

Completely Bare Swedish Superlatives

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Abstract. This paper shows that Swedish differs from both German and English with respect to the distribution and interpretation of definiteness-marking on superlatives: Bare degree and amount superlatives unambiguously receive a relative interpretation, definite-marked amount superlatives are unambiguously ‘proportional’ (although they do not always carry a ‘more than half’ interpretation), and definite-marked degree superlatives can have an absolute or a relative reading. We show that an analysis based on movement of the superlative morpheme accounts well for the Swedish pattern but does not provide the tools for a cross-linguistically valid framework, failing in particular to account well for relative readings in conjunction with definiteness-marking. We therefore propose an alternative, non-movement approach building on a very recent treatment of the superlative morpheme, giving it access to a contrast set and an association relation. The crucial difference between Swedish on the one hand and English and German on the other hand is proposed to lie in whether the association relation is saturated through semantic composition or by context.

Keywords: superlatives, relative vs. absolute and proportional readings, definiteness, Swedish

1. Introduction

As the reader may recall, there are seven continents in the world (North America, South America, Europe, Africa, Asia, Australia, and Antarctica). Imagine that our friend Gloria has visited three of them, namely North America, Africa, and Europe, and that everyone else in the room has visited only North America and Europe. In this situation, (1) is true.

(1) Gloria has visited the most continents.

This is a *relative reading*. In contrast, (2) strikes many native English speakers (the first author included) as false in this scenario.

(2) Gloria has visited most continents.

If the sentence is false, it is because Gloria has not visited the majority of the continents; here we have a *proportional reading*. Bare *most* can have relative readings as well, as Szabolcsi (2012) documents, despite assumptions to the contrary in foregoing literature. So in English, the variant with definiteness marking (*the most*) has a relative reading and no proportional reading, and the bare variant (*most*) has a proportional reading as well as a relative reading, the former possibly being the more dominant of the two.

German works differently, and in Swedish, it’s roughly the opposite: the definite-marked variant (3) has only a proportional reading, and the bare variant (4) has only a relative reading.

(3) Gloria har besökt de flest-a kontinent-er-na.
Gloria has visited the.PL many.est-W continent-PL-DEF
→ Gloria has visited more than half of the continents.

- (4) Gloria har besökt flest kontinent-er.
 Gloria has visited many.est continent-PL
 → Gloria has visited more continents than anyone else.

This contrast is the starting point for the present investigation: How can the same basic ingredients give rise to such widely differing patterns of interpretation?

2. Background: English and German

Let us begin with some brief background on relative readings in general, and how they interact with definiteness in English and German. Relative readings generally require some sort of licenser. This is typically focus, as in (5) and (6). In (5), the focussed element Jean is being compared to the other elements of what we will call the *contrast set* (the sisters). Jean is associated with the highest value, compared to her sisters, and they are measured in terms of the expensiveness of the books that they bought. Example (6), where Tuesday is being compared in the same way to other days, shows that relative readings do not require the licenser to be in subject position.

- (5) Of her 3 sisters, [Jean]_F bought the most expensive book.
 (6) There was the least snow on [Tuesday]_F.

Wh- constructions can also license relative readings, both questions as in (7) and relative clauses as in (8):

- (7) Who received the fewest letters?
 (8) The one who receives the most votes wins.

And as Heim (1999) pointed out, even PRO can license relative readings:

- (9) A: How do you win this contest?
 B: By [PRO putting the tallest plant on the table].

But there is a limit: some constructions contain no licenser. As Hackl (2009) points out, presentational constructions where the superlative DP is in the coda position are one. Here, *the most* cannot appear, because *the most* only has relative readings, and in this configuration there's no licenser for the relative reading. Here are two examples, one with a count noun and one with a mass noun:

- (10) There are people living on (*the) most continents.
 (11) There is contamination in (*the) most oil.

Since *least* and *fewest* have no proportional reading, neither *least* or *the least* or *fewest* or *the fewest* is viable in this configuration.

- (12) *There are people living on (the) fewest continents.
 (13) *There is contamination in (the) least oil.

With degree superlatives, the definite form is ambiguous between an absolute and a relative reading, and a bare form is not an option.

- (14) Gloria climbed the highest mountain.
- a. ‘Gloria climbed Mt. Everest.’ [absolute]
- b. ‘Gloria climbed a higher mountain than anybody else.’ [relative]

German has only the definite variant for both degree and amount superlatives; the bare variant in (15) is ungrammatical. As one might then expect, definite amount superlatives have both a relative and a proportional reading.¹

- (15) Hans hat *(die) meisten Bücher gelesen.
- a. ‘John read more books than anybody else.’ [relative]
- b. ‘John read more than half of the books.’ [proportional]

Likewise, there is no bare variant for negative amount superlatives, as shown in (16).

- (16) Hans hat *(die) wenigsten Bücher gelesen.
- a. ‘John read fewer books than anybody else.’ [relative]
- b. ‘John read less than half of the books.’ [proportional]

So we see that there is some variation within the Germanic family as to how definiteness interacts with the relative vs. non-relative distinction. What we will see in the next section is that the variation is much greater than that, as already hinted in the introduction. In Section 4 we will see that Hackl’s (2009) analysis works strikingly well for Swedish. But we argue that it cannot be generalized to account for English and therefore offer an alternative based on Coppock & Beaver’s (2014) analysis of the superlative morpheme in Section 5.

3. Swedish

Let us first establish some background on the inventory of Swedish amount comparatives and superlatives (see Table 3). English makes a distinction between count and non-count for negative comparatives and superlatives (*less/least* vs. *fewer/fewest*) which is not present in German (which uses *weniger/wenigste* for both). Swedish makes a corresponding distinction in the positive paradigm, with the comparative and superlative of ‘many’ being *fler* and *flest*, and the comparative and superlative of ‘much’ being *mer* and *mest*. Swedish also makes a *less/least* vs. *fewer/fewest* distinction: The negative comparative for ‘much’ is *mindre*; for ‘many’ it is *färre* (or more colloquially, *mindre*). (There is a puzzling gap in the cell corresponding to the negative superlative for ‘many’: the negative superlative for ‘much’ is straightforwardly *mindre*, but *färst* sounds odd or

¹Based on what we have just seen about English, we might expect that (16) would only have a relative reading. However, we do see a kind of proportional reading sometimes attested with *die wenigsten*; consider the following quotation (attributed to Hugo von Hofmannsthal), although this example has been reported to sound ‘archaic’ (Sven Lauer, p.c.): “Die wenigsten Leute haben auch nur einen Augenblick ihres Lebens wirklich gewollt, ebensowenig als geliebt.” Translation: ‘A minority of people have even for one moment in their lives really wanted, much less loved.’ A word-for-word translation of this example does not work in English, with or without definiteness marking: *“{Fewest, The fewest} people have even for one moment in their lives really wanted, much less loved.” So there is no corresponding proportional reading for *fewest* in English. This is a curious little difference between English and German which we will not aim to account for here.

	ENGLISH	GERMAN	SWEDISH
MANY + ER	more	mehr	fler
MANY + EST	most	meisten	flest
MUCH + ER	more	mehr	mer
MUCH + EST	most	meisten	mest
LITTLE + MANY + ER	fewer	weniger	färre
LITTLE + MANY + EST	fewest	wenigste	??färst/?minst
LITTLE + MUCH + ER	less	weniger	mindre
LITTLE + MUCH + EST	least	wenigste	minst

Table 1: The inventory of amount comparatives and superlatives in English, German and Swedish

archaic and *minst* sounds incorrect in combination with plurals, e.g. ??*färst*/*minst böcker* ‘fewest books’.)

Now for the interaction with definiteness. As mentioned above in connection with examples (3) and (4), repeated here as (17) and (18), definite-marked amount superlatives in Swedish receive a proportional reading, while bare ones receive a relative reading.

- (17) Gloria har besökt de flest-a kontinent-er-na.
 Gloora has visited the.PL many.est-W continent-PL-DEF
 → Gloria has visited more than half of the continents.
- (18) Gloria har besökt flest kontinent-er.
 Gloria has visited many.est continent-PL
 → Gloria has visited more continents than anyone else.

In (17) we have definiteness-marking both with the plural definite article *de* and with the suffix *-na*; the *-a* ending on *flest* is a so-called ‘weak’ ending, which occurs when the noun phrase is definite or plural (or both, as in this case); this sentence implies that Gloria has visited more than half of the continents (a proportional reading). In (18), we have no definiteness-marking anywhere, and the sentence means that Gloria has visited a greater number of continents than anyone else (a relative reading). So in a scenario like the one described above, where Gloria has visited three continents and everyone else has visited just two, (17) is false and (18) is true.

Here are some corpus examples with *flest* and *de flesta*.

- (19) De med *flest stalkers* kommer vinna.
 ‘Those with (*the*) *most stalkers* are going to win.’
- (20) Till slut var det faktiskt myrorna som vann kampen om *flest döingar*.
 ‘At the end it was in fact the ants who won the competition for (*the*) *most dead ones*.’
- (21) Han har tittat på *de flesta matcherna*.
 ‘He has watched *most of the matches*.’

- (22) I själva verket kan *de flesta varor och tjänster* produceras regionalt.
 ‘In fact *most goods and services* can be produced regionally.’

All of these would sound odd or have a different meaning with a change in definiteness marking.

As one would expect given the foregoing, the bare variant is not acceptable when there is no relative reading licenser. This is shown for *flest* in (23) and *mest* in (24).

- (23) Det finns flygplatser vid $\left\{ \begin{array}{l} *flest \text{ städer.} \\ \text{de flesta större städer(na).} \end{array} \right\}$
 ‘There are airports in (the) most large cities.’
- (24) Det finns kolhydrater i $\left\{ \begin{array}{l} *mest \text{ mat.} \\ \text{den mesta maten.} \end{array} \right\}$
 ‘There are carbohydrates in (the) most food.’

As in English, neither definite nor bare negative amount superlatives are acceptable in this construction, whether the noun is plural or mass:

- (25) Det bor folk på $\left\{ \begin{array}{l} *färst/minst \text{ kontinenter.} \\ *de \text{ första/minsta kontinenterna.} \end{array} \right\}$
 ‘There are people living on (the) most continents.’
- (26) Det är kontaminanter i $\left\{ \begin{array}{l} *minst \text{ olja.} \\ *den \text{ minsta oljan.} \end{array} \right\}$
 ‘There are contaminants in (the) most oil.’

Interestingly, this pattern is reflected in degree superlatives as well. In English we saw a split between amount and degree superlatives, but in Swedish the distinction goes all the way to degree superlatives. The degree superlative with definiteness marking in (27) has an absolute reading, referring to the pine tree that is taller than all other pine trees. In contrast, (28) doesn’t mean that Gloria sold the ice cream that was more delicious than any other ice cream; it means that Gloria sold more delicious ice cream than all of her competitors.

- (27) Den stör-st-a tall-en blev ner-skuren.
 the big-est-w pine-DEF became down-cut
- (28) Gloria sålde god-ast glass.
 Gloria sold good-est ice.cream

According to the Swedish Academy Grammar (Teleman et al. 1999), example (27) involves “direct selection”, where “the member of the group that has the given property to a greater degree than the others” is distinguished (Vol. II §45-46); example (28) involves what they call “indirect selection”, presumably because Gloria is compared with other ice cream sellers indirectly, through the tastiness of their ice cream.

However, degree superlatives accompanied by definiteness-marking can have a relative reading in some cases; according to Teleman et al. (1999, II, p. 79), “indirect selection can also be expressed with the same type of noun phrase as direct selection”, and (29) is an example of that; it can mean either that Fredrik bought the wine that is more expensive than all other wine or that Fredrik bought more expensive wine than anyone else.

AMOUNT SUPERLATIVES

	[+DEF]	[-DEF]
English	relative	proportional/?relative
German	proportional/relative	*
Swedish	proportional	relative

DEGREE SUPERLATIVES

	[+DEF]	[-DEF]
English	absolute/relative	*
German	absolute/relative	*
Swedish	absolute/relative	relative

Table 2: Interaction between definiteness and relative vs. absolute/proportional readings of superlatives in English, German, and Swedish

- (29) Fredrik köp-te det dyr-ast-e vin-et.
 Fredrik buy-PAST the.SG expensive-est-W wine-DEF
 (ambiguous between relative and absolute)

The current picture is summarized in Table 3, which shows that there are three distinct patterns, and that English and Swedish are in a way opposites, at least when it comes to amount superlatives. While in English, the definite variant has a relative reading and the bare variant has (primarily) a proportional reading, the opposite holds in Swedish: The definite-marked variant has a proportional reading and the bare variant has a relative reading. And in Swedish, this correlation is reflected in the realm of degree superlatives as well.

Before moving on, we should note that we are dealing with a more radical absence of definiteness-marking with superlatives than what has been discussed in previous literature. Borthen (2007) for example discusses the possibility of article drop in cases like (30).

- (30) Gloria ritade (den) rolig-ast-e bild-en. [relative, absolute]
 Gloria drew the funny-SUP-W picture-DEF
 ‘Gloria drew the funniest picture.’

But an absolute reading is available here regardless of whether the article is present. This kind of article drop is interesting, but it does not interact with the relative vs. absolute distinction. *Completely* bare superlatives have only a relative reading, and no absolute or proportional reading.

4. Movement analysis

As the reader may know, there are several different approaches to relative readings in the literature. According to the *movement* approach (Szabolcsi 1986, Heim 1999, Hackl 2009), the superlative morpheme *-est* takes scope outside of the object DP on a relative reading but is interpreted inside the DP on a proportional or absolute reading. Under another approach (Farkas & É. Kiss 2000,

Sharvit & Stateva 2002, Teodorescu 2009), the superlative morpheme is always interpreted inside the DP. On the latter kind of analysis, the natural move to make is to say that the appearance of relative ‘readings’ is due to variation in the contents of the comparison class.

In this section, we will show that the movement approach works uncannily well for Swedish. Under a set of assumptions that have been suggested independently in previous literature, the DP-internal structure requires a definite article and yields only a non-relative reading, as in (31), whereas the DP-external structure may not be definite and yields only a relative reading as in (32).

(31) Gloria har besökt de flesta kontinenterna. [**relative, proportional*]

(32) Gloria har besökt flest kontinenter. [relative, **proportional*]

As an aid to distinguish between the readings we will enlist the three following scenarios:

(33) a. **3-2-1 Scenario**

Gloria - North America, Africa, Europe
Fred - North America, South America
Sue - Europe

b. **2-2-1 Scenario**

Gloria - North America, South America
Fred - North America, South America
Sue - Europe

c. **5-2-1 Scenario**

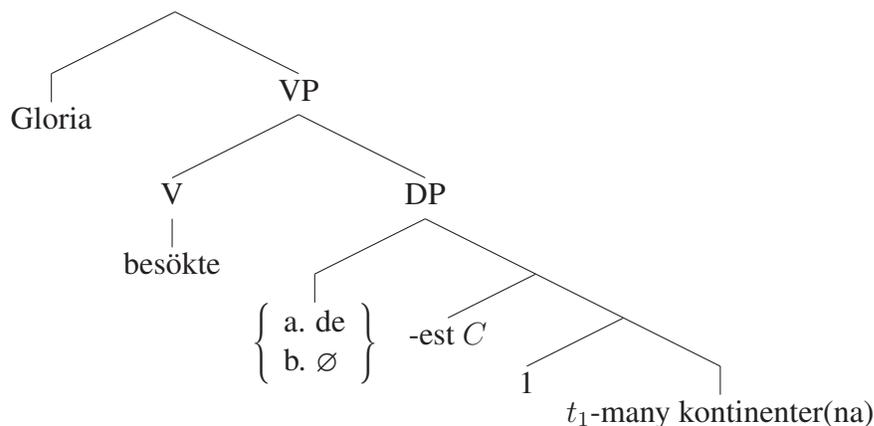
Gloria - North America, South America, Europe, Asia, Africa
Fred - North America, South America
Sue - Europe

The dash signifies the ‘visit’ relation, so under the 3-2-1 scenario, Gloria visited North America, Africa and Europe, etc. In the 3-2-1 scenario, Gloria visited more continents than any of her friends, so the relative reading is true. The proportional reading is false because Gloria didn’t visit more than half of the continents. In the 2-2-1 scenario, Gloria and Fred both visited the same two continents (North America and South America), and the relative and the proportional readings are both false, because Gloria didn’t visit more than any of her friends nor did she visit more than half. In the 5-2-1 scenario, both readings are true. A given theory of superlatives and definiteness makes the right predictions for Swedish if (31) is predicted true in those scenarios where the proportional reading is true, and (32) is predicted to be true in those scenarios where the relative reading is true.

4.1. DP-internal

The hallmark of the movement analysis is the case where the superlative morpheme has moved outside of the DP, but let us first consider the DP-internal structure. According to the movement analysis literature, the DP-internal structure actually does involve movement of the superlative morpheme, but here the movement is limited to within the DP.

(34)



Even though the superlative morpheme present in (34) has undergone movement, it is still inside the DP. However, it is no longer a sister to the cardinality predicate *-many*. We will consider two variants of the structure, the definite as in (34a) and the bare as in (34b). We will begin with the latter, as it is a somewhat simpler case.

Using the principle of Maximize Presupposition (Heim 1991, Schlenker 2011, Percus 2006), we can derive the result that the DP-internal structure requires a definite article, so the bare variant (34b) is ungrammatical. Since the description that the definite article would combine with is inherently unique but not necessarily instantiated (as there may be a tie for first place, so to speak), it is useful to assume that the definite article presupposes uniqueness but not existence, as under the analysis proposed by Coppock & Beaver (2015). We adopt Coppock & Beaver's (2015) lexical entry for *the* and for definiteness-marking in Swedish (encoded both by the article and by the suffix), shown in (35).

(35) **Lexical entry:** *the*
 $the \rightsquigarrow \lambda P \lambda x . [\partial[|P| \leq 1] \wedge P(x)]$

This formula uses Beaver & Krahmer's (2001) ∂ (read 'partial') operator, which marks the formula within its scope (e.g. the uniqueness part of (35)) as presupposed. The input is a predicate and the output is the same predicate as long as there is no more than one satisfier of the predicate; otherwise the output is a constant function to the 'undefined' truth value. So, in essence, using Coppock & Beaver's (2015) analysis of *the* ensures that whatever description *the* is given is unique, but does nothing else.

We also assume that the bare, unmarked (morphologically empty) form is a competitor to the definite form, so that they are competitors for the purposes of Maximize Presupposition. Maximize Presupposition is articulated in (37), which depends on the notion of Presuppositional Domination, defined in (36). (See Coppock & Beaver 2015 for more detail.)

(36) **Presuppositional Domination**

Expression α *presuppositionally dominates* expression β just in case α and β are classically equivalent, and α has presuppositions at least as strong as β but not *vice versa*.

(37) **Principle: Maximize Presupposition**

In a context C , lexical item α blocks β in a derivation iff (i) α and β are competitors, (ii) α presuppositionally dominates β , and (iii) replacing α by β does not affect how C would be updated.

The update of a context C (a set of worlds) with a sentential meaning p is defined iff p is defined at every world in C . In that case the updated context is just the subset of worlds in C where p is true.

With these assumptions, we can derive that the definite form *has* to be chosen when the structure is DP-internal. The description that the article would combine with is [-est C t -many kontinenter]. It is unique, because it characterises the largest continent-plurality in C and only one plurality can be bigger than all others in C . So the presuppositions of definiteness marking are always satisfied. Because a speaker then has to choose definite over bare, the bare form is ungrammatical.²

Let us now focus on the DP-internal structure with definiteness marking, and consider under what conditions it would turn out to be true. Since the denotation of the definite description (definiteness marking + superlative description) is a predicate (type $\langle e, t \rangle$) under Coppock & Beaver's (2015) analysis, and this is not the right type to occupy an argument position, it must undergo a type-shift in order to function as an argument. Following Coppock & Beaver (2015), we assume that a definite description can be interpreted either with an iota shift (denoting the unique individual satisfying the description), or with an existential shift (as an existential quantifier).

(38) **Meaning shift: IOTA**

$$\text{IOTA} \equiv \lambda P \iota x . P(x)$$

(39) **Meaning shift: EX**

$$\text{EX} \equiv \lambda P \lambda Q . \exists x [P(x) \wedge Q(x)]$$

In order to evaluate the truth conditions after these two shifts, we need an analysis of the superlative morpheme. A standard analysis will suffice for the present discussion. The superlative morpheme takes a gradable predicate G (relating an individual with a degree, like the meaning of *tall* or the cardinality predicate *-many*) and an individual x , presupposes that x is in some contextually given comparison class C , and says that x bears G to a greater degree than any other element in C .

$$(40) \quad \text{-est} \rightsquigarrow \lambda G_{\langle d, et \rangle} \lambda x . [\partial [x \in C] \wedge \forall x' \in C [x \neq x' \rightarrow \exists d [G(x, d) \wedge \neg G(x', d)]]]$$

Applying the iota shift results in the truth conditions shown in (41) and applying the existential shift results in the truth conditions shown in (42).

(41) **DP-internal/IOTA**

$$\text{VISIT}(G, \iota x [\forall x' \in C [x' \neq x \rightarrow \exists d [* \text{CONT}(x) \wedge \text{MANY}(x, d)] \wedge \neg [* \text{CONT}(x') \wedge \text{MANY}(x', d)]]])$$

'Gloria visited that continent-plurality that is more numerous than all other continent-pluralities in C '

²This conclusion would not follow as straightforwardly under a Fregean analysis of the definite article, where it presupposes uniqueness and existence, because uniqueness is not guaranteed. If there are two entities that are tied for most numerous then there is no entity that is more numerous than all others. Nothing we have said so far rules out that possibility.

- (42) DP-internal/EX
 $\exists x[\text{VISIT}(G, x) \wedge \forall x' \in C[x' \neq x \rightarrow$
 $\exists d[*\text{CONT}(x) \wedge \text{MANY}(x, d)] \wedge \neg[*\text{CONT}(x') \wedge \text{MANY}(x', d)]]]$
 ‘Gloria visited some continent-plurality that is more numerous than all other continent-pluralities in C ’

These two both give a proportional reading under certain assumptions, as we will show shortly. Let us concentrate on (41) to begin with. In order to decide when this is true, we have to look at what C contains. There seem to be two rational strategies for constructing C : a *pointwise* strategy, where for each visitor, the plurality of continents visited by that visitor is a member of C ; and a *partition* strategy, dividing the set of continents in two, those that Gloria has visited, and those that she has not visited. These strategies yield the following values for C in the given scenarios:

- (43) a. **Pointwise strategy:** for each visitor, the continents visited
 3-2-1 $C = \{\underline{\text{NA+SA+E}}, \text{NA+SA}, \text{E}\}$
 2-2-1 $C = \{\underline{\text{NA+SA}}, \text{E}\}$
 5-2-1 $C = \{\underline{\text{NA+SA+E+As+Af}}, \text{NA+SA}, \text{E}\}$
- b. **Partition strategy:** continents Gloria {did, did not} visit
 3-2-1 $C = \{\text{NA+SA+E}, \underline{\text{As+Af+Ant+Aus}}\}$
 2-2-1 $C = \{\text{NA+SA}, \underline{\text{E+As+Af+Ant+Aus}}\}$
 5-2-1 $C = \{\underline{\text{NA+SA+E+As+Af}}, \text{Ant+Aus}\}$

In each set, we have underlined the continent-plurality that is largest, in order to make it easy to calculate whether the sentence is predicted to be true. If Gloria visited the underlined plurality, then the sentence is true in the scenario; otherwise it is false. So the pointwise strategy yields true in all scenarios, and the partition strategy yields true only in the 5-2-1 scenario. The partition strategy (under a DP-internal analysis, regardless of if we choose an iota or existential shift) thus delivers the right pattern of truth values for a proportional reading.

The pointwise strategy comes closer to the relative reading, but misses in the 2-2-1 scenario. Note that there are only two elements in C under the pointwise strategy for the 2-2-1 scenario, since Gloria and Fred visited the same two continents. Since this is the largest continent-plurality in C , and Gloria visited it, the sentence is predicted to come out as true in this scenario. But neither the proportional reading nor the relative reading is true in this scenario, because Gloria visited neither more continents than anybody else nor more than half of the continents. So the pointwise strategy does not deliver either the proportional or the relative reading.

If we had a way of enforcing the partition strategy and ruling out the pointwise strategy, then the DP-internal analysis would always get an proportional reading. One way to do this is to adopt Hackl’s (2009) assumption that C cannot contain overlapping pluralities. The pointwise strategy will in general produce overlapping pluralities, particularly when what is at issue is what continents various people have visited; two people may have visited overlapping sets of continents. We speculate that it is for this reason that the pointwise strategy cannot be used in an example like this, and the partition strategy has to be used.

By this reasoning, the pointwise strategy might be ‘safe’, so to speak, in other domains. Consider voting, for example. Each vote goes to exactly one party, so for every party, the votes they received are non-overlapping. Suppose that the pointwise strategy is allowed in such a circumstance. In a parliamentary system, there may be more than two parties, and it is not uncommon that none of them gets more than half of the votes, but we expect a sentence with definiteness marking nevertheless to be true. This prediction is borne out for the definite-marked amount superlative in Swedish:

- (44) Centerpartiet fick *de flesta rösterna* (24,4%), men vann inte flera mandat än de två regeringspartierna SDP (21,5%) och samlingspartiet (20,2%)...
 ‘The Center Party got *the most votes* (24%), but did not win more mandates than the two government parties SDP (21.5%) and the coalition party (20.2%)...’

In this sentence it is clear that the Center Party did not get more than half of the votes (only 24.4%), and yet there is a definite-marked amount superlative in it. Native Swedish speakers agree that this case is much better than the example with the continents. Note that example (44) cannot be translated into English using *most of the*.

- (45) #The Center Party got most of the votes (24.4%).

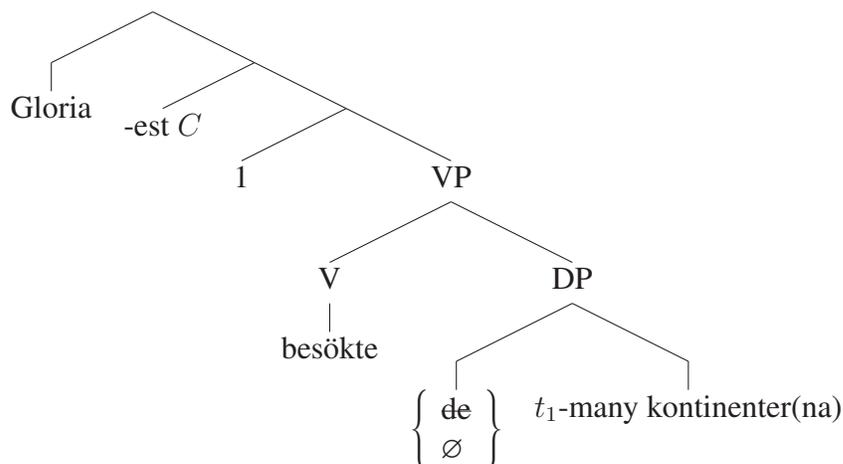
So *most (of the)*, in contrast to Swedish *de flesta*, appears to be genuinely proportional. But it may not be quite right to say that definite amount superlatives in Swedish always have ‘proportional’ readings, if ‘proportional’ implies ‘more than half’; they have readings with non-overlapping comparison classes.

The No Overlapping Pluralities principle thus appears to guide the choice of strategies at a domain level: If the domain is such that there is a risk of overlapping pluralities, then the pointwise strategy is not allowed and the partition strategy is required, leading to a ‘more than half’ interpretation. It is not entirely clear to us how to formalize this. But given a formulation of the No Overlapping Pluralities principle with this property, we will correctly obtain a proportional(-like) interpretation for definite-marked amount superlatives in Swedish, and also make the more subtle prediction that a ‘more than half’ interpretation will not arise in certain domains. Since we have already established that the definite article is necessary in DP-internal structures, we now have part of the correlation between definite marking and proportional readings in Swedish.

4.2. DP-external

In the DP-external structure, the superlative morpheme has moved all the way up beyond the VP node, and it combines with a more complex and abstract gradable property formed by abstraction over its degree trace, a relation between individuals and the number of continents they visited.

(46)



It is a common assumption, frequently invoked in the literature associated with the movement analysis, that definite noun phrases are islands for movement. Let us adopt that assumption here as well. This means that the variant of (46) with definiteness marking is ungrammatical.

So, let us concentrate on the variant of (46) without definiteness marking. We assume that the bare noun phrase is associated with an existential quantifier. The truth conditions that emerge from this analysis are then as follows:

(47) DP-external/EX

$$\forall x' \in C [x' \neq G \rightarrow \exists d [\exists y [*CONT(y) \wedge MANY(y, d) \wedge VISIT(G)(y)]] \wedge \neg [\exists y [*CONT(y) \wedge MANY(y, d) \wedge VISIT(x')(y)]]]$$

'The number of continents that Gloria visited is greater than the number of continents that anybody else in C visited'

Now C consists of potential continent-visitors (people) rather than continents. (Since C now consists of continent-visitors, the question of overlappingness does not arise.) As discussed above, this is true when Gloria climbed more mountains than anyone else, so it delivers the right truth conditions for the relative reading.

Let us summarize the assumptions we have made in Section 4: (i) The superlative morpheme can be interpreted DP-internally or DP-externally; (ii) definiteness-marking is analyzed using Coppock & Beaver's (2015) lexical entry for *the*, which presupposes uniqueness but not existence; (iii) after the definite article combines with its sister (the DP), either an iota shift or an existential shift is utilized, and the resulting formulae both yield proportional readings for the DP-internal structure; (iv) Maximize Presupposition; (v) the bare form is a competitor to the definite article, so the definite article is chosen over the bare form whenever its presuppositions are satisfied (given Maximize Presupposition); (vi) the choice of strategy for constructing C is constrained by the principle of No Overlapping Pluralities, so the pointwise strategy may not be used in a given domain unless it is guaranteed not to produce overlapping pluralities.

None of these assumptions is entirely new, so this is a relatively straightforward application of the movement analysis. Taken together, they imply that there are two possibilities: a DP-internal

structure, which comes with definiteness-marking and yields a proportional (or proportional-like) reading, an a DP-external structure in which the DP is not definite, yielding a relative reading.

Note that we have assumed here that definiteness-marking actually signals definiteness, in contrast to applications of the movement analysis to English, where the definite article is an expletive. This assumption receives cross-linguistic support from work on superlatives in Slavic languages. Based on what they call ‘DP-internal relative readings’, Pancheva & Tomaszewicz (2012) conclude that *-est* can move only in the absence of an overt definite determiner in Slavic. They argue furthermore that even in English, an overt definite determiner blocks *-est* movement.

5. Back to English

In English, the very same morphological pieces lead to the opposite pattern of interpretations:

(48) Gloria has visited the most continents. [relative,*proportional]

(49) Gloria has visited most continents. [%relative, proportional]

How can this be? In this section we will argue that the movement analysis cannot easily be generalized to account for English, and will propose an alternative analysis for both languages building on a new treatment of the superlative (retaining some of the progress we made in the previous section).

Above, we concluded that a proportional reading, along with definiteness marking, always arises under the DP-internal structure, and that a relative reading, and no definiteness marking, arises under the DP-external structure. This does not leave room for definiteness-marking in conjunction with a relative reading, but we see this for both degree and amount superlatives in English and German, and even Swedish degree superlatives appear to have a relative interpretation, as we noted above in connection with example (29). What kind of system would allow for relative readings of definite-marked superlatives?

In the literature associated with the movement analysis, the following possibility is suggested: The definite article that appears with superlatives on a relative interpretation is not actually a marker of definiteness. At LF, the definite marker is deleted if the superlative has moved to a DP-external position. So the determiner is just an expletive in such cases. It is not made clear in this literature under what circumstances the definite article may be interpreted as indefinite. Another question that arises is why an indefinite article couldn’t be used instead, as Coppock & Beaver (2014) point out:

(50) Gloria climbed the/?a highest mountain.

Another possibility is to loosen the assumptions that give rise to the proportional reading when the superlative is DP-internal. One crucial assumption that we made use of above was the No Overlapping Pluralities principle. If we postulated that this did not apply in English, so that the ‘pointwise’ strategy could apply in English, could we account for the English pattern? The answer turns out to be no. The pointwise strategy does yield something like relative readings, but it would falsely predict “Gloria visited the most continents” to be true in the 2-2-1 scenario, where Gloria

and Fred visited the same two continents, and Sue visited only one. The two mountains climbed by Gloria and Fred being the largest plurality in the comparison class, the sentence is predicted to be true, and this prediction is incorrect. In general, the partition strategy falsely predicts that sentences with relative readings are true in a case where two members of the contrast set are associated with the same plurality via the relevant association relation, and this plurality is largest in the comparison class.³ Call this the *first-place tie problem*.

Precisely in order to avoid this problem, Coppock & Beaver (2014) propose another way of analyzing the superlative morpheme. The solution relies on letting the superlative morpheme have direct access to the contrast set and the association relation, rather than taking the range of the association relation as the comparison class (as under the pointwise strategy). For a given member of the contrast set (e.g. Gloria), let us call the entities that this individual stands in the relevant relation to (e.g. visited) with its *associates* (e.g. the pluralities of continents visited by Gloria). On a relative reading, the members of the contrast set are indirectly compared through the measure of their associates. A superlative description holds of an entity if it is the associate of some member of the contrast set and it is greater according to the given measure (e.g. quantity, height, etc.) than all associates of all other members of the contrast set.

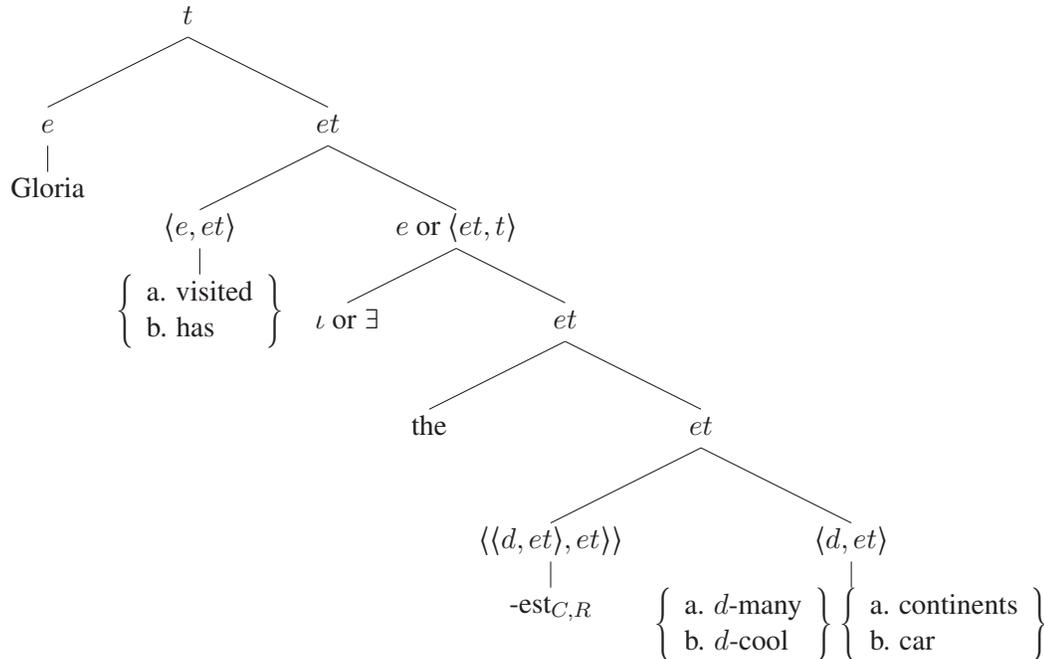
$$(51) \quad -est \rightsquigarrow \lambda C_{\langle e,t \rangle} \lambda R_{\langle e, \{e,t\} \rangle} \lambda G_{\langle d, et \rangle} \lambda x . \exists y [\partial [R(y, x) \wedge C(y)] \wedge \exists d [G(x, d) \wedge \forall y' \forall x' [[R(y', x') \wedge C(y') \wedge y \neq y'] \rightarrow \neg G(x', d)]]]$$

So a superlative morpheme denotes a function which takes four arguments: a contrast set C , an association relation R , a gradable predicate G , and a subject x . The subject x is presupposed to be an associate of some member of the contrast set. The superlative description holds of x if it is G to a degree d that is greater than the G -ness of any associate of any distinct member of the contrast set. If Gloria and Fred visited the same two continents, then this continent plurality will not satisfy the superlative description, because for any member of the contrast set y who visited it (Gloria or Fred), there will always be another member of the contrast set (Fred or Gloria, respectively) who visited an equally numerous one (namely that very continent plurality).

When the contrast set C and association relation R are saturated by context (pragmatically), the result is a uniquely characterizing predicate of type $\langle e, t \rangle$, which the definite article can combine with. This is shown simultaneously for the amount superlative *Gloria visited the most continents* and the degree superlative *Gloria has the coolest car*.

³This problem motivates Krasikova (2012) to use intensions rather than extensions in the comparison class, but this solution presents certain technical difficulties (Dylan Bumford, p.c.).

(52)



The definite description may then in principle undergo either an iota or an existential shift, although as Coppock & Beaver discuss, various pieces of evidence suggest that it undergoes an existential shift in the case of relative readings.

The association relation is assumed to be trivial in case of a proportional or absolute (non-relative) reading, so the entry is flexible enough to handle both types of readings. If R is a non-trivial relation such as ‘visit’ or ‘have’, then a relative reading emerges. If R is identity, then a non-relative (proportional or absolute) reading emerges. The result is equivalent to the more standard analysis of *-est*, as we can see from the following equivalence, where R is instantiated as identity:

$$\begin{aligned}
 (53) \quad &= \lambda G_{\langle d, et \rangle} \lambda x . \exists y [\partial [y = x \wedge C(y)] \wedge \exists d [G(x, d) \wedge \forall y' \forall x' [[y' = x' \wedge C(y') \wedge y \neq y'] \rightarrow \neg G(x', d)]]] \\
 &= \lambda G_{\langle d, et \rangle} \lambda x . [\partial [C(x)] \wedge \exists d [G(x, d) \wedge \forall x' [[C(x') \wedge x \neq x'] \rightarrow \neg G(x', d)]]]
 \end{aligned}$$

Since the superlative is always interpreted DP-internally under the present view, and we end up with an equivalent analysis of the superlative morpheme itself, the result is equivalent to the DP-internal structure under the analysis from the previous section. Thus if we make the further assumption that the contrast set C is subject to the No Overlapping Pluralities principle, then we predict proportional(-like) readings in case the association relation is identity, for the reasons outlined above. (When the association relation is trivial, the *contrast set* in the present analysis takes on the role of the *comparison class* in the more standard analysis.) In particular, we derive the result that a ‘more than half’ implication emerges in a domain like continent-visiting, but not in a domain like vote-receiving.

Whether R is non-trivial or identity, definiteness marking is predicted to appear when it is pragmatically saturated, because the superlative description is inherently unique. So the basic system

works well for German: definiteness-marking is always present, and compatible with both proportional and relative readings.

English and Swedish deviate from the German pattern in their own ways: In English, definite amount superlatives have no proportional interpretation, and in Swedish, definite amount superlatives have no relative interpretation. For English, we assume that the proportional reading of a definite amount superlative is blocked by bare *most*, which we take to be a separate lexical item, not generated compositionally via the superlative morpheme.

For Swedish, let us suppose that the association relation R cannot be saturated by context, and has to be filled in compositionally. For example, if the superlative expression is the object of a transitive verb, then the transitive verb is taken as an argument by the object. This process is incompatible with the presence of a definite article. If the definite article is present, then the association relation must already have been saturated, because the definite article expects an argument of type $\langle e, t \rangle$. The superlative description therefore must be bare if it is to combine compositionally with an association relation represented by a constituent of the sentence. This yields bare superlative descriptions with relative readings.

As pointed out by the Swedish Academy Grammar (Teleman et al. 1999, Vol. II, pp. 78-9), bare Swedish superlatives tend to occur where bare arguments are allowed more generally. Mass nouns and plurals in Swedish, as in English, don't require an article. Singular count nouns typically do, but there are some exceptions, and this correlates with the acceptability of superlatives.

- (54) a. *Lindberg skrev bäst bok.
'Lindberg wrote the best book.'
- b. *Lindberg skrev bra bok.
'Lindberg wrote (a) good book.'
- (55) a. Johan hade rödast näsa.
'Johan had the reddest nose.'
- b. Johan hade röd näsa.
'Johan has (a) red nose.'

This suggests that compositional saturation is limited to cases where bare arguments are independently licenced by the grammar.

Now, what about non-relative readings? Suppose that Swedish also has at its disposal a type-shifting operation that fills in the association relation as identity. If this applies, then the superlative description ends up as a uniquely characterizing predicate, and the definite article would then be required. As in English and German, a non-relative reading emerges, given an appropriately characterized No Overlapping Pluralities principle.

This system predicts only absolute readings (with a trivial association relation) for definite degree superlatives as in (29) (*Fredrik köpte det dyraste vinet* 'Fredrik bought the most expensive wine'). However, it is not entirely clear to us how one could distinguish between a genuinely relative reading and one in which the association relation is identity and the contrast set consists of wines

bought by Fredrik et al. So it is not clear what concrete facts, if any, the analysis gets wrong, given that the difference between a relative reading and an absolute reading is very subtle in the realm of degree superlatives.⁴

6. Summary

In Section 4, we argued that the movement analysis, in conjunction with a set of general assumptions (Maximize Presupposition, a ‘weak uniqueness’ analysis of the definite article, the bare form as a competitor to the definite form, and No Overlapping Pluralities), derives the Swedish pattern. The DP-internal structure yields definiteness-marking in conjunction with a proportional reading for amount superlatives, or an absolute reading for degree superlatives, and the DP-external structure yields a relative reading and no definiteness-marking. But as we argue in Section 5, the movement analysis does not account well for languages in which relative readings come with definiteness. Assuming that the definite article is vacuous is problematic, and merely loosening the No Overlapping Pluralities assumption leads to what we called the ‘first-place tie problem’.

Under the alternative view we presented in Section 5, the superlative morpheme is always interpreted DP-internally. Following Coppock & Beaver (2014), *-est* takes a contrast set and an association relation. When the association relation is identity, the result is equivalent to a standard analysis of *-est*, and a non-relative reading emerges. For amount superlatives, the result is a proportional(-like) reading, assuming No Overlapping Pluralities. When the association relation is non-trivial, we get a relative reading. If the association relation argument is saturated pragmatically (filled in by context), then the superlative description is a uniquely characterizing predicate, and hence definiteness-marking emerges (via Maximize Presupposition). This is what happens in English and German (except that English has bare *most*, which blocks a proportional reading for amount superlatives). Swedish only allows compositional saturation. This yields relative readings if the superlative morpheme combines with a non-trivial association relation, and then there can be no definiteness marking for type reasons. If a type-shift applies, saturating the association relation with identity, then a non-relative reading emerges along with definiteness-marking. Assuming that the contrast set is subject to No Overlapping Pluralities, we get a ‘more than half’ interpretation in those domains for which the pointwise strategy for determining the contrast set is not safe. (In the case of degree superlatives it is difficult to distinguish relative from non-relative readings, hence the appearance of relative readings with degree superlatives.)

What is common to all three languages is the analysis of definiteness, the superlative morpheme, the No Overlapping Pluralities principle, and Maximize Presupposition. The points on which the languages differ are: whether or not the language has a proportional determiner (English: yes, German and Swedish: no), and whether compositional saturation is used (English and German: no, Swedish: yes). Remaining puzzle: why bare *most* can have relative readings in English.

⁴We considered the possibility that the association relation can be saturated pragmatically if the compositional option isn’t allowed due to grammatical constraints on where bare nouns may appear. This would predict that relative readings would tend to arise in conjunction with definiteness marking in just those places where bare nouns are dispreferred. This prediction is not borne out, because we find “relative” readings to the same extent with plural and mass degree superlatives, and there bare arguments are allowed.

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