

Incommensurability

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Abstract. This paper discusses subcomparatives with ‘incommensurable’ adjectives (e.g. *beautiful* and *intelligent*), which have received little attention in the literature so far. This is surprising, as the topic is of great importance for the current discussion with respect to the choice between a vague predicate analysis and degree-based approaches to gradability. This paper studies the properties of comparisons involving ‘incommensurable’ adjectives on the basis of a new collection of (mostly attested) data. A confrontation of the data with both degree-based and non degree-based theories offers evidence for the latter, and more in particular for a more constrained version of Klein’s analysis ([11],[12]) as presented in Doetjes, Constantinescu & Součková [6].

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1 Introduction

In the literature, different judgments can be found for adjectival subcomparatives with so-called ‘incommensurable’ adjectives. Adjectival subcomparatives are comparatives which contain an overt adjective both in the main clause and in the *than*-clause. These two adjectives usually differ from one another. An example is given in (1):

- (1) The table is longer than the desk is wide

The adjectives *long* and *wide* correspond to the dimensions of length and width respectively, and these dimensions can be measured by the same measurement system. According to Kennedy [9], the number of adjectives that may occur in subcomparatives is limited by the fact that adjectives in these structures need to be commensurable. In case they are incommensurable, as the adjectives in (2), the sentence is not felicitous. Thus he concludes that incommensurability constitutes an argument against the vague predicate analysis of adjectives as developed by Klein ([11],[12]) and recently defended by Van Rooij [16].

- (2) #My copy of *The brothers Karamazow* is heavier than my copy of *The Idiot* is old

Even though this example is convincing, and indeed seems to be rather odd, Bartsch & Vennemann ([1]:91) discuss another case of a comparative with supposedly incommensurable adjectives, and claim that the sentence is fine:

- (3) Marilyn is more beautiful than she is intelligent

As Bartsch & Vennemann indicate, the important reading is not the metalinguistic one (where *more* could be replaced by *rather*), but the reading in which a comparison is made between Marilyn's beauty and her intelligence. Surprisingly, the relevant reading of (3) is mostly ignored in the literature (with the exception of [1], [8], [2], [3]), and if addressed, relatively few examples are taken into account. Some of Bale's [2] examples are given in (4):

- (4) a. Seymour is as intelligent as Esme is beautiful
b. If Esme chooses to marry funny but poor Ben over rich but boring Steve, [...] Ben must be funnier than Steve is rich.
c. Although Seymour was both happy and angry, he was still happier than he was angry.

The properties of subcomparatives with so-called incommensurable adjectives are important for the way gradability is represented. The only way to handle this type of phenomenon in a degree based approach is to assume some sort of a mapping mechanism that turns the incommensurable degrees, that is, degrees on different scales, into objects that may be compared (cf. [1], [8], [2], [3]). On the other hand, sentences such as (3) and (4) can be seen as an argument in favor of the vague predicate analysis.

The first part of this paper examines a collection of (mostly attested) examples of subcomparatives containing 'incommensurable' adjectives in English and Dutch. I will argue that sentences such as (3) and (4) have to be seen as a subcase of what I will call Relative Comparison or **RC** (following [6]), and that Comparison of Deviation ([9],[10]) should also be seen as an instance of RC. I will also discuss conditions on RC that can make sense of the contrast between (2) on the one hand, and well-formed cases of RC on the other. In the second part of the paper, the data will be confronted to both the vague predicate analysis and theories of gradable expressions that make use of degrees. I will argue that RC should be seen as evidence for a constrained version of the vague predicate analysis, as proposed by Doetjes, Constantinescu & Součková [6].

2 What is relative comparison?

The sentences in (3) and (4) raise to two different questions. In the first place, one needs to know whether the phenomenon exemplified in (3) and (4) is limited to subcomparatives with incommensurable adjectives, or that there are also sentences with commensurable adjectives that exhibit a similar behavior and should be analyzed in the same way. In the second place, given the contrast between the judgments given in the literature for (2) and (3)-(4), one wants to know under what conditions this type of sentences can be used.

Before addressing this second question, I will first discuss some properties of these structures. More in particular, I will argue that RC is a rather broad phenomenon, which covers all subcomparatives with a relative interpretation, excluding only

subcomparatives with an absolute interpretation such as (1) above, in which the absolute width of the table is compared to the absolute length of the desk (cf. [6]).

According to Bale [2], relative comparison (in his terms ‘indirect comparison’) is not restricted to subcomparatives with incommensurable adjectives. It also occurs in elliptical comparatives with two different norms, as in (5):

- (5) Ella is heavier for a baby than Denis is for a three year old.

As Bale notes, an ordinary degree based theory would expect this type of sentences to be impossible, as we are certainly not comparing the weight of the baby to the weight of the three year old in absolute terms. What we do compare here is the relative weight of the baby (as compared to other babies) and the relative weight of the three year old (as compared to other three year olds).

The sentence in (5) is actually very similar to subcomparatives with two polar opposites and a comparison of deviation interpretation, as in (6a) below. Kennedy ([9],[10]), who discusses this type of sentences in detail, argues that direct comparison of the degrees corresponding to polar opposites is not possible, as these form different objects. In order to derive this, he postulates that the degree corresponding to a positive adjective constitutes a positive extent (ranging from zero to some point on the scale), while degrees introduced by negative adjectives correspond to negative extents (ranging from some point on a scale to infinity). As a result, the positive adjective *tall* conveys information about the height an object has, while the negative adjective *short* conveys information about the height an object does not have’([9]:193). As comparison of two degrees is based on the inclusion relation, this way of modeling positive and negative degrees excludes comparison of a positive and a negative degree even if they are defined as degrees on the same scale. However, in this latter scenario there is a way out. Comparatives and equatives with two polar opposites that make use of the same scale may be interpreted as instances of Comparison of Deviation (COD). Kennedy derives the example in (6a) as in (6b), which results in a comparison of the two differential extents, measuring the difference between the actual degree and the standard. The ZERO function maps the two differential extents onto two extents that both start at the zero point of the same scale, and as such can be compared.

- (6) a. The Cubs are as old as the White Sox are young
 b. $\text{ZERO}(\text{old}(\text{Cubs}) - d_{s.\text{oldness}}) \geq \text{ZERO}(\text{young}(\text{White Sox}) - d_{s.\text{youngness}})$

Kennedy’s analysis predicts that COD is restricted to adjectives that project degrees on the same scale (antonyms and dimensional adjectives that are compatible with the same measurement system, such as *long* and *tall*). As such, he excludes the possibility of COD in subcomparatives with incommensurable adjectives (cf. (2)), but he can handle Bale’s example in (5). The analysis of sentences such as (6a) as involving a comparison of the deviation from the standard implies that the degrees are at least equivalent to the standard value, and as such these sentences presuppose the positive form of the adjectives they contain, as the positive also introduces the standard [5].

For Bartsch & Vennemann [1] there is no fundamental difference between sentences such as (6) (Kennedy’s COD) and cases such as (2) and (3) (comparisons with incommensurable adjectives). In both cases, the comparison concerns the difference between the actual degree and the norm, and as such they are all analyzed

in terms of a comparison of the deviations from the respective standards introduced by the two adjectives. In the case of dimensional adjectives, this comparison makes use of a conventional measure. In the case of sentences such as (3), they introduce a scale on which specific and average beauty/intelligence values can be assigned numbers on a single scale (specific and average BQs and IQs, as they call them). As such, the differences between the specific and the average values may be compared. Hamann, Nerbonne & Pietsch [8] arrive at a similar result by forcing the standard values corresponding to the two adjectives to be mapped onto the same point of the derived scale.

However, Bale [3] argues that (2) and (3) cannot be analyzed in a similar way to COD, as this type of sentence does not imply the positive, as illustrated in (7).

(7) Unfortunately, Mary is more intelligent than Medusa is beautiful.

Bale concludes that the neutralization effect we find in normal comparatives (cf. [4]) is also present in this type of comparison Bale and that the analysis of (2) and (3) should not introduce the standard. This implies that there are two different phenomena: COD on the one hand, and relative comparison (his indirect comparison) on the other.

According to Bale, the difference between the two phenomena is correlated with the use of the analytic versus the synthetic form of the comparative. In COD the synthetic form is used, and this is in his view responsible for the effect that we find. However, there are two facts that complicate the picture. In the first place, the use of an analytic comparative as opposed to a synthetic form may introduce an evaluative interpretation of the adjective (see [6], [15]), and as such the lack of a neutral interpretation may well be directly due to the use of the analytic comparative, which would make it independent from the use of a subcomparative with two polar opposites. On the other hand, it is questionable whether the effect neutralization effect Bale talks about is always available, even for sentences with an analytic comparative. In this regard it is interesting to look at COD sentences in German, where only the synthetic form is used. Yet, these sentences have a comparison of deviation type of interpretation, which corresponds to a non neutral interpretation [4]. The positive form of the adjectives in (8) is presupposed, contrary to what we find in (7).

(8) ?Hans is kleiner als Eva groß ist
'Hans is shorter than Eva is tall'

At this point the picture seems to be rather complicated: on the one hand, people do not agree on whether we are dealing with one phenomenon or with two. On the other hand, even though neutralization effects can be found, as shown by Bale's data, they do not always occur. Obviously one could say that (7) is a case of relative comparison while (8) is a case of COD, but this does not explain why this would be so. More in particular, there does not seem to be any reason not to apply Bale's analysis to cases such as (8), and this raises the question why the effect found in (7) is necessarily absent in (8).

When looking at the sentences Bale uses in order to show that the neutral interpretation exists, it turns out that they have two things in common. In the first place, they contain positive adjectives (*beautiful, intelligent, pretty*), and in the second

place, they all have a strong ironical flavor. This is also clear in the example in (9), which is an attested Dutch sentence (internet).

- (9) Gelukkig was [de hond] veel slimmer dan hij mooi was.
 ‘Luckily the dog was much smarter than he was good-looking.’

The sentence in (9) does not only lack the presupposition that the dog is good-looking, it strongly suggests that the dog is ugly, and in this respect the interpretation differs from a neutral or non evaluative interpretation. As such the sentence can be seen as a case of what Leech [13] calls ‘criticism under the guise of praise’: even though the dog is claimed to be pretty, the person who uses this sentence wants to convey that the dog is ugly. Given that praise usually involves positive adjectives, one expects this effect to arise only when positive adjectives are used. Interestingly, when one tries to formulate a negative counterpart of (9), one does not succeed. There is no way to interpret (10) without presupposing that the dog is ugly.

- (10) Jammer genoeg was [de hond] veel dommer dan hij lelijk was
 ‘Unfortunately the dog was much more stupid than he was ugly’

The effect in (9) might be analyzed as resulting from an ‘ironic standard’: the normal standard corresponding to the adjective *mooi* has been replaced by an ironic standard, which stretches up the domain and as such permits to even include the ugly dog in the set of good-looking individuals.

Given that it is possible to force a non presupposed reading of the first adjective, as in (7), it should be possible to stretch up the domain of both adjectives. A closer look at the data shows that this seems to be the default case. Evidence for this comes from the fact that it is very hard to get the ironic reading of the sentence in (9) when the first adjective *slim* ‘smart’ is replaced by its negative counterpart *dom* ‘stupid’, as in (11a). Moreover, in equatives with two positive adjectives, it is not possible to interpret only one of the two adjectives ironically. In (11b), either both adjectives are ironical, or both are not. If one assumes that the ironic reading forces an ‘ironic standard’ for both adjectives, these restrictions can be understood.

- (11) a. Jammer genoeg was [de hond] veel dommer dan hij mooi was
 ‘Unfortunately the dog was much more stupid than he was good-looking’
 b. De hond was even slim als hij mooi was
 ‘The dog was as smart as it was good-looking’

An analysis of cases such as (7) and (9) in terms of an ironic ‘standard’ has an important advantage for the interpretation of the data. It makes it possible to assume that even (7) and (9) involve a comparison of deviation in the sense that they presuppose the positive. However, in this case, this positive has an ironic interpretation. The apparent lack of this type of effect in the traditional COD environments, and in particular in (8), follows from the fact that the domain of both adjectives needs to be stretched up, while this is only possible when a positive adjective is used. As such the effect is not expected to occur in sentences such as (8), which contain both a positive and a negative adjective.

A further argument for treating RC and the traditional COD cases with polar opposites as one single phenomenon has been offered in [6]. We claim that in both types of sentences a similar interpretation is obtained, which is not the interpretation

in (6b) above. We argue that standard cases of COD do not involve a comparison of differential extents in an absolute sense, as predicted by Kennedy's analysis, but rather in a relative sense: if the two standards introduced by the two adjectives are clearly different, the same deviation (in absolute terms) counts as a smaller deviation from the higher standard than from the lower one. This can be illustrated by the example in (12a), which is arguably true under the COD interpretation in (12b) [10]:

- (12) a. The Sears Tower is as tall as the San Francisco Bay Bridge is long.
b. The degree to which the Sears Tower exceeds a standard of tallness (for buildings) is at least as great as the degree to which the San Francisco Bay Bridge exceeds a standard of length (for bridges)

If one compares the differential extents, one cannot do so in an absolute way, given that the total length of Sears Tower (527 meters) might well be less than the difference between the length of San Francisco Bay Bridge (5,920 meters) and the standard length for bridges. Such a scenario could still make the sentence true, as long as the two differential extents are comparable to one another in a relative way, given the size of the standard. The deviations are rather measured as a percentage of the standard than as an absolute value.

To conclude the first part of the section, there are good reasons to treat the original COD cases (involving polar oppositions) and subcomparatives with incommensurable adjectives as manifestations of one single phenomenon. In the first place, these sentences presuppose the positive (even though this fact may be obscured by the effect of irony). Moreover, all of these cases involve a relative, strongly context dependent interpretation, which makes them very different from subcomparatives that involve an absolute comparison such as the one in (1).

The next question to address is what constraints are placed on relative comparison. As observed at the beginning of this paper, not all combinations of adjectives seem to lead to a felicitous result (cf. (2)). However, a well chosen example in the right type of context can be fully felicitous and there is no reason to assume that the structure as such is ungrammatical. In the remainder of this section, I will argue that RC requires the two adjectives to be semantically or contextually associated to one another.

A closer look the difference between the infelicitous example in (2) and for instance the fully felicitous attested example in (9) is that it is not easy to find some sort of a connection or relation between the two adjectives used in (2) (*heavy* and *old*). On the other hand, the two adjectives used in (9) (*mooi* 'pretty, good-looking' and *slim* 'smart') are conventionally associated to one another ("the looks and the brains"). It is not by accident that both Bartsch & Vennemann and Bale use many examples with similar adjectives (see (3) and (4a)); this type is also very easy to find on internet in all sorts of contexts.

When looking at other examples and at the contexts in which they are used, one can find further evidence for the idea that there needs to be some kind of an association between the two properties in order to make the sentence felicitous. This association can be of various kinds. In the original COD-cases, for instance, antonymy seems to play a role in licensing the use of the RC structure, as illustrated by (13) (note that in this example the analytic form of the comparative is used).

- (13) Do you see a rectangle, that is taller than it is narrow? That's what I see and that's what other people see when you are wearing a long dress.

3 Theoretical consequences

At this point it is clear that subcomparatives with ‘incommensurable’ adjectives are not excluded and thus a complete theory of comparatives has to be able to derive them. As indicated in the introduction, these sentences cannot be handled by a standard degree based approach, because these adjectives do not project comparable degrees on a single scale. Various authors [1], [8], [2], [3]) solve this problem by mapping the degrees to different objects that can be compared, as indicated above. On the other hand, one might want to say that this type of sentence offers evidence in favor of the vague predicate analysis, in which such a mapping is not necessary. In what follows I will discuss a number of possible accounts in the light of the empirical generalizations made in the previous section.

Bartsch and Vennemann [1] argue in their account of sentences such as (2) that these have to be treated on a par with COD cases. For them, a sentence such as (2) involves a scale on which specific and average values for beauty and intelligence (“specific and average BQ’s and IQ’s as they call them) can be assigned in such a way that these numerical values can be compared. The interpretation of the sentence amounts to a comparison of the deviations between the specific and the average values for beauty and intelligence respectively. For COD sentences involving dimensional adjectives, they make the same assumption. However, in this case the grammar can make use of measures, such as feet or centimeters, depending on where the speakers come from. Interestingly, this is the point at which their proposal makes a false prediction. As shown above, COD makes a comparison between the relative lengths of two differential extents and not between their absolute lengths. This is not expected in their proposal, as their analysis of the incommensurable cases is modeled on the existence of measurement systems.

Bale [2],[3] offers a detailed analysis of the mapping between degrees on ordinary scales to degrees on a universal scale. In his view, the only difference between cases such as (1) (absolute comparison, where two measures are compared in an absolute way) and (3) (relative comparison) is that the domain of individuals that has to be taken into account for sentences such as (1) contains measures (which he considers to be a special type of individuals). Given that sentences such as (1) normally have neutral interpretations (see [7] for discussion), Bale predicts RC sentences to have a neutral interpretation as well. As such he fails to account for the limited nature and the ironic effect of this type of interpretation that has been illustrated in (9)-(11) above. A further problem of the type of mapping Bale proposes (which I will not describe in detail here for reasons of space) is that he predicts a fine-graininess that is not justified by the data. Bale reconstructs the precise position of every degree on the universal scale from the relative position the individual occupies on the primary scale with respect to other values on that scale. He assumes that a value on the primary scale is mapped onto a fraction on the universal scale. This fraction corresponds to the position of the value (where the lowest value equals one and the highest value equals the total number of values) divided by the total number of values on the scale. This is problematic in two respects. On the one hand, RC does not require the amount of information about the domain that Bale’s system needs, and on the other hand, the meaning of these sentences is not as clear-cut as he predicts. RC is a coarse-grained phenomenon. Take the interpretation of the equative in (24a). The sentence implies

that the peaches are both very juicy and aromatic and very heavy, and the use of a comparative rather than an equative would only be possible if for instance the peaches were extremely juicy and aromatic while being only slightly bigger than average. In this respect, a less constrained mapping, as proposed by Hamann, Nerbonne & Pietsch [8] is to be preferred. However, as shown below, the coarse-grained nature of RC follows directly from an account of comparatives that takes the vague predicate analysis as a starting point.

In approaches to comparatives based on the vague predicate analysis, the meaning of RC cases (that is, including the original cases of COD) involves the use of degree functions such as *quite*, *very* and *extremely* (cf. [12]:130, [14]). A sentence such as (4c) would be analyzed as in (18), where *d* could be *quite*, *very* or *extremely*.

$$(18) \exists d[(d(\text{funny}))(Ben) \wedge \neg(d(\text{rich}))(Steve)]$$

This captures the coarse-grained nature of RC, as these modifiers are vague themselves and only allow for a rough division of the domain. This is an advantage over degree based approaches, as these necessarily involve a mapping, and this mapping may be done in a very precise way. Also, the fact that we are (necessarily) dealing with a rough type of comparison seems to be at least part of the reason why the two adjectives in this structure need to be associated to one another. Consider again the equative in (24a). The only information the comparative conveys is that the peaches are very juicy and aromatic. The fact that they are heavy is already present in the context. However, by using the RC structure, the fact that all these properties add to the satisfaction of the person who bought the peaches is focused on. A further advantage of this type of approach is that it predicts the relative interpretation of COD-cases involving a dimensional adjective to be the only possible one, as the interpretation of expressions such as *very* and *extremely* varies with the standard. Finally, given that *John is quite/ very/ extremely tall* cannot be followed by the sequence *#but he is not tall*, the use of these modifiers makes it in principle possible to derive the COD-type interpretation of RC.

This last point is more complex, however. When looking in more detail at the standard formalization of the comparative under the vague predicate analysis, as formulated by Klein, it turns out that this approach does not account for the COD-type of interpretation. Rather, Klein predicts the effect in (9) to apply across the board. The formalization in (19) only implies that the dog should be smart. As such, Klein fails to account for the asymmetry between positive and negative adjectives noted above.

$$(19) \exists d[(d(\text{smart}))(the\ dog) \wedge \neg(d(\text{good-looking}))(the\ dog)]$$

This problem is solved in a more constrained version of Klein's analysis as we proposed in [6] and [7]. In our view, Klein's analysis has to be restated in terms of a comparison between degree functions. The *than*-clause introduces in this case the maximally informative degree function δ that, if applied to the adjective in the *than*-clause results in a set including the subject of this adjective (this is the formalization used in [7]). The analysis of (4b) is given in (20), where $\delta 1 >_A \delta 2$ iff $\delta 1(A) \subset \delta 2(A)$.

$$(20) \exists \delta 1[(\delta 1(\text{funny}))(Ben) \ \& \ \delta 1 >_A \text{MAX}_{\text{good-looking}}(\lambda \delta 2(\delta 2(\text{rich}))(Steve))]$$

In this analysis, the functions that can be used must be inherently ordered with respect to one another (which is a consequence of Klein's Consistency Principle), and we

assume that *quite*, *very* and *extremely* fulfill this requirement as well. As such, the sentence in (4b) states that if Steve is quite rich, Ben has to be very funny, or, alternatively, if Steve is very rich and Ben has to be extremely funny. This seems to be exactly what the sentence means. The analysis differs from Klein's original formalization by putting a much stronger constraint on the semantic contribution of the *than*-clause. As for the example in (9), the *than*-clause introduces the most restrictive set $\delta(mooi)$ containing the dog. As a consequence, the ironic reading of the sentence can be attributed to a stylistic effect that stretches up the domain for *mooi* 'good-looking' as to even include the ugly dog.

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