflectional option made some sense when the suffix was misclassified as expressing superlative degree, on the belief that inflection is the morphological class of operations that includes those that produce the paradigm of lexemes: degree was one of the grammatical accidents related to adjectives, so the suffix should be inflectional. Beyond this, a typical problem of this suffix from the perspective of inflection is that it could combine not just with adjectives, but also with other forms.

(266)   general-ísimo   N
        general-ISIMO
        'the main general'
(267)   lej-ísimo-s   Adv
        far-ISIMO
(268)   cuant-ísimo   Quantifier
        how.much-ISIMO

However, the suffix is not prototypically derivational, either. The problems exhibited by it are reminiscent of those related to appreciative morphology: its productivity is high, and its meaning is typically compositional, so it is not listed in dictionaries. Like some appreciative morphemes, it can be iterated:

(269)   a. chiqu-it-it-o
           small-dim-dim-masc
        b. guap-is-ísimo
           handosme-ISIMO-ISIMO

Like most appreciative morphemes, it does not change the gender of the base –when it has one– and it does not combine with inflected verbs, although it can do it with gerunds.

(270)   corriend-ísimo
        running-ISIMO

What seems to be the case is, then, that this suffix should be viewed as a marker of elative meaning, where elative indeed is related to degree because it expresses an extreme value of a property expressed by or related to the base, but without belonging to the grammatical expression of degree. This morpheme, in fact, should probably be viewed as an affixal version of other elements that express extreme degree, such as those in (271) and (272).

(271)   hambre canina
        hunger dog-like
        'exteme hunger'
(272)   a. loco de atar
           crazy of tying
           'extremely crazy'
        b. un problema de dos pares
           a problem of two pairs
           'an extreme problem'

6.4. The *ABA filter, comparatives and superlatives

Thus we can conclude that the shape of the superlative in Spanish is in essence identical to the one of the comparative, in the way that if the comparative is irregular, the superlative is also irregular in the same way.

(273)　a. bueno
　　　　　good
　　　b. mejor
　　　　　better
　　　c. (el) mejor
　　　　　 the best
(274)　a. malo
　　　　　bad
　　　b. peor
　　　　　worse
　　　c. (el) peor
　　　　　 the worst

We will call this pattern of irregularity ABB, that is, the form A of the positive degree is different to the comparative (of superiority) B, while the superlative is identical to the comparative. This ABB principle is essentially exceptionless in Spanish, whenever the comparative and the positive are differentiated.

Bobaljik (2012) explores the relation between the different types of irregulars in a sample of 300 languages, and notes a number of possible patterns. The ABB pattern is well-established in the sample, as exemplified for instance in Basque:

(275)　a. asko
　　　　　many (pos)
　　　b. gehi-ago
　　　　　many-er
　　　'more'
　　　c. gehi-en
　　　　　many-est
　　　'most'

Of course, an AAA pattern is also well-established, meaning essentially that there is no irregular expression of the adjective in either of the two degrees.

(276)　a. big
　　　b. bigg-er
　　　c. bigg-est
(277)　a. grande
　　　　　big
　　　b. más grande
　　　　　more big
　　　c. (el) más grande
　　　　　 the most big

The ABC pattern is also documented: here both comparative and superlative are irregular, but each one with its own irregular base. Consider Latin.

(278) a. bon-us
           good
       b. mel-ior
           good-er
       c. optim-us
           best

What is undocumented is (i) a pattern AAB, where the superlative is irregular but not the comparative, and (ii) a pattern ABA, where the comparative is irregular but the superlative is regular. To be clear: that would mean something like (279) for English.

(279) *good-better-goodest

The reader might be jumping now to reply that Spanish allows for the superlative in (280), but this is not a counterargument for Bobaljik, because the varieties and conditions that allow (280) in the superlative are the same as those where (281) is allowed in the comparative. If there is only one irregular form in the comparative that must be forcefully used, then the superlative cannot be regular.

(280) el chico más bueno
       the boy most good
(281) más bueno que su hermano
       more good than his brother

From the absence of AAB and ABA Bobaljik concludes that the comparative and the superlative are both more complex than the positive degree –to the point that the relation between superlative and comparative is closer than the one that either of them has with the positive– and that the superlative is built with the structure of the comparative, essentially, so that any trigger of irregularity that the comparative has will be carried on to the superlative. He calls this The Containment Hypothesis (2012: 49).

(282) The representation of the superlative properly contains that of the comparative ([at least] in all languages that have a morphological superlative)

Let us close this section, then, with the discussion of the consequences of these patterns for the syntactic representation of the comparative and the superlative.
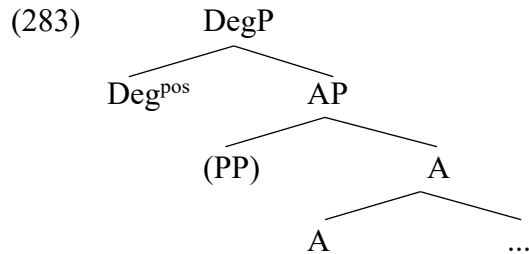
6.5. Consequences for the structure of degree
Bobaljik's (2012) observations about the absence of AAB and ABA patterns, essentially, dictate the following principles.

(i) the positive degree has to be expressed differently from both the comparative and the superlative
(ii) the superlative is built above the structure of the comparative, but the comparative is not built above the structure of the positive.
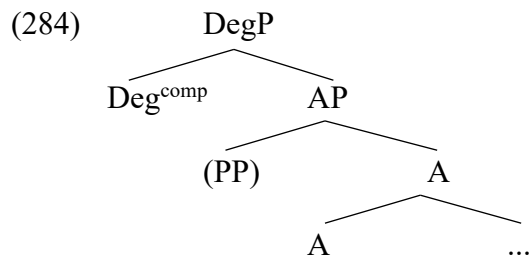
Let us use them as an introduction to the next section, where we will be more explicit about the syntax and semantics of the comparative.

Essentially, this predicts the existence of two heads that alternate as different manifestations of DegP –more specifically, as different manifestations of the Deg layer that Corver (1997) and Izvorski (1995) associate to quantification–. (283) represents the positive degree, where remember that the presence or absence of the syntactic PP that defines the standard of comparison depends on the scalar properties of the adjective, although the PP has to be licensed by Deg^{Pos}.

(283)

```
            DegP
          /      \
     Deg^pos      AP
                /    \
             (PP)     A
                    /   \
                   A     ...
```
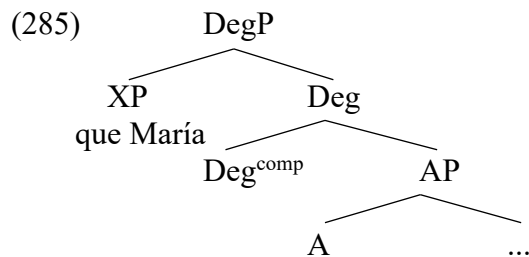
The semantic denotation of this degree is 'higher or equal to the standard value'. Remember also that we supported the view that the degree associated to excess or sufficiency is more complex, and has a modal base.

In contrast, (284) expresses the superiority comparative degree.

(284)

```
            DegP
          /      \
    Deg^comp      AP
                /    \
             (PP)     A
                    /   \
                   A     ...
```
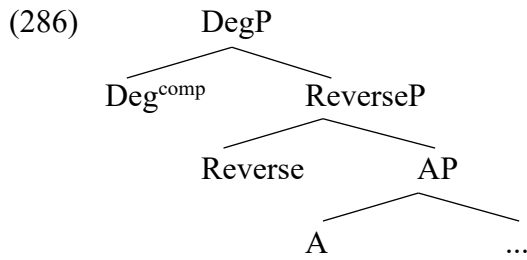
Its semantics is different: 'higher than the standard value', where the standard value is now introduced by a comparative coda which is independent of the scalar properties of the adjective. For this reason it seems to be reasonable to associate it to the DegP projection, as in (285).

(285)

```
            DegP
          /      \
        XP        Deg
   que María    /     \
          Deg^comp      AP
                      /    \
                     A      ...
```

The impossibility of having the comparative coda co-occur with the standard value would have to come from Comp licensing a comparative coda, not the PP denoting the standard value.

Note two things at this point. The first one is that (285) defines the superiority comparative, not the equality one or the inferiority one. Bobaljik (2012), through Lesslessness, already proposes that the inferiority comparative should be build from the superiority one, adding a reversing head.

(286)
```
              DegP
            /      \
       Deg^comp    ReverseP
                  /      \
            Reverse       AP
                        /    \
                      A       ...
```
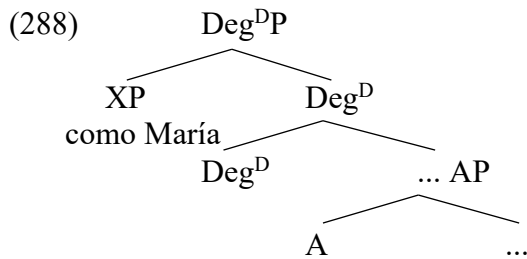
The addition of Deg and Reverse becomes *menos* 'less', as we saw, and in principle this prevents the same exponent to express also a synthetic form including the lexical adjective.

Second, the equality comparative should be different for two reasons that we already introduced, and that we will develop further in §7.5: first, the comparative degree identifies the maximal degree of the subject by equaling it to the maximal degree of the second member of the comparison, not just quantifies over it; second, the type of coda is formally different, so it cannot be introduced by the same head.

(287)   a. más alto que Pedro
            more tall than Pedro
        b. tan alto como Pedro
            as   tall as   Pedro

Combining this with Corver (1997) –see also Sánchez López (2006) and Pastor (2008)– this suggests that the equality comparative is merged not as the quantificational degree, but as the referential degree similar to DP.

(288)
```
              Deg^DP
            /       \
         XP          Deg^D
      como María   /       \
              Deg^D          ... AP
                            /    \
                          A       ...
```
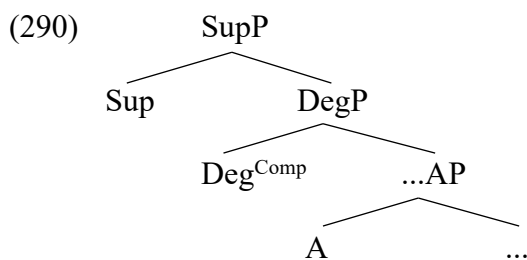
Going now to the superlative, Bobaljik's (2012) proposal is that the superlative is built over the comparative degree head, in its superiority or inferiority version –note that the reverse head is below Deg, not above it, so one can define Superlative as a head that always selects the same Comp head–. Several languages show this containment relation morphologically, by expressing the superlative through an additional morpheme that is added to the comparative morpheme. Persian is one such example (2012: 50).

(289)   a. X
        b. X-tær
        c. X-tær-in

This is expressed by a structure like (290), where we have to assume that the superlative selects the superiority comparative head, not the equality one, with or without the reverse operator.

(290)

```
              SupP
             /    \
          Sup      DegP
                  /    \
             Deg^Comp   ...AP
                       /    \
                      A      ...
```

Like this, if Superlative contains Comparative but not Positive, it can be that the Superlative picks another irregular base than the comparative (ABC pattern), or that it takes the same irregular base as the comparative (ABB), but it will not be the case that it picks the regular form of the positive when the comparative is irregular (ABA) because the superlative does not contain the positive. The AAB pattern is impossible because comparative does not contain positive –it substitutes it–, so any irregularity related to the structure that makes the superlative be different would already appear in the comparative, contained in the superlative.

Note, however, that in order to block AAB Bobaljik has to exclude a situation where the irregular form is triggered by the presence of Superlative, not by the presence of Comparative. If neither positive degree nor comparative degree have an irregularity triggering property, but Superlative has it, AAB might be possible to generate.

The structure in (290) also predicts that the semantics of the superlative shoud be modelled through the semantics of the comparative, a prediction that will be discussed in §8. It also opens up the question of what happens with the (syntactic) second member of the comparison in the superlative version.

However, this system is a good background to move now to the dicussion of the syntax and semantics of comparative structures.

7. The syntax and semantics of comparative structures

In this section, we will overview the main questions about the syntax and semantics of comparative structures. The issues that we will discuss in each one of the subsections are obviously intertwined, but we will divide them into specific research questions for the sake of clarity. Before we start, a caveat is in order: cannonical comparative structures –see §7.6 for non-cannonical comparatives– fall into three main classes, depending of what is the notion compared: numbers (291a), quantities (291b) and degrees (291c). Given the empirical domain discussed here, we will concentrate on the last type, even if the problems that we will overview here are obviously relevant for the previous two classes (see Sáez del Álamo & Sánchez López 2013 for a very complete overview of comparison, in general).

(291)   a. Carlos tiene más problemas que Luis.
             Carlos has more problems than Luis
        b. La sopa tiene menos sal que el pescado.
             the soup has less salt than the fish
        c. Las comparativas son más difíciles que el subjuntivo.
             the comparatives are more difficult than the subjunctive

As a background to the questions that we will address in the following pages, we will remind the reader of the main components of a comparative structure, and we will introduce terminology. There are three types of comparatives: superiority, inferiority and equality. Equality comparatives have specific properties that differentiate it from

the other two classes, as noted repeatedly in the previous sections (in particular, §1.1 and §6.5). These different properties will be addressed in §7.5.

(292) a. Juan es más alto que Pedro.
         Juan is more tall than Pedro
       b. Juan es menos alto que Pedro.
          Juan is less tall than Pedro
       c. Juan es tan alto como Pedro.
          Juan is as tall as Pedro

Let us take a comparative structure such as (293).

(293) El Covid-19 es diez veces más letal que la gripe.
       the Covid-19 is ten times more lethal than the flu

Different components of the comparative are presented here (see RAE & ASALE 2009: §45.2a for a particularly clear presentation of these elements). Next to the comparative adverb *más* –which as we saw could be considered a quantifier or not, depending on the analysis–, we have a comparative base. The comparative base is the notion that is being compared, and in this case it is the degree of lethality that two entities display. The comparative base is in principle different from the comparative head, which is the syntactic constituent with which the comparative adverb combines and which acts as the restrictor of the quantifier. In our example, the comparative head and the comparative base coincide, but this is not always the case.

(294) La caja es más alta que ancha.
       the box is more tall than wide

In (294), the comparative head is the adjective corresponding to 'tall', but the comparative base is not the degree of tallness, but the extensions –measured in the same units, by convention– of two different scales, one of width and one of length.

(293) also shows a modifier of the comparative adverb, *diez veces*, which measures the difference between the two degree intervals compared. This is called the differential value, and its properties and role will be discussed in §7.4.

The syntactic constituent that introduces the second member of comparison is known as the comparative coda, or the comparative complement, and has triggered a number of questions which have not been solved to full satisfaction of the scientific community, beyond the constituency problem that was already discussed in §2 and §3. First of all, one question is what type of internal syntactic construction it displays (§7.1). Second, in superiority and inferiority comparatives, there is (in Spanish) an alternation between two types of comparative codas, introduced by different elements.

(295) a. Juan es más alto que Luis.
         Juan is more tall than Luis
       b. Juan es más alto de lo que era hace un año.
          Juan is more tall of the that was ago one year
       'Juan is taller than he was one year ago'

The distribution of these two types of codas has been a classic problem in Spanish linguistics (§7.2). Equally problematic is the question of the categorial status of *que* and

de in these constructions –obviously more difficult to answer in the first case–, a problem that is intertwined with the question of whether the comparative coda in (295a) involves some process of ellipsis or not (§7.3). In other words, is (296) a good analysis of (295a)?

(296)   Juan es más alto que ~~alto es~~ Luis.
        Juan is more tall than tall is Luis

If so, the comparative coda is clausal –reflects a whole sentence– and the coda should be viewed as introduced by a conjunction *que*. If not, what you see is what you get, meaning that the coda is just introducing a nominal constituent and then *que* should be viewed as a preposition. Let us then proceed with our overview.

7.1. The comparative coda: its syntax

Remember the standard semantics of a superiority comparative, as it was presented in (84).

(297)   ιd [max{d: P(d, Juan)}] > ιd [max{d: P(d, Juana)}]

Importantly, what one does here is to compare two different degrees which become unique as the maximal degree that each one of the individuals exhibit for two possibly different properties. The comparative coda, then, is a predicate of degrees. This semantic representation could be syntactically represented with (298).

(298)   Esta sopa está más salada que dulce está el postre.
        this soup is more salty than sweet is the dessert

Now, notice that in (298) the adjective had to occupy a front position within the comparative coda, something that is compulsory in Spanish, but not in English.

(299)   *Esta sopa está más salada que el postre está dulce.
         this soup is more salty than the dessert is sweet
(300)   This soup is saltier than the dessert is sweet.

Since Chomsky (1977) (see also Postal 1998, Lechner 1999, 2004, Kennedy 2002, Corver 2006), it has been proposed that the comparative coda is a structure that involves movement (A'-movement, specifically) of the degree value to a front position within the structure, so that the degree value is the highest element within the syntactic constituent. Essentially, and leaving details to the side for the time being, the idea is that (300) is covertly (301b), where the Deg related to the adjective in the comparative coda has moved to a front position.

(301)   a. [than the dessert is <Deg> sweet]
        b. [than <Deg> the dessert is ~~Deg~~ sweet]

Whether the extraction is possible without the AP or not, in principle, explains the contrast in word order between English and Spanish.

(302)   a. [que el postre es [<Deg> dulce]]
       b. [que [<Deg> dulce] es el postre]

The conditions for this are not just syntactic, but also phonological; note for instance that in English the overt degree element cannot move without the adjective in other contexts.

(303)   *How is John ~~how~~ tall?

The evidence that there is movement here, and that the movement is A' comes from various sources. First, note that the comparative coda is sensitive to islands; if the degree expression is merged within for instance a relative island, the result is ungrammatical –because it cannot move to the highest position within the coda–.

(304)   *La sopa está más salada que el postre es un plato [que es <deg> dulce].
      the soup is more salty than the dessert is a dish that is   sweet

Other types of islands, such as wh-islands (305), subject islands (306) or complex NP islands (307) also block movement of the degree expression.

(305)   *La sopa está más salada de lo que me preguntaba si estaría.
      the soup is more slaty of that I wondered whether would.be
(306)   *La sopa está más salada que el que el postre sea dulce es seguro.
      the soup is more salty of that that the dessert is sweet is certain
      Intended: 'The soup is more salty than how sweet the dessert is, which is certain'
(307)   *La sopa está más salada que el hecho de que el postre sea dulce.
      the soup is more salty than the fact of that the dessert is sweet

Also, A'-movement can license a negative polarity item, as shown in (308). The comparative coda also allows licensing of a negative polarity item (309).

(308)   a. *Alguien sabe nada.
       someone knows nothing
      b. ¿Quién sabe nada?
       who knows nothing
(309)   a. *Es dulce nada.
       is sweet nothing
      b. La sopa es más salada que nada.
       the soup is more salty than nothing

Crossover effects are also identified in Kennedy (2002), but they cannot be straightforwardly tested with degree expressions, as they require referential DP expressions to work.

The same pattern applies to the codas of equality comparisons, but here speakers hesitate more about (310d).

(310)   a. La sopa está tan salada como el pescado.
       the soup is as salty as the fish
      b. *La sopa está tan salada como el pescado es un plato que es salado.
       the soup is as salty as the fish is a dish that is salty

c. *La sopa está tan salada como me preguntaba si estaría salado el pescado.
   the soup is as salty as I wondered whether would.be salty the fish
d. ?La sopa está tan salada como nada.
   the soup is as salty as nothing

The movement analysis interacts with ellipsis in the analyses that assume it for some codas, but before we go there (§7.3) we have to discuss the issue of the different codas that appear in superiority and inferiority comparatives.

7.2. The distribution of coda elements

A widely noted fact in Spanish, since Bello (1847) (see among others Bolinger 1950, 1953, Plann 1984, Brucart 2003 and, specially, Sáez del Álamo & Sánchez López 2013: 53-74) is that the superiority and the comparative coda display an alternation between two types of items to introduce the coda.

(311)   a. Juan es más alto que María.
           Juan is more tall than María
        b. Juan es más alto de lo que lo es María.
           Juan is more tall of that which so is María
        'Juan is taller than María is'

Different types of explanations have been offered for this alternation, whose empirical distribution is not clear –here, again, we will gloss over several details that are relevant for the comparison of number of quantity, as we want to focus on degree comparisons; see Brucart (2003) and Sáez del Álamo & Sánchez López (2013) for a broader overview–.

Bolinger (1950) proposed three rules for the presence of *de* 'of'. First, the coda must introduce a manifest correlate of the comparative head, which allows the alternation in (312a) but not in (312b).

(312)   a. Juan es más alto de lo alto que es Pedro.
           Juan is more tall of the tall that is Pedro.
        b. *Juan es más alto de la altura de Pedro.
           Juan is more tall than the height of Pedro

Second, the correlate must also denote a magnitude, not anything else.

(313)   a. Juan es más alto de dos metros.
           Juan is more tall of two meters
        b. *Juan es más alto de ancho.
           Juan is more tall of wide

Third, the comparative notion must be identical –remember that this is the semantic base of the comparison, which can be identical to the comparative base head or not–.

(314)   a. Juan es más alto de lo alto que es Pedro.
           Juan is more tall of the tall that is Pedro
        b. *Juan es más alto de lo ancho que es Pedro.
           Juan is more tall of the wide that is Pedro

However, this does not cover all cases: Bolinger (1953) in fact notes that sometimes *de* 'of' appears when the coda is not a correlate of the comparative head, as in (315).

(315)   Una fortuna más grata de la que nunca nos imagináramos.
       a fortune more pleasant of that which ever we imagined
       'A fortune that is more pleasant than we could have ever imagined'

The correlate *la que*, in feminine, takes *fortuna* 'fortune' as reference point, but the comparative head is not this noun, but the AP. Two approaches can be considered here: Bolinger (1953) proposes that the subjunctive in the comparative coda is favoring a 'mass' or 'non-specific' interpretation of the NP, so that *grata fortuna* becomes a particular type of entity. In this way, quantification of the degree of *grato* is in fact quantification over the type *grata fortuna* –how much of *grata fortuna* one has, assuming a mass denotation–. This restores the parallelism between the coda and the comparative head, even if the surface syntax does not seem to follow it.

The prediction of this approach is that such mismatches should be possible in particular when the NP is mass or can be viewed as mass, for instance when it denotes a type. This seems to be in the good direction, if we consider a contrast like (316).

(316)   a. *Chicos más amables de los que imagináramos.
        boys more kind of that which imagined
     b. Agua más pura de la que imagináramos.
        water more pure of that which imagined

The second option, used by Plann (1984) is to propose that Bolinger's rules are actually wrong and one should actually consider the distribution from a purely syntactic perspective: *de* 'of' is used only when a whole clause follows it. This captures elegantly contrasts such as (317).

(317)   a. Juan es más alto que Pedro.
        Juan is more tall than Pedro
     b. Juan es más alto de lo que es Pedro.
        Juan is more tall of that which is Pedro

The problem, as Sáez del Álamo & Sánchez (2013: 63) note, is that one has to define 'clause' in this case; if 'clause' means 'having an inflected verb', (318) is a counterexample to the rule (as Plann 1984 in fact realises).

(318)   Juan canta más que baila.
       Juan sings more than dances

A second problem with Plann's rule is that it loses the connection, made explicit in Brucart (2003), between the alternation and additive constructions such as those in (319).

(319)   a. más que dos libros
        more that two books
     b. más de dos libros
        more of two books

In (319a), the denotation is that, beyond two books, there are other entities to consider. In (319b), the base is quantitative: it is said that the quantity of books is higher than two. For Brucart (2003), who starts from Bolinger (1950) but greatly refines the original description, what makes a coda with *de* 'of' appear can be reduced to two simple conditions: the comparative head and the comparative notion must be totally parallel in the comparative coda and the comparative notion must be quantitative, not just quantificational. In this sense, (320) –also noted in Bolinger (1953)– cannot be introduced with *de* because even if it refers to a quantity (quantificational) it is not expressed through a quantitative expression, but through a demonstrative.

(320)   más alto que eso
        more tall than that

This characterisation also allows to explain the contrast in (321), where apparently one is introducing in both cases nominalised relative clauses (note, incidentally, that Brucart's analysis needs the type of explanation for 315 that assumes some reanalysis of the adjective with the noun).

(321)   a. chicos más altos que los que vimos
           boys more tall that those which we.saw
        b. chicos más altos de lo que pensábamos
           boys more tall of that which we.thought

In (321a), the relative actually has a structure like (322), with ellipsis of a noun identical to the antecedent. Thus, the coda is not quantitative because it is introduced by a definite article, thus referential (RAE & ASALE 2009: §45.6i) and there is no paralellism.

(322)   que los <chicos> que vimos

In (321b), the relative pronoun is *lo que*, which expresses the degree variable (therefore, in the neuter form). If we get out for one second from degree comparisons and move to number comparisons, the contrast in (323) would be the same:

(323)   a. más chicos que los que vimos
           more boys that those that we.saw
        b. más chicos de los que vimos
           more boys of those that we.saw

In (323a), there is noun ellipsis, while in (323b) the relative is unanalysable and expresses a number quantitative notion.

(324)   a. más chicos que los <chicos> que vimos
           more boys that the boys we saw
        b. más chicos de [los que] vimos

As a corollary, the contrast in (325) follows.

(325)   a. más chicos que las sillas que había
           more boys that the chairs that there.were

b. *más chicos de las sillas que había
   more boys of the chairs that there.were

Finally, remember that there should also be syntactic parallelism. However, this does not seem to predict correctly why (326) is at least marginally acceptable –and definitely better in the appropriate meaning than (327)–.

(326)   ?un vestido más caro de cien euros
        a   dress   more expensive of 100 euros
(327)   #un vestido más caro que cien euros
        a   dress   more expensive that 100 euros
        'a dress that costs more than 100 euros cost'

The problem is ultimately syntactic. When we compare degrees, we are operating over adjectives or other predicates, not nouns. The syntactic parallelism requires that the comparative head, the adjective, is an adjective too. However, this is ungrammatical for independent reasons:

(328)   *un vestido más caro de bastante caro
        a   dresss more expensive of quite expensive

Specifically, the problem is that *de* 'of' is a preposition, and prepositions must introduce nominal entities (or some types of relative clauses, as we saw above). Thus, syntactically (326) is licensed. Perhaps the reason why the syntactic parallelism is not crucial here to remove the grammaticality is that '100 euros' is a value within the scale of 'expensive', so in a sense –if the adjective denotes a value in a scale– the same object is interpreted at the LF interface. At this point it might be useful to remember that several languages allow the adjective in the positive degree to express overtly the value within a scale with a quantitative nominal expression.

(329)   a. three meters tall
        b. four meters wide

It is not unthinkable that, while Spanish does not allow the literal translation of (329), the same type of relation is possible. If so, the comparative coda in (326) might be representing the remnant of a bigger structure including the adjective, but where the QP satisfies the syntactic condition of the preposition *de*.

This whole (partial) explanation is based on the assumption that (i) *de* is a preposition and (ii) thus, it can introduce a subclausal constituent (a nominal expression). However, what about *que*? The next section will examine this problem in the context of ellipsis.

7.3. Ellipsis or not? The categorial nature of the coda

One of the most controversial issues in the grammar of comparative constructions is whether there is ellipsis or not. Let us start with some terminology and some preliminary observations. Consider (330).

(330)   Juan es más alto que Pedro.
        Juan is more tall than Pedro

We know that the semantic representation, ultimately, must be that the degree of tallness exhibited by Juan is higher than the degree of tallness exhibited by Pedro. Thus, there is no question that the expression *que Pedro*, which only provides us with the subject of the property in the second member of the comparison, is insufficient to produce this interpretation. The debate is how this semantics is obtained, with two main approaches that are the classical ones whenever the surface syntax provides us only with a fragment of what we need to interpret in semantics.

a) The constituent *que Pedro* is subclausal, syntactically: a nominal expression introduced by *que*. In such case, whatever we need to arrive to the semantics is provided through semantic enrichment over a syntactic structure that does not contain a predicate or a degree.

b) The constituent *que Pedro* is what remains from a whole clause, and the material that we are missing to reach the interpretation is syntactically present, but elliptical in phonology. The whole structure is, in fact, *que Pedro es alto*, with ellipsis of *es alto*.

In the (a) option, syntax and phonology are unremarkable, but semantics has to be complicated in a way that, somehow, the nominal expression is appropriately connected to the comparative structure through an operation of inference. In the (b) option, nothing special has to be done in semantics, as semantics reads directly from a whole predicational structure present in syntax, but phonology –and possibly syntax– has to do something to guarantee ellipsis of the identical material.

Obviously, the nature of *que* depends on these two options. In the (b) option, *que* would have to be a conjunction introducing a clause. In the (a) option, it would not be a subordinating conjunction, but rather a preposition or perhaps a coordinative conjunction (as coordinative conjunctions can introduce non-clausal constituents).

To understand how the analysis of *que* would work if it is to be considered a preposition, consider the analysis of *de*, which is uncontroversially prepositional. Brucart (2003: 13), who treats comparative superiority and inferiority constructions on a par with additive and substractive constructions closely following Sáez del Álamo (1997), proposes that the comparative degree head contains two complements: the coda and a quantificational expression. We illustrate this with a number comparison, as he does –the degree comparison would just require different categories in the complement position, as in (332)–.

(331) a. más días de los (días) previstos
      more days of the (days) expected
   'more days than expected'

b.
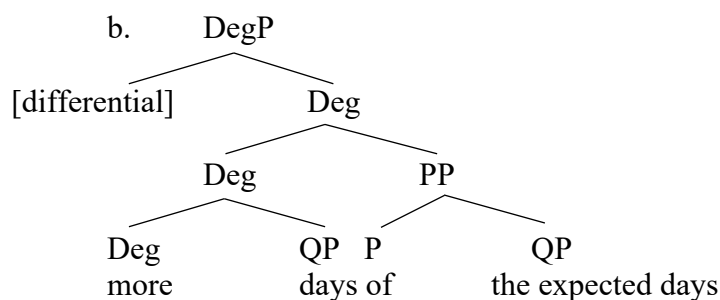
(332) a. más alto de lo (alto) esperable
      more tall of the (tall) expected
   'taller than expected'

b.　　DegP

[differential]　　Deg

Deg　　PP

Deg　　QP　P　　QP
more　　tall　of　　the expected tallness
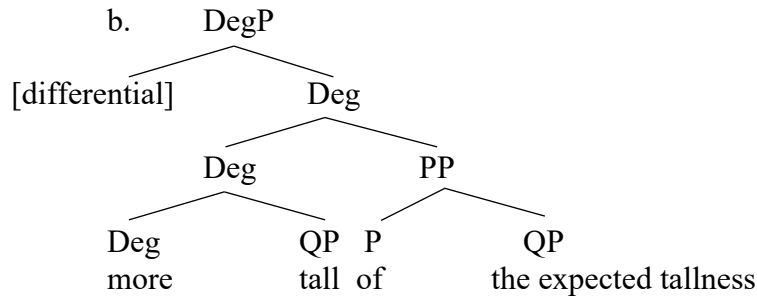
The strict syntactic parallelism that *de* requires between the comparative head and the coda (§7.2) facilitates this type of analysis: the same degree head introduces both the comparative base and the second member, so the semantic reconstruction required to reconstruct the parallelism in the absence of a whole clausal structure is pretty straightforward. We will see that this becomes more problematic when we consider *que*, which does not impose this type of parallelism.

Before we proceed, some distinctions need to be introduced. There are some cases where virtually nobody would argue against some ellipsis. (333) requires us to postulate ellipsis of the attribute under identity with the comparative head, if only because copulative verbs cannot function without them when there is no ellipsis.

(333)　a. Juan is taller than Pedro is ~~d-tall~~.
　　　　b. *Pedro is.

In that example, the quantifier and the comparative head are deleted, while in (334) the comparative head remains, albeit substituted, and the degree or quantitative expression is the notion that is elided, potentially with additional items.

(334)　Mary is taller than Pedro is ~~d~~-nice.

These cases have been described in the literature, since Bresnan (1973) as Comparative Deletion (333) and Comparative Subdeletion (334), respectively; note, funnily enough, that none of the two literal translations of (333) and (334) would be appropriate for Spanish.

(335)　a. *Juan es más alto (de lo) que Pedro es.
　　　　b. ??María es más alta (de lo) que Pedro es simpático.

It is also not controversial that other forms of ellipsis, such as gapping, are required in some comparative codas, this time also allowed by Spanish.

(336)　Pedro tiene más coches que María casas.
　　　　Pedro has more cars than María houses
　　　　'Pedro has more cars than María <has> houses'

These are generally not the controversial cases, but rather those in (337), where there is only a constituent of a clause without any inflected verb that allows us to assume by default that the whole structure is sentential.

(337)　a. María es más alta que Juan.

María is more tall than Juan
b. María es más alta que larga.
María is more tall than long
c. María es más alta que antes.
María is more tall than before

Let us start with the ellipsis analysis. In the ellipsis analysis (Hankamer 1971, 1973; Bresnan 1973, Pinkham 1982, Solé 1982, Kennedy 2007) a sentence such as (337a) is in fact (338), where the elliptical material is identical to an antecedent in the main clause.

(338) María es más alta que Juan ~~es alto~~.

Now, it is standard to assume that the remnant of ellipsis moves to a syntactically high position –typically Focus, cf. Abels (2019)–. The second member of the comparison makes explicit the notion that is relevant to establish the comparison itself, in accordance to this. Thus, ellipsis would be always ellipsis of a sentential constituent not containing the discourse-prominent focus position.

(339) María es más alta que [CP [Juan] C ~~es alto~~]

There are three problems here, which basically have the common property that they would force us to consider that ellipsis in comparatives does not behave as ellipsis in other contexts. First of all, consider a sentence like (340) (RAE & ASALE 2009: §45.4b).

(340) María ha dedicado más horas [que su amiga] a preparar el examen.
María has used more hours than her friend to prepare the exam

Here ellipsis would not require the material to be before the elided constituent, as the constituent 'to prepare the exam' follows it.

(341) María ha dedicado más horas [que su amiga ~~ha dedicado q horas a preparar el examen~~] a preparar el examen.

Note that one could save this by supposing an initial step like (342), followed by movement of the comparative phrase.

(342) María ha dedicado a preparar el examen [más horas [que su amiga ha dedicado q-horas a preparar el examen]].

More problematic is a sentence like (343) (RAE & ASALE 2009: §45.5f).

(343) Más gente ha leído obras de Lorca que de Galdós.

The material that is ellided is in principle not a syntactic constituent.

(344) Más gente ha leído obras de Lorca que ~~q gente ha leído obras~~ de Galdós.

One could argue that here the remnant undergoes movement to a focus position, turning the rest into a constituent.

(345)   Más gente ha leído obras de Lorca que [CP de Galdós [q~gente~ha~leído~obras]]

However, extraction should not always be possible. Even movement would not rescue the derivation in (346).

(346)   Los libros de Lorca son más populares que los de Galdós.
         the books of Lorca are more popular than those of Galdós

Here we would require movement of the whole DP to a focus position followed by noun ellipsis, independently obtained, of the head of the DP, despite it being in a focus position.
   Finally, this type of ellipsis would have to be compulsory in some cases, something that is not generally the case otherwise. Not having ellipsis in (347) implies that the whole clause is in focus.

(347)   María quiere ir a la fiesta, y Pedro también quiere ir a la fiesta.
         María wants to.go to the party, and Pedro too wants to.go to the party

This option is not available, for instance, in (348).

(348)   *María es más inteligente que Luis <es (inteligente)>.

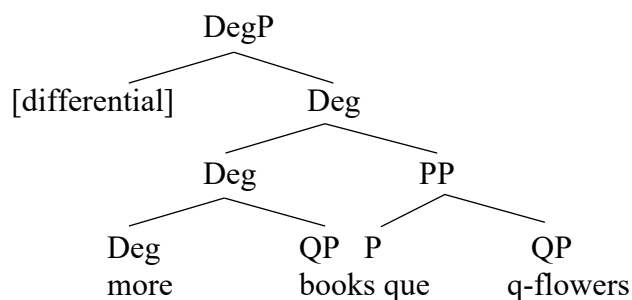Note that the word order does not really interfere here:

(349)   a. *María es más inteligente que es inteligente Luis.
         b. *María es más inteligente que inteligente es Luis.

It might be the case, though, that the A'-movement required by the comparative coda forces this type of ellipsis, although this option has not been fully explored.
   Despite these problems, the clausal analysis with ellipsis has been generally adopted for (at least) cases where the remnant is not identical to the comparative head. Brucart (2003) and Gutiérrez Ordóñez (1992) propose that *que* is, in contrast, a preposition-like element in other contexts where there is no clausal analysis enforced. Brucart (2013) restricts those cases to situations where the syntactic function of the element in the comparative coda coincides with the function of the antecedent, because –remember– they both will depend from the same head (350a). In contrast, the clausal analysis is preferable for cases where there is no identity in function, as in those cases considerable inference would be required –note also that the case assigned to the pronoun would have to be determined within a wider syntactic context not defined by the external structure where the comparative constituent is merged in (350b): some clause would have to assign nominative to the pronoun in (350b), as opposed to other cases (350c)–.

(350)   a. Carlos dio a María más libros que flores.
            Carlos gave to María more books than flowers

```
                    DegP
                   /    \
      [differential]     Deg
                        /   \
                      Deg    PP
                     /  \   /  \
                  Deg   QP P    QP
                  more  books que  q-flowers
```

b. Carlos dio a María más libros que tú ~~diste a María q-libros~~
   Carlos gave to María more books than you.nom
c. *Carlos dio a María más libros que a ti ~~diste a María q-libros~~

That case has to be sensitive to the syntactic function as a connectivity-effect whose analysis typically involves assuming parallel syntactic structures, followed by ellipsis. Analyses such as Heim (1985), that generalise the subclausal analyses to all contexts, are forced to propose a great deal of semantic parallelism and inference, and still have to face problems with respect to these formal connectivity effects –case marking–, because they standardly lack a reflection in semantics.

However, Ortega-Santos (2013) criticises this P-analysis also for the restricted set of cases that Brucart (2003) analyses as subclausal. Consider (351).

(351) Juan es más alto que tú.
       Juan is more tall than you

If the connector is a preposition, the second member of the comparison carries the wrong case, as normally prepositions assign case to pronouns.

(352) *a tú
        to you

Also, the remnant can be a prepositional phrase, which forces us to conclude that the comparative coda in such cases is a sequence of two prepositions, something which is marked in Spanish.

(353) Estás más con Carlos que con María.
       are more with Carlos than with María

Sáez del Álamo & Sánchez López (2013: 96) add an additional problem to the prepositional analysis. Normally, in Spanish third person pronouns force a human reading of their referent when they are overt:

(354) a. La mesa está sucia.
          the table is dirty
       b. #Ella está sucia.
           she is dirty

This does not happen after prepositions:

(355)   a. Está debajo de la mesa.
            it.is below of the table
        b. Está debajo de ella.
            it.is below of it

If the coda is introduced by a preposition, then we would not expect the effect of (354) to happen in this context. However, (356) gets the interpretation of (354), not the one in (355).

(356)   a. La ventana está más sucia que la mesa.
            the window is more dirty than the table
        b. #La ventana está más sucia que ella.
            the window is more dirty than her

The prepositional analysis, however, has a strong piece of support behind it, which is the contrast in (357) (cf. Reglero 2007, Sáez del Álamo & Sánchez López 2013: 100-101).

(357)   a. María tiene más libros que nadie.
            María has more books than nobody
        b. *María tiene más libros que nadie revistas.
            María has more books that nobody magazines

The negative polarity item is not licensed in (357b), where standardly ellipsis is assumed. Reglero (2007) explains that this is due to the discourse-related movement required for the remnants of the ellipsis. If the remnants have to move to a prominent discourse position in CP, as negative items cannot do it independently (358), they are expected not to be potential remnants in ellipsis.

(358)   a. A María la vimos.
            to María her saw
        b. *A nadie lo vimos.
            to nobody him saw

If that is the case, then, (357a) cannot be the result of ellipsis: it would rather seem that *que* directly introduces the negative polarity item, perhaps being itself the licensor of the negative polarity item.

Thus, none of the two analyses seems to be free of problems. It might well be the case that the conclusion could be that ellipsis should follow different principles in comparatives, perhaps through the independent presence of a degree movement. However, before concluding this section, we want to mention a third possibility: that the structure is subclausal, but the *que* is in fact a coordinative conjunction (Reinhart 1991, Sáez del Álamo 1992). If this approach is restricted to the cases that Brucart (2003) considered prepositional, the approach would correctly predict that case of the two members of the comparison is identical –nominative if necessary, as coordinative conjunctions do not assign case of their own in Spanish–, and would also account for the interpretative parallelism automatically. However, this approach faces several problems that Sáez del Álamo explicitly mentions (see also Hazout 1995).

For starters, the comparative constituent would escape the coordinate island constraint:

(359)   a. *¿A quién quieres ____ y a María?
         to whom you.love   and to María
    b. ¿A quién quieres más ____ que a María?
         to whom you.love more   than to María

The comparative constituent, as we saw already in §2, cannot displace as a constituent alone, but coordinated structures can.

(360)   a. A Juan y a María quiero.
         to Juan and to María I.love
    b. *Más que a María quiero a Juan.
         more than to María I.love to Juan

To conclude, it seems that different types of structures might be necessary to explain different types of comparative codas, and it seems inescapable to at least recognise some level of specificity to comparative codas, as they do not follow perfectly any of the independently-motivated operations that underlie each one of the proposals (ellipsis, prepositional nature or coordination). While this matter is clearly unresolved in the existing literature and this overview, let us move now to the differential value.

7.4. The differential and multiplicative expressions

As we already said, the differential value is the syntactic constituent that quantifies over the difference between the two intervals in a comparative structure. There are essentially two subclasses of expressions that can modify the comparative, and only the first can be considered differential.

A differential expression requires addition or substraction of a particular quantity from the comparative coda to calculate the magnitude that applies to the first member of the comparison. These differentials are normally built with a quantifier and a noun that expresses some unit of measure.

(361)   a. Juan es dos centímetros más alto que María.
       Juan is two centimeters more tall than María.
    b. Juan es dos centímetros menos alto que María.
       Juan is two centimeters less tall than María

In (361a), even though we ignore the height of María, we know that the height of Juan exceeds it by two centimeters –we obtain the height of Juan by adding two centimeters to that of María–. In (361b) we substract the same measure from the height of María.

The nouns allowed here are any type of noun that designates a lexicalised unit of measure, of course corresponding to the type of scale that the adjective expresses.

(362)   a. dos grados más caliente
       two degrees more hot
    b. dos kilos más pesado
      two kilos more heavy
    c. dos euros más caro
       two euros more expensive
    d. dos puntos más alto

two points more high
e. dos minutos más tarde
two minutes more late

Even though expressing indeterminate quantities, the evaluative degree modifiers that were discussed in §5.3 can also be differentials in the comparative of superirity or inferiority structure.

(363)　a. bastante más alto
　　　　quite more tall
　　　b. mucho más alto
　　　　much more tall
　　　c. un poco más alto
　　　　a　bit more tall
　　　d. suficientemente más alto
　　　　enough more tall

The second class of expressions that can modify a comparative multiplies or divides the degree interval of the second member of the comparison an N number of times to obtain the maximal degree value of the first member. These are restricted in Spanish to the noun *vez* 'time', and cannot be considered differentials because they do not measure the distance between two intervals, but rather obtain one value through iterations or divisions of the other.

(364)　a. dos veces más guapo que María
　　　　two times more pretty than María
　　　b. dos veces menos guapo que María
　　　　two times less pretty than María

These are, then, similar in meaning to nouns like *doble* 'double', *triple* 'triple' or mitad 'half', whose syntactic construction is however different because they seem to be taking the scale used to define the values as a prepositional complement.

(365)　a. el doble de guapo que María
　　　　the double of pretty than María
　　　b. la mitad de guapo que María
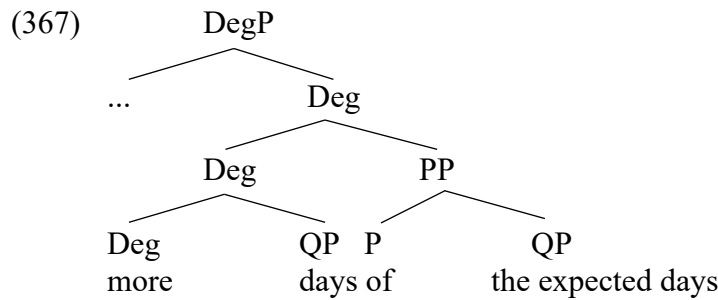　　　　the half of pretty than María

In most studies, the differential value –and remember that 'differential' is restricted to the values that are added or substracted, that is, only the first class– is viewed as a non-compulsory member of the comparative which, when not overt, is not presupposed. In these approaches, which are essentially all but Sáez del Álamo (1997) and Brucart (2003), the differential is an element that when present simply modifies the difference between the two magnitudes that the construction anyways expresses. The label 'comparative' is suggesting this: the primitive notion is the comparison, and the derived one is the differential, which can be deduced from the notion of comparison itself. Thus, to be clear, in a sentence like (366) there is no differential, because 'differential' is a non compulsory member of the comparison.
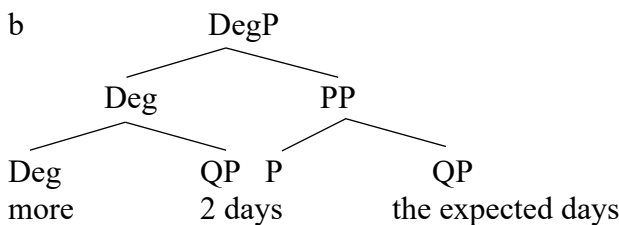
(366)　Juan es más alto que María.

Juan is more tall than María

Sáez del Álamo (1997) and Brucart (2003), in contrast, view the differential as the essential piece within the comparative structure –Brucart (2003) even suggests that 'comparative' is a misnomer–. In their view, a comparative structure is a particular type of additive (or substractive) construction where the comparison is actually deduced from the existence of a differential between the two members of the comparison. Remember the structure proposed in Brucart (2003):

(367)
```
                DegP
              /      \
          ...          Deg
                     /      \
                  Deg        PP
                /     \     /    \
            Deg       QP   P      QP
            more    days of   the expected days
```
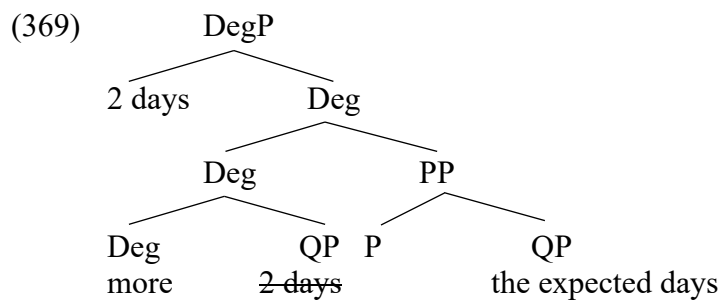
The idea is that in this structure, the first member of the comparison –the QP 'days'– carries a base-generated quantifier (or degree operator) that already defines a particular magnitude, and becomes the differential. Take for instance, as an illustration (368a). The differential is underlined in (368a). This element is generated in the base position, as (368b).

(368)   a. dos días más de los días previstos
            two days more of the days expected

```
    b              DegP
                 /      \
             Deg         PP
           /     \      /    \
        Deg      QP    P      QP
        more   2 days    the expected days
```
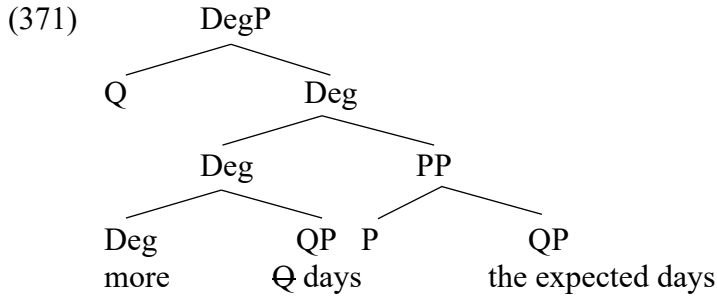
Basically this is an additive structure: it says that to obtain the value of actual days, one has to add 2 to the number of expected days. The syntax of the 'comparative' construction is obtained when the quantifier (carrying in this case the NP) moves to spec, DegP, to license the differential value that is necessarily part of the comparison when it does not express identity between two magnitudes.

(369)
```
                DegP
              /      \
         2 days        Deg
                     /      \
                  Deg        PP
                /     \     /    \
            Deg       QP   P      QP
            more    2 days    the expected days
```
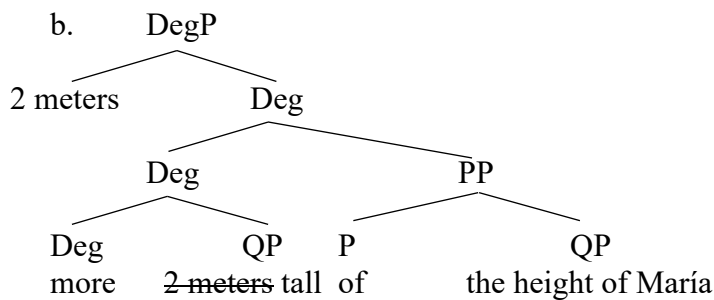
From here it follows that the differential is covert, but present, in a sequence like (370), which would correspond to (371).

(370)   más días de los previstos

(371)

```
              DegP
           ╱       ╲
         Q           Deg
                   ╱      ╲
                 Deg        PP
               ╱    ╲      ╱   ╲
             Deg    QP   P      QP
             more   Q days      the expected days
```
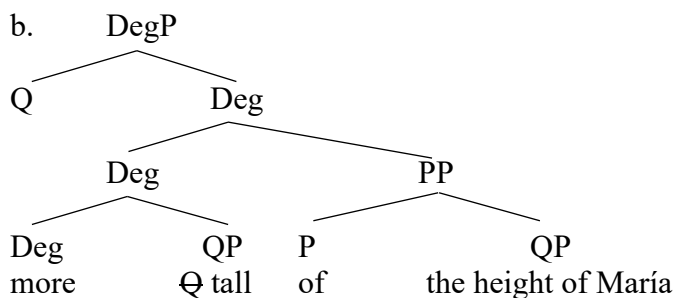
The same would apply in the case of a degree comparison.

(372)   a. dos metros más alto de lo alta que es María
            two meters more tall of the tall that is María

   b.

```
              DegP
           ╱       ╲
      2 meters       Deg
                   ╱      ╲
                 Deg        PP
               ╱    ╲      ╱    ╲
             Deg    QP   P       QP
             more  2 meters tall  of   the height of María
```

(372) translates as 'add two meters of tallness to the height of María'. The differential would be indeterminate when phonologically empty, but present.

(373)   a. más alto de lo alta que es María
            more tall of the tall that is María

   b.

```
              DegP
           ╱       ╲
         Q           Deg
                   ╱      ╲
                 Deg        PP
               ╱    ╲      ╱    ╲
             Deg    QP   P       QP
             more   Q tall  of    the height of María
```

It is less clear, however, whether the multiplicative expressions, despite their difference in semantics, would be subject to the same type of syntactic analysis.

7.5. The equality comparative
Remember that inferiority and superiority comparatives are the manifestation of a low quantificational degree, while equality comparatives are, according to the theories mentioned in §3 and §5, the manifestation of a referential degree phrase, because they

identify a specific degree value through identity with the one exhibited by the second member of comparison. Beyond the formal difference in the type of coda used, there are several phenomena that confirm that they should be elements of a different type; Sánchez López (2006) provides an overview of these.
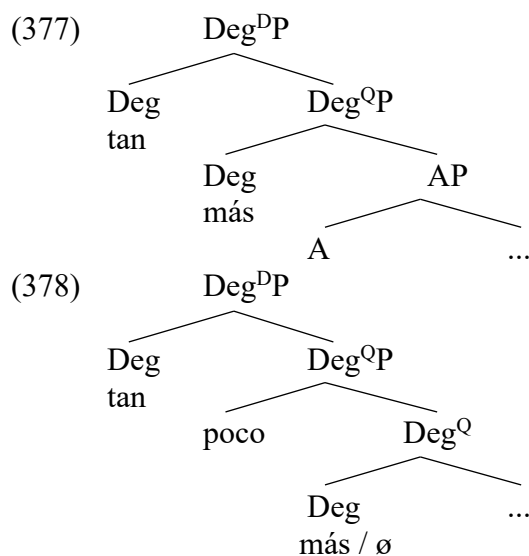
First of all, the equality comparative rejects differential expressions, but allow the multiplicative ones that we just overviewed in §7.4. This is expected if the multiplicative expression is, as suggested already, not denoting the difference between two magnitudes: in equality comparatives the differentials are impossible because the two degrees are identified as identical.

(374)   a. *Juan es dos metros tan alto como María.
             Juan is two meters as tall as María.
         b. Juan es dos veces tan alto como María.
             Juan is two times as tall as María

Secondly, there is a difference in word order between the equality quantifier and the superiority or inferiority quantifiers.

(375)   a. poco más alto
             little more tall
         b. *más poco alto
             more little tall
(376)   a. tan poco alto
             as little tall
         b. *poco tan alto
             little as tall

This shows that the equality comparative is structurally higher than the quantitative comparative, as expected by Corver's (1997) proposal.

(377)   Deg^{D}P
         _____
        Deg   Deg^{Q}P
        tan   _____
                   Deg   AP
                   más   _____
                            A   ...

(378)   Deg^{D}P
         _____
        Deg   Deg^{Q}P
        tan   _____
                   poco   Deg^Q
                            _____
                           Deg   ...
                           más / ø

Third, elative adjectives reject superiority or inferiority comparatives, as we expect if their meaning already incorporates a quantifier over degrees.
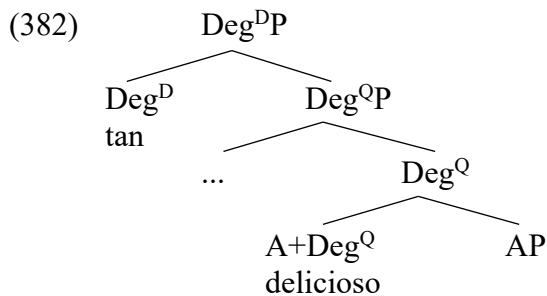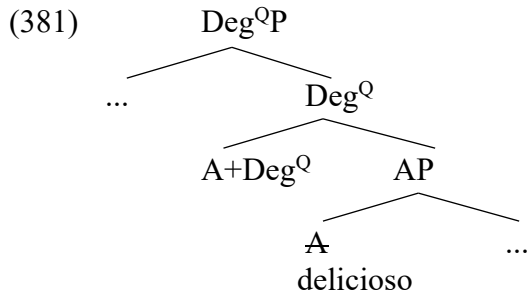
(379)   *más {delicioso / maravilloso / guapísimo} que eso

more delicious / marvelous / superpretty than that

However, they accept equality comparatives.
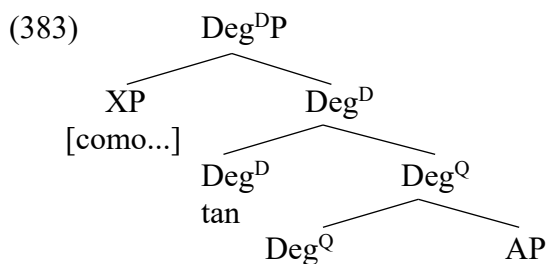
(380) tan {delicioso / maravilloso / guapísimo} como
       as delicious / marvelous / superpretty as

This is again expected if the elative adjective moves up to the low quantitative degree head and the equality degree head is merged higher than this.

(381)

$$
\begin{array}{c}
\text{Deg}^{Q}\text{P} \\
\diagup \quad \diagdown \\
\ldots \qquad \text{Deg}^{Q} \\
\diagup \quad \diagdown \\
\text{A+Deg}^{Q} \qquad \text{AP} \\
\diagup \quad \diagdown \\
\text{A} \qquad \ldots \\
\text{delicioso}
\end{array}
$$

(382)

$$
\begin{array}{c}
\text{Deg}^{D}\text{P} \\
\diagup \quad \diagdown \\
\text{Deg}^{D} \qquad \text{Deg}^{Q}\text{P} \\
\text{tan} \qquad \diagup \quad \diagdown \\
\ldots \qquad \text{Deg}^{Q} \\
\diagup \quad \diagdown \\
\text{A+Deg}^{Q} \qquad \text{AP} \\
\text{delicioso}
\end{array}
$$

This is also consistent with Brucart's (2003) analysis of differential structures: given that equality comparatives do not involve addition or sustraction, they should involve a different head from the ones involved in the analysis of *más* and *menos*.
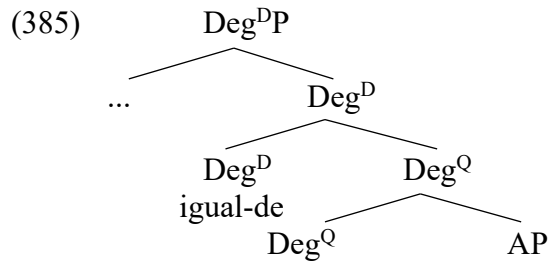
Beyond this, the difference in the form of the coda could be expressed if the higher referential DegP projection is the locus where the equality comparison coda is introduced.

(383)

$$
\begin{array}{c}
\text{Deg}^{D}\text{P} \\
\diagup \quad \diagdown \\
\text{XP} \qquad \text{Deg}^{D} \\
[\text{como...}] \quad \diagup \quad \diagdown \\
\text{Deg}^{D} \qquad \text{Deg}^{Q} \\
\text{tan} \quad \diagup \quad \diagdown \\
\text{Deg}^{Q} \qquad \text{AP}
\end{array}
$$

However, the equality comparison coda is subject to lexical conditions to a greater extent than the comparative one. Restricting ourselves to degree expressions, there is an alternative manifestation of the quantifier, (384).

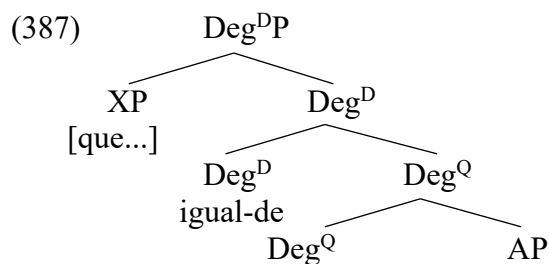(384) igual de alta
       equal of tall

Although the syntax of this expression is potentially more complex –note the preposition that in principle would be introducing the adjective–, we will assume for the sake of the presentation that the head should be 'igual-de', that is, without internal complexity.

(385)

```
              DegᴰP
        ┌───────┴───────┐
       ...            Degᴰ
                 ┌──────┴──────┐
               Degᴰ          Degꟴ
             igual-de    ┌─────┴─────┐
                       Degꟴ         AP
```

Note that the comparative coda here is not introduced with *como*.

(386) igual de alta {que / *como} su hermano
       equal of tal   than   as   her brother

This leads us to assume that this head lexically selects a different shape for the coda, as in the following diagram.

(387)

```
              DegᴰP
        ┌───────┴───────┐
       XP             Degᴰ
     [que...]    ┌──────┴──────┐
               Degᴰ          Degꟴ
             igual-de    ┌─────┴─────┐
                       Degꟴ         AP
```

Thus: while in the case of the quantitative degree head one could assume that the shape of the second term of comparison is dictated by the syntactic and semantic restrictions that we presented in §7.2 and which have nothing to do with the specific lexical items chosen as degree quantifiers, in the case of the referential Deg head the selection seems to be lexical, and not syntactic or semantic.

The complications that we mentioned in §7.3 about how to analyse the comparative coda in superiority and inferiority comparatives are reproduced in the case of equality comparatives. Next to cases of multiple remnants, which argue for a clausal analysis with ellipsis, the possibility that the constituent is subclausal in a prepositional use of *como* is also open. (388) shows an undisputed case where ellipsis would be necessary, and therefore *como* would be a conjunction.

(388) Juan es tan simpático como María inteligente.
       Juan is as nice as María intelligent

(389) shows one case where the identity in function and marking might allow for an analysis in terms of preposition or coordinative conjunction, and (390) shows a few of the problems already mentioned for this approach.

(389) Juan es tan simpático como María.

Juan is as nice as María

(390) a. ¿A quién quieres tanto _____ como a María?
        to whom love.you as.much as to María
    b. *Tanto a Juan como a María quiero.
        as.much to Juan as to María I.love
    c. *Juan es tan simpático como ti.
        Juan is as nice as you.obl
    d. #La ventana está tan rota como ella.
        the window is as broken as her
    Intended: 'The window is as broken as the table'
    e. Juan es tan listo como nadie.
        Juan is as smart as nobody

The pattern of data is identical to *que*, transferring to this domain the advantages and disadvantages that each one of the approaches has.

7.6. Pseudo-comparatives and proportional comparatives

To conclude this lengthy section, we will briefly refer to the matter of pseudo-comparative structures and proportional comparatives, which reasons of space that at this point the reader is very likely to understand prevent us from fully discussing.

Proportional comparatives are those which denote the parallel increase or decrease of two magnitudes (see RAE & ASALE 2009: §45.11 for details). These are only possible in superiority or inferiority comparative contexts (391c), although one member can denote an increase and the other can denote a decrease.

(391) a. Cuanto más leo, más quiero leer.
        how more I.read, more I.want to.read
    'The more I read, the more I want to read'
    b. Cuanto menos duermo, menos falta me hace.
        how less I.sleep, less need me makes
    'The less I sleep, the less I need it'
    c. Cuanto más leo, menos entiendo.
        how more I.read less I.understand
    'The more I read, the less I understand'
    d. *Tanto más leo como más quiero.
        as more I.read as more I.want

Progressive comparatives (ibidem: §45.12a.d) are those where the increase or decrease in a magnitude depends on the comparison between different temporal instants: the magnitude increases or decreases as time progresses.

(392) Juan está cada vez más alto.
       Juan is each time more tall

The notion of pseudo-comparative structures, finally, includes no less than four structures whose surface shape is reminiscent of comparative structures, but whose meaning and sometimes temporal restrictions are not. These include (see Sáez del Álamo & Sánchez López 2013: 31-53):

a) exclusion or restrictive pseudo-comparatives, where the denotation is that the predicate applies only to the entity of the class that is mentioned in the place that is generally used for the second member of the comparison.

(393)   No tengo más amigos que tú.
         not I.have more friends than you

b) metalinguistic or corrective pseudo-comparatives, where the notion denoted is the adequacy or appropriateness of the entity mentioned as the first member, in opposition to the second member.

(394)   Esto es más atributo que predicativo.
         this is more an attribute than a predicative

c) additive pseudo-comparatives, where instead of comparing two magnitudes new members are added to a previously existing set.

(395)   Puedes comer más cosas que pasta.
         you.can eat more things than pasta

d) finally, prototypical comparatives have the shape of a comparative but its second member of comparison is an entity that prototypically displays an extreme value of that property, with the result that the denotation of the construction is closer to an elative than to a comparative degree structure.

(396)   Está más gordo que una ballena.
         is more fat than a whale

The common property of the first three subclasses is that they do not allow substitution of the superiority comparative *más* for the inferiority *menos*, suggesting that in none of these cases there is a calculation of the value of a degree scale that can be reversed (remember §6.2).

(397)   a. *No tengo menos amigos que tú.
         b. ??Esto es menos atributo que predicativo.
         c. *Puedes comer menos cosas que pasta.

However the fourth class does allow this substitution:

(398)   Está menos claro que el enigma de la trinidad.
         it.is less clear than the enygma of the trinity

This suggests that, as dicussed in the literature, maybe this class is not really (syntactically) pseudo-comparative: its special properties might come from the conceptual semantics, that force us to assign a non-compositional interpretation to the second member of comparison. It is not surprising, in this respect, that many of such comparatives are lexicalised as idioms:

(399)   a. más sordo que una tapia
            more deaf than a wall

'completely deaf'
b. más feo que Picio
    more ugly than Picio
'extremely ugly'
c. más bueno que el pan
    more good than the bread
'extremely good'

8. The syntax and semantics of superlative structures

In contrast to comparatives, superlatives are arguably much less studied and analysed. The goal of this section is to describe some puzzling properties, several of which have not really been properly addressed in the literature, and confront superlatives with comparatives, in particular from the perspective advanced in §6.4 that superlatives are built over comparatives. Let us first, however, introduce some of these issues.

Syntactically, superlatives in Spanish –and remember here we focalise in the so-called relative superlative or partitive superlative, as in §6.3 we discussed that *-ísimo* forms are in fact elative– are necessarily restricted to nominal constituents: the superlative must be contained within a nominal structure which, moreover, must be definite (RAE & ASALE 2009: §45.13c).

(400) a. su más importante contribución
            her most important contribution
        b. el chico más alto
            the boy most tall
        c. la más guapa
            the most pretty
        d. quien más sabía
            who most knew

Note that in (400d) the superlative is embedded within a relative clause with a nominal head (possibly implicit, possibly lexicalised through the relative pronoun). Similarly, other relatives express the same type of relation.

(401) a. cuando más guapo era
            when most handsome I.was
        b. como más fácil sea
            as   most easy may.be
        c. donde más cómodo estés
            where most comfortable may.be

For this reason, (402) is ungrammatical, as the superlative is not contained within a nominal or nominalised structure:

(402) *Juan es más guapo de todos.
            Juan is most handsome of all

In other words: in contrast to comparatives, which allow the quantificative phrase to be within a sentence (cf. 403, as a reminder), superlatives require a nominal constituent without which the sequence is ungrammatical.

(403)   Juan es más guapo que Pedro.
         Juan is more handsome than Pedro

The superlative involves some form of comparison over all members of a class, in order to extract the one whose maximal degree exceeds everybody else's. The class can be manifested in several different ways, with three main types of manifestations (RAE & ASALE 2009: §45.13h). The first one is through prepositional phrases, of which some directly introduce other entities of the same type that are being compared (404) and others define a general situation which contains the set of entities in the comparison (405).

(404)   a. el chico más guapo de todos
            the boy most handsome of all
         b. la pregunta más difícil entre las del examen
            the question most difficult among those of.the exam
(405)   a. el chico más guapo de la clase
            the boy most handsome of the class
         b. la provincia más rica de España
            the province most rich in Spain
         c. el rey más temido de la historia
            the king most feared of the history

Some adjectives, in particular modal adjectives (406; Schwarz 2005, Romero 2013, Loccioni 2018) can also introduce the set. In such cases the general consensus is that the adjective is introducing the set of entities indirectly: when one claims that the degree is the highest imaginable or possible, the inference is that any other entity that has a different degree will necessarily have a lower degree.

(406)   a. la mejor respuesta imaginable
            the best answer imaginable
         b. el mejor actor posible
            the best actor possible
         c. la peor respuesta concebible
            the worst answer conceivable

There is at least one adjective (RAE & ASALE 2009: §45.13j) which is not modal and performs a similar role, allowing the inference that all other entities of the world have a lower degree.

(407)   el mejor cantante vivo
         the best singer alive

Finally, relative clauses can also define the set of entities, again, indirectly by describing a situation which includes all individuals of the same type. Here it is typical that the relative clause contains a predicate expressing cognition: it is inferred, thus, 'all entities known'.

(408)   a. el mejor hijo que pudiera imaginar
            the best son that I.could imagine

       b. la peor cocinera que haya visto
          the worst cook that I.have seen
       c. el más difícil momento que recuerde
          the most difficult moment that I.remember

Similarly, all adjectives and participles related to this semantic domain –being aware of the existence of an entity– can act as the constituent that introduces the set of entities compared.

(409)   el mejor actor conocido
        the best actor known

Other relative clauses without a cognitive predicate can perform the role; note that the following examples restrict the set of entities to those that satisfy a particular description.

(410)   a. el actor más viejo que ha ganado un Oscar
          the actor most old that has won an Oscar
       b. el político más elegante que ha sido ministro de agricultura
          the politician most elegant that has been secretary of agriculture

Note that, in contrast to the comparative coda, this set of entities –henceforth, the comparison class C– has a variable syntactic manifestation. As a PP, the preposition is not fixed; it can also be expressed through adjectives or relative clauses, and adjectives are clearly restricted by their semantic meaning –not any adjective and not any relative clause would be able to introduce C–.

Another property of superlatives in opposition to comparatives is the tendency to prepose the superlative to a highest position within the nominal constituent (Kayne 2008, RAE & ASALE 2009: §45.13s-t, Loccini 2018).

(411)   a. cuando más triste estaba en su vida
          when most sad was in his life
       b. *cuando más triste estaba que su hermano
          when more sad was than his brother
(412)   a. el más importante miembro del congreso
          the most important member of.the congress
       b. *el más importante miembro que el presidente
          the most important member than the president

In correlation with this, Loccioni (2018) notes that the prenominal vs. postnominal position of superlatives does not come accompanied by the non-restrictive vs. restrictive reading that Cinque (2010) identifies for adjectives in Romance. In (413) this contrast is shown for a non-superlative adjective; (414) shows that the effect disappears in the case of superlatives.

(413)   a. mis elegantes amigos
          my elegant friends
       'my friends, who are all elegant'
       b. mis amigos elegantes
          my friends elegant

'those of my friends who are elegant'
(414)   a. mi más elegante amigo
            my most elegant friend
        b. mi amigo más elegante
            my friend most elegant

Let us, then, examine the consequences of some of these problems, and see how they can fit together within an analysis of superlatives in Spanish. In §8.1 we will address the issue of whether the superlative is likely to contain the comparative, as Bobaljik (2012) proposed. In §8.2 we will discuss a semantic ambiguity related to the comparison class in superlatives, and in §8.3 we will discuss why the superlative must be embedded in a nominal expression.

8.1. The semantic and syntactic relation between comparatives and superlatives

The semantics of the superlative presupposes some form of comparison, as other cases of gradable predicates. This is visible in the representation of the superlative (von Fintel 1999, Heim 2000, Hackl 2009) in (415):

(415) $[[\text{Sup}]]\ (R)(x) = 1$ iff $\forall y[y \neq x \rightarrow \max\{d:R(d)(x) = 1\} > \max\{d:R(d)(y) = 1\}]$

That is: predicated from an individual x, the superlative is true if for a property R, x has a higher degree of that property than any y (unless y = x) within a comparison class. In contrast, remember, the comparative of superiority would be true if the degree of the property R exhibited by x is higher than the degree of the property for y. From this perspective, the difference between comparative and superlative would be one parallel to existential vs. universal quantification: in the comparative, there is an entity whose degree is lower than the one exhibited by x, and in the superlative, every entity in the comparison class has a lower degree of the property than x. Obviously, the inferiority comparative and the inferiority superlative (*el menos alto*, 'the least tall') would be parallel in the same way.

(416) $[[\text{Sup}^{\text{Inf}}]]\ (R)(x) = 1$ iff $\forall y[y \neq x \rightarrow \max\{d:R(d)(x) = 1\} < \max\{d:R(d)(y) = 1\}]$
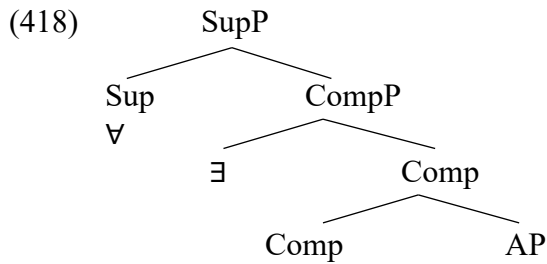
There is alternative way of viewing the semantics of the superlative (cf. Heim 1999, Gajewski 2010) which is not overtly comparative:

(417) $[[\text{Sup}]]\ (R)(x) = 1$ iff $\exists d[R(d)(x) = 1\ \&\ \forall y[y \neq x \rightarrow \neg R(d)(y)]$

That is: the superlative is true predicated from 'x' if there is a degree value such that no other member in the comparison class has it; there is no overt comparison here, even if from here comparison is presupposed. The first conclusion, then, is that in case the containment hypothesis between comparative and superlative is right, then the formula in (415) must be closer to the truth than (417).

Second, even in that case it is not trivial how the relation between the existential quantification and the universal quantification is to be implemented. Standardly, the existential quantifier and the universal quantifier are not viewed as one built on top of the other one, but rather as primitive entities. One cannot, then, simply state that CompP introduces an existential quantifier binding the second member of the comparison (when there is no other quantifier) and SupP above it introduces a universal quantifier,
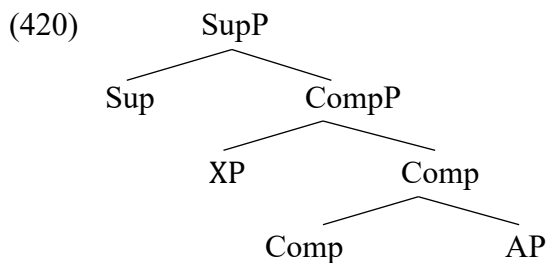
because the second member of comparison would already be bound by the first quantifier.

(418)

```
            SupP
          /      \
       Sup        CompP
        ∀        /      \
              ∃          Comp
                       /      \
                    Comp       AP
```

The second set of problems is syntactic. It is clear that the comparative coda is not licensed by the superlative. The superlative licenses a superlative coda that can introduce the comparison class which cannot co-occur with the comparative coda.

(419) a. *el más alto estudiante que Juan
              the most high student than Juan
       b. el más alto estudiante de todos
              the most tall student of all
       c. *el más alto estudiante de la clase que todos
              the most tall student of the class than all

If the superlative contains the comparative, it cannot literally mean that the comparative can introduce any member in its structure that it would introduce in the absence of a superlative head above it. If so we would obtain something like (420), which predicts either (419a) or (419c).

(420)

```
            SupP
          /      \
       Sup        CompP
                /      \
             XP         Comp
                       /      \
                    Comp       AP
```

Somehow one has to ensure that the comparative coda is not licensed in this context, but if Comp itself licenses it, how is this possible? In what way would presence of SupP block the licensing of Comp that otherwise would be produced? One could perhaps try to relate this with the universal quantifier, but there is no obvious sense in which the presence of a universal quantifier blocks a predicate from licensing an argument.

An alternative that one could also explore is that the comparative coda raises to the SupP phrase, where its licensing conditions become different.

(421)

```
            SupP
          /      \
       XP         Sup
                /      \
             Sup        CompP
                       /      \
                    X̶P̶        Comp...
```
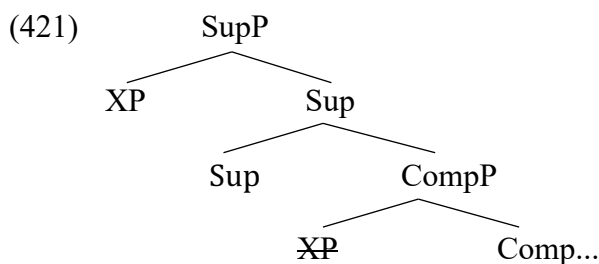
This would not be easy to implement. One is faced with the difficulty of explaining why XP would need to rise to SupP only to see its licensing conditions change; in other words, we could understand that if XP is materialised as a superlative coda it would not be licensed within CompP and will have to rise to SupP, but we still cannot exclude (419a), because if XP is materialised as a comparative coda it should already be licensed in CompP and rising to SupP –however we enforce it– should not change this.

One possible way out would be to go back to the idea that Sup is related to universal quantification, and claim that the XP that rises to Sup must be able to respect this quantification. However, this predicts something like (422a), which is ungrammatical, even though (422b) –with a superlative semantics, but a comparative syntax– is grammatical.

(422) a. *el más alto estudiante que todos los demás
           the most tall student than all the others
       b. Juan es más alto que todos los demás
          Juan is more tall than all the others

There is an additional reason not to propose this type of movement, and that is that the coda does not behave as one would expect if it was an argument of Sup that is projected within the SupP projection. Remember that the comparative class is not expressed with a categorically stable head: there are prepositional phrases, adjectives and relative clauses that can perform this role. This does not look like grammatical selection.

Moreover, whenever a noun modifier carries an argument, Spanish strongly prefers to restrict it to postnominal position:

(423) a. *un fiel a su madre hijo
           a loyal to his mother son
       b. un hijo fiel a su madre
          a son loyal to his mother

It is tempting to relate the fact that a comparative adjective cannot be prenominal with this principle: if the comparative coda is indeed an argument of Comp, then (424a) is ungrammatical for the same reason that (423a) is.

(424) a. *un más alto hijo que su madre
           a more tall son than his mother
       b. un hijo más alto que su madre
          a   son more tall than his mother

Then, the fact that superlatives can –and in fact prefer to– be in prenominal position, pretty high within the nominal constituent would match with the absence of categorical selection in suggesting that the superlative coda is not merged within SupP. Lacking an argument, the constituent is free to move to prenominal positions, and when the comparative class is expressed the only restrictions will be semantic.

Loccioni (2018) in fact provides a possible structure of superlatives that matches these observations. For her, drawing on ideas from Kayne (2008), the superlative should be interpreted as a head that is merged high within the DP structure, and which attracts the adjective –possibly, for her, a comparative–. The superlative is related to an ordinal

adjective (first, second, third...) both semantically and structurally. Semantically the superlative relates to an ordinal because its role is to determine the 'first' or 'last' member in an ordered set of entities. The superiority superlative picks up the first element, and the inferiority superlative picks up the second element.

It is in fact a regular observation that the ordinals corresponding to 'first' and 'last' lexically have the meaning of superlatives and share some of their properties (RAE & ASALE 2009: §45.13v):

(425)   a. el último estudiante de todos
            the last student of all
        b. la primera pregunta de todas
            the first question of all

Syntactically, the position of the superlative morpheme (which is silent in Romance) would correspond to the merging layer of ordinal numerals –for Loccioni, -est in English is in fact an ordinal expression; cf. *fir-st* and *la-st*–. From this position, it will be able to follow or precede cardinal numerals, as ordinals do.

(426)   a. las dos primeras preguntas
            the two first questions
        b. las primeras dos preguntas
            the first two questions
(427)   a. las dos más largas presentaciones
            the two most long presentations
        b. las más largas dos presentaciones
            the most long two presentations

The comparison class and the superlative form a discontinuous constituent, that is, are two separate heads. The comparison class must be in the syntactic domain of the superlative, and provides the set of entities that the superlative orders like any other ordinal numeral. For this reason, the comparison class is not a designated syntactic head, but rather the interpretation assigned to the complement of Sup: thus, its syntactic manifestation can be variable and not syntactically conditioned. When it is expressed syntactically we can speculate that it would be an adjunct–.

Being in a high position, SupP attracts the adjective, which explains why superlative adjectives tend to appear prenominally.

(428)   [SupP Sup... [CompP   Comp<más alto>....]]

Thus, Bobaljik's (2012) containment relation would be satisfied through movement, but it would not be an effect of base-merge: the comparative and the superlative are divided through different potential layers, even if they ultimately have to combine.

This interesting approach opens additional ways of expressing the absence of comparative codas in superlative constructions. One could imagine that the presence of the coda would not allow the comparative adjective to move up in the structure: if the XP is present, movement of DegP would not let the superlative empty morpheme combine with it. Alternatively, one could go back to the existential vs. universal divide and approach the matter semantically, claiming that specifying an entity that acts as the term of comparison crashes with the exhaustive ordering of all entities in the discourse that the semantics of the superlative requires.

While there are several aspects to explain here and the details would have to be worked out, it seems that an approach along these lines might actually be able to explain the containment that morphological evidence forces and at the same time covers the differences in syntax and semantics between the superlative and the comparative.

8.2. Absolute and comparative readings of the superlative

Superlative expressions display a particular type of ambiguity that has been known as the absolute vs. relative reading. Consider the sentence in (429).

(429)   Juan compró el diamante más caro.
       Juan bought the diamond most expensive

This can be interpreted in two ways. In the so-called absolute reading, Juan bought the diamond that is most expensive from the whole set of diamonds in the world, which (by the way) in April 2020 was the Perfect Pink diamond. In the so-called comparative or relative reading, Juan might have bought a pretty cheap diamond, but within the set of people that we consider in this context, he was the one that bought the most expensive one, because he paid 20 euros while the others paid 15 euros. This ambiguity has been widely studied in the literature (see, among others, Farkas & Kiss 2000, Heim 1985, 1999, 2000, Sharvit & Stateva 2002, Szabolcsi 1986).

The puzzle is the following: in the absolute reading, the comparison class is provided by the nominal expression that contains the superlative, as made obvious by an overt expression of that comparison class (430).

(430)   el diamante más caro de todos los diamantes
       the diamond most expensive of all the diamonds

In the comparative reading, the comparison class is outside the nominal expression that contains the superlative, and cannot be present or at least cannot be present in its cannonical syntactic position.

(431)   De todos los que compraron un diamante, Juan compró el diamante más caro
       of all who bought a diamond Juan bought the diamond most expensive

There are two main ways of approaching this ambiguity, and as we saw already in §2, they reflect the difference between treating degree elements as quantifiers or not. In the approach where degree heads are quantifiers, the ambiguity reflects a difference in scope: in the absolute reading (430), the superlative takes scope within the DP where it belongs. In the relative reading (431), the superlative is an operator that moves out of the DP covertly and takes scope above the predicate (roughly, the comparison class would be the expression 'y bought a d-expensive diamond'). This approach is for instance compatible with Loccioni (2018), who claims that the comparison class is not a designated syntactic constituent, but the interpretation related to the complement of the superlative head.

The second option is to treat the difference as a distinction in the contextual domain used to define the comparison class (von Fintel 1994): the comparison class, like any other set of entities, can be wider or narrower depending on what is contextually relevant. Let us go back to the formula in (415):

(432) $[[\text{Sup}]] (R)(x)= 1$ iff $\forall y[y \neq x \rightarrow \max\{d:R(d)(x)= 1\} > \max\{d:R(d)(y)= 1\}]$

The only change is to add a predicate variable that restricts the domain where the y participants belong.

(433) [[Sup]] (R)(x)= 1 iff $\forall$ y[y$\neq$ x & y $\in$ C $\rightarrow$ max{d:R(d)(x)= 1} >
　　　max{d:R(d)(y)= 1}]

Now, we can express the distinction between the two readings through a difference in the contextually-relevant domain of the comparison class, without any difference in scope: in the absolute reading, the domain for y is the diamonds; in the relative reading, the domain for y is those that bought a diamond. As it was the case in the other situations discussed in §2, these ambiguities do not necessarily support a quantifier-movement approach to degree. Note, however, that this approach would mean that the comparison class is not straightforwardly defined by the syntatic complement of Sup, as Loccioni (2018) proposes: either an independent syntactic head would have to be defined to correspond to C in (433) or the C argument would have to be provided in semantics, not being represented in syntax.

8.3. Why nominal constituents

Let us finally briefly discuss the problem of superlatives being necessarily embedded in nominal constituents (see Matushansky 2008 for the simple proposal that superlatives are always attributive). One side of the phenomenon easily follows from independent considerations: the nominal expression must be definite in the superlative absolute reading.

(435)　Juan compró {el / *un} diamante más caro de todos los diamantes.
　　　Juan bought the / a　　diamond more expensive than all the diamonds

This follows, of course, from the observation that within the class of diamonds the nominal expression denotes the one that has the highest value, and therefore it has to be unique; thus, definiteness follows.

It is enygmatic, though, why the expression needs to be definite also in the relative reading. As we saw above, the paraphrase shows that in that context the reference of the nominal expression is indefinite ('John bought a diamond that was more expensive than any of the diamonds that the others bought'), and in fact there is direct syntactic evidence for this, pointed out by Szabolcsi (1986). Consider the context in (436), which is a weak context for the definiteness effect in Spanish (and other languages).

(436)　Juan tiene una hermana.
　　　Juan has a sister

That the direct object of the verb 'have' in Spanish is a context that rejects definite expressions is shown by (437).

(437)　*Juan tiene (a) la hermana.
　　　　Juan has DOM the sister

The problem is that the superlative in the relative reading can appear in this context, strongly suggesting that it is not really a definite expression refering to a unique individual.

(438)   Juan tiene la hermana más guapa.
        Juan has the sister most pretty
        'Juan has a sister that is prettier than anybody else's sister in the comparison
        class'

If the definite article does not refer to an individual, what does it refer to? The general proposal (Krasikova 2012, but see also Kayne 2008) is that the definite article can be playing two roles: to refer to a unique individual (as in absolute superlatives) or to refer to a unique degree, specifically the degree value that (maximally) one entity displays and no other in the contextually-determined comparison class –as in the relative superlative–. Thus, in the second case the role of the definite article is to pick a unique degree, but the reference of the noun expression is not necessarily definite.

There are two phenomena that automatically support this type of view. The first one is that in French the superlative exhibits a second definite article in postnominal position.

(439)   la fille la plus belle
        the girl the most pretty

It is tempting to propose that the second article is in fact the manifestation of the degree that identifies the unique maximal value; in prenominal position one of the two articles erases perhaps due to adjacency:

(440)   la [la plus belle] fille

Second, in expressions without any possible noun, the pronoun used appears in Spanish in neuter gender, as one would expect if the reference is to a degree, which is not grammaticalised as a noun.

(441)   a. lo más rápidamente posible
           the most quickly possible
        b. lo menos tarde posible
           the least late possible

This perspective allows to think of the neuter expression as a pronoun referring to a unique degree, with the adjective 'possible' being predicated from it, as a restrictor of the domain from which that degree is extracted. What would happen, then, in cases with an overt noun or with a nominal expression that has gender or number? We could assume that in such cases the article that represents the unique degree formally agrees with the closest gender and number-marked object within the DP. The absolute reading of a superlative would, underlyingly, be (442).

(442)   la chica [D más alta]
        the girl the most tall

In this context, Spanish would not spell out the second determiner for reasons that are obscure at this point, but that could ultimately depend on fine-grained PF conditions. In the prenominal version we could invoke a principle similar to the one in French.

(443)   [la [D más alta] chica]

In the relative superlative reading, the only article would be the one associated to the degree, as in (444).

(444)   a. [D   chica [la más alta]]
b. [D [la más alta] chica]

The article would raise to the D position in (444), producing the final order –again, for reasons that are obscure at this point–.

It is, finally, tempting to relate the definite article for degrees with Corver's (1997) high DegP, which is referential. The referential degree head, then, would have at least two values, one used in equality comparatives (*tan*) and another one for superlatives, where its projection is compulsory.

(445) Deg^DP

Deg^D Deg^QP
la

Deg^Q AP
más

A   ...
alta
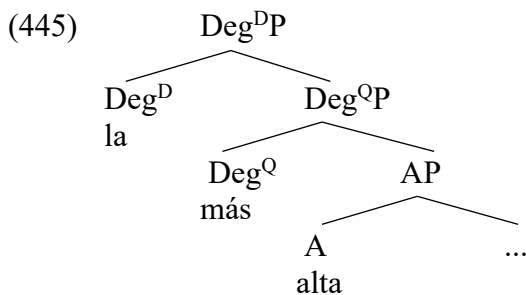
Now the question is why should superlatives only appear within nominal constituents? From this perspective this is just an illusion: the article that minimally appears in these constructions is a reflection of a degree layer that superlatives require given the uniqueness interpretation of the degree that they refer to.

Combined with Bobaljik's (2012) proposal, (445) would rather be (446), where Sup has two layers, one for Deg^Q and one for Deg^D.

(446) Deg^DP

Deg^D Deg^QP
la

Deg^Q

Deg^Q ...XP
[superlative]

X Deg^Q

Deg^Q AP
[comparative]
más   alta
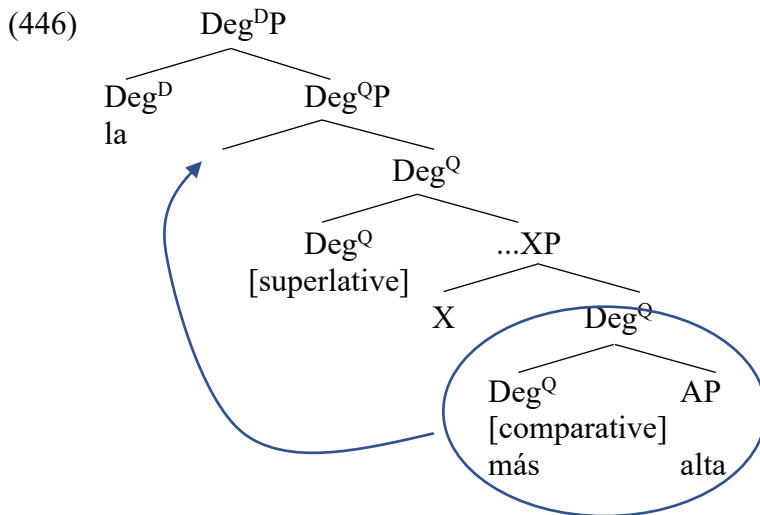
Combined with Larson's (2014) proposal, the subject of predication of the comparative would be merged in a layer above Deg^Q, triggering agreement with both the adjective and the definite article.

9. Conclusions

Let us wrap up as briefly as possible. The grammar of degree is still puzzling. There is no agreement with respect to whether:

(i) degree elements are quantifiers or not

(ii) degrees are heads within the projection of an adjective (or other gradable predicates) or not

(iii) comparative codas are merged as complements or not

(iv) how the semantic compositionality is reflected in the syntactic structure

(v) the distinction between a positive degree adjective and a gradable adjective without degree

(vi) whether gradable predicates are measure functions or functions from degrees to predicates

Beyond this, there are still empirical domains where a lot of descriptive work is required –eg., in the grammatical consequences of scalar structure–, and where analyses need to be refined.

Antonio Fábregas
Department of Language and Culture
HSL-Fakultet
UiT-Norway's Arctic University
9037, Tromsø, Norway
antonio.fabregas@uit.no

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