# Antonymy and Evaluativity

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## 1. Introduction

The goal of this paper is to characterize and account for the systematic distribution of a semantic property, "evaluativity". A construction is evaluative if it makes reference to a degree that exceeds a contextually specified standard. The term comes from Neeleman et al. (2004); Seuren (1978) alternatively refers to this property as 'orientedness' and Bierwisch (1989) as 'norm-relatedness'. The distribution of evaluativity seems to vary with the predicate and quantifier of a degree construction. I attempt to explain this distribution in terms of semantic properties of predicates and degree quantifiers.

Evaluativity is typically associated with positive constructions as in (1):

(1). a. Amy is tall. b. Amy is a tall woman.

I use the term 'degree construction' to refer to any construction that makes reference to a degree of gradability or a degree of quantity. I use the term 'degree morphology' to refer to morphemes that bind or saturate degree variables: examples include measure phrases (MPs) like *5ft* and degree quantifiers like the comparative morpheme *–er* and the *wh*-phrase *how*.

A positive construction is a degree construction without any overt degree morphology. (1a) is evaluative because it attributes to Amy a height that exceeds a relevant standard. This illustrates the context-sensitivity of evaluativity; evaluative constructions refer to a standard, and this standard can vary with the context of utterance. Amy can be considered tall in one context, e.g. a discussion of ballerinas, and short in another, e.g. a discussion of basketball players.[1]

Another property of evaluativity is that it is not part of the meaning of an adjective. The fact that a positive construction with the adjective *tall* is evaluative does not bear on the evaluativity of other degree constructions with *tall*:

(2) a. Amy is taller than Betty. b. Amy is as tall as Betty.

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[1]For a discussion of how this standard is valued, see Kennedy 2007 and references therein.


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The comparative in (2a) and the equative in (2b) contain the predicate *tall*, but these sentences are not evaluative. An utterance of e.g. (2b) does not make reference to a degree that exceeds a contextual standard: (2b) could felicitously be uttered if Amy's and Betty's heights were below the relevant standard of tallness.

We can test the evaluativity of a degree construction in a general sense by determining whether or not it entails its corresponding positive construction (Bierwisch 1989). Because evaluativity is context-sensitive, this notion of entailment is one that requires holding fixed the context of utterance, and thus the contextually-valued standard, across the two constructions: $\varphi$ entails $\psi$ iff for every context $c$, if $\varphi$ is true at $c$ then so is $\psi$. We can verify that (2a) is not evaluative because it does not entail that Amy (or Betty) is tall.

As evaluativity is not a part of the meaning of the predicate in a construction, neither is it a part of the meaning of the construction.

(3). a. Amy is as tall as Betty. b. Amy is as short as Betty.

The equative (3a) is not evaluative, but the equative in (3b) *is*: it makes reference to a contextually salient standard of shortness (and entails that Amy is short).

I argue in this paper that the distribution of evaluativity is a product of two things: the polarity of the predicate and the nature of the degree quantifier (whether it is 'polar-variant' or 'polar-invariant'). I'll first establish a major shortcoming of current accounts of evaluativity, and then propose that evaluativity is encoded in a **degree modifier**, which can optionally occur in any degree construction. Section 6 extends the account to antonym pairs that demonstrate evaluativity patterns different from *tall* and *short*.

## 2. Analyses of Evaluativity

As we have seen above, what seems to be the most simple use of adjectives (the positive construction) has an aspect of meaning (evaluativity) that is often lacking in more complex constructions like the comparative. The question of how to go about encoding evaluativity in the positive construction has thus been centered on how to associate the presence of a semantic property with the absence of any additional morphology (and, similarly, the absence of a semantic property with the presence of additional morphology).

The MP construction in (4) has two overt arguments: an individual (the subject *Amy*) and a degree (the MP *5ft*). This suggests the semantics for *tall* in (5); I assume here that if $x$ is tall to degree $d$, then $x$ is tall to degree $d - 1$.

(4) Amy is 5ft tall.

(5) $[\![\text{tall}]\!] = \lambda x \lambda d.\text{tall}(x,d)$

This is a common view of the semantics of gradable adjectives (Seuren 1978, Rullman 1995, Heim 2000) and I will use it in what follows. An alternative view holds that gradable adjectives are 'measure functions,' functions from individuals to degrees (Kennedy 1999, 2007, a.o.). A vague predicate analysis eliminates reference to degrees entirely, assuming that adjectives are functions from objects to truth values on a partitioned contextually-sensitive domain (McConnell-Ginet 1973, Kamp 1975, Klein 1980).

The apparent correlation between the presence of evaluativity and the absence of degree morphology suggests prima facie that an analysis of the positive construction should link the two. This has led many to argue that the positive construction contains a covert degree phrase (POS). POS simultaneously binds the free degree variable and compares the degree to a standard (Bartsch and Vennemann 1972, Cresswell 1976, von Stechow 1984, Kennedy 1999). The meaning in (6) is one instantiation of POS, based on Cresswell's analysis.

(6) POS = $\lambda P \lambda x \exists d. P(x,d) \wedge d > s$

In recent accounts (Kennedy 1999, 2007), POS resides in the head of DegP in lieu of an MP. So POS resolves the differences between positive and MP constructions at once: it accounts for the difference in overt arguments (it covertly binds the degree argument in the positive construction), and it contributes evaluativity by restricting the degrees to those high on a scale with respect to a standard. POS can't cooccur with overt degree morphology because both operators reside in Deg° and because both operators bind the degree argument.

But, as we have seen, it is false that overt degree morphology blocks evaluativity. In (3b), the equative construction is evaluative despite the presence of the degree quantifier *as*. A similar pattern is exhibited in degree questions ([+/–E] marks an evaluative and a non-evaluative construction respectively).

(7) a. How tall is Amy? [–E] b. How short is Amy? [+E]

While the question in (7a) comes with no expectation that Amy be particularly tall, the question in (7b) presupposes that Amy is in fact short.

The table in (8) is a summary of the distribution of evaluativity in constructions with overt degree morphology. Comparative and excessive constructions are not evaluative (do not entail that $x$ is $A$), nor are equatives and interrogatives with positive antonyms; but equatives and interrogatives with negative antonyms *are* evaluative.

I'll call those constructions whose evaluativity depends on the polarity of the antonym 'polar-variant' constructions. Those whose evaluativity does not depend on the polarity of the antonym are 'polar-invariant'.

(8) *The distribution of evaluativity in constructions with degree morphology*

| type | form | *tall* | *short* | ex. |
|---|---|---|---|---|
| polar-variant | **equative** | [–E] | [+E] | Amy is as tall/short as Betty. |
| | **interrogative** | [–E] | [+E] | How tall/short is Betty? |
| polar-invariant | **excessive** | [–E] | [–E] | Amy is too tall/short for her pants. |
| | **comparative** | [–E] | [–E] | Amy is taller/shorter than Betty. |

It seems then that the POS account does not accurately describe the distribution of evaluativity. The data above call for an analysis of evaluativity that i) allows for evaluativity to cooccur with overt degree morphology, and ii) can account for its absence in constructions with positive-polarity predicates and in constructions like the comparative.

## 3. The Degree Modifier EVAL

We can allow for evaluativity to cooccur with overt degree morphology by encoding it in a degree modifier of type $\langle\langle d,t\rangle,\langle d,t\rangle\rangle$. Because modifiers do not change the type of a construction, they can in principle occur optionally in any degree construction.

Evaluative constructions reference degrees that exceed a standard. So we can think of the degree modifier that encodes evaluativity, 'EVAL', as a function from a set of degrees to a subset of those degrees (the ones above the standard).

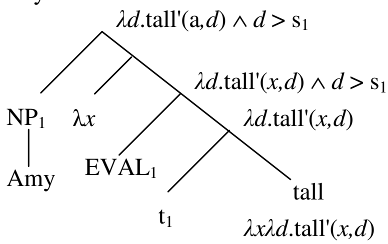
(9) $\text{EVAL}_i \rightsquigarrow \lambda D_{\langle d,t\rangle}\lambda d.\ D(d) \wedge d > s_i$

*s* is a pragmatic variable, i.e. it is left unbound in the semantics. I assume that each instance of EVAL in a sentence introduces a single pragmatic variable.

The tree below demonstrates how EVAL can contribute evaluativity to the positive construction (I have yet to argue for why it must):

(10) a. Amy is tall.

b.




This derivation results in a set of degrees. I assume that, in lieu of an overt quantifier or modifier, the free variable *d* is bound by existential closure, resulting in the proposition that Amy is tall to a degree which exceeds the relevant standard of tallness. This last move is necessary because to analyze any constituent of the sentence in (10) as involving quantification over degrees is to prevent its compatibility with degree quantifiers and modifiers (Doetjes 1997).

Following Bhatt & Pancheva (2004) a.o., the subject *Amy* is base-generated in the functional projection "aP," which takes AP as its complement. Given a situation in which Amy is 5ft tall and the standard of tallness applicable to Amy is 3ft, then the argument of EVAL in (10b) includes the degrees 1ft, 2ft, 3ft, 4ft, 5ft, and the value includes 4ft, 5ft but not degrees below 4ft (the sets are dense). This allows two different mechanisms for resolving the two differences between the constructions in (4): the difference in arguments is resolved by existential closure, and the difference in evaluativity is resolved by EVAL.

## 4. The Distribution of EVAL

The characterization of EVAL as a degree modifier predicts that it can take any set of degrees as its argument. Due to the fact that EVAL is phonologically covert, this leads to a state of affairs in which any degree construction can in principle have an evaluative or non-evaluative interpretation. When either interpretation is available, the construction is [–E]. When the non-evaluative interpretation is blocked, the construction is [+E].

As (8) suggests, there are two semantic aspects of degree constructions that conspire to determine whether or not that construction receives an evaluative interpretation: 1) the polarity of the predicate in the construction, and 2) whether or not the construction is polar-invariant. I'll review the significance of these properties and discuss how they effect evaluativity in constructions with overt degree morphology, and then in positive constructions (Section 4.3).

### *4.1. Polarity*

It has been widely observed that two antonyms (e.g. *tall* and *short*) make use of the same scale, but in reverse directions (Cresswell 1976, Seuren 1984, von Stechow 1984, Bierwisch 1989, Kennedy 1999). The fact that *tall* and *short* differ only in their ordering is illustrated by the following entailment patterns:

(11) a. Amy is taller than Betty. → Amy is not shorter than Betty.
b. Amy is shorter than Betty. → Amy is not taller than Betty.

In (11), the comparative form with the positive antonym *tall* entails the negation of the one with the negative antonym *short*, and vice-versa.

I assume here with Bartsch & Vennemann (1972) and Bierwisch (1989) that adjectival scales are triples $\langle D, <_Y, \Psi \rangle$ with $D$ a set of degrees, $<_Y$ a total ordering on $D$, and $\Psi$ a dimension (e.g. 'height'). Antonym scales are illustrated in Figure 1 for the antonyms *tall* and *short*:

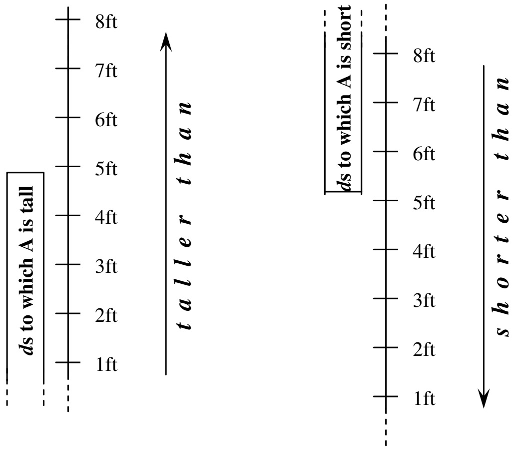



Figure 1: Amy's height

I will represent a set of degrees associated with the predicate *tall* as $D_{tall}$ and so forth. Assuming that Amy is 5ft tall, we can represent Amy's height as it is reflected on the 'tall' scale as well as on the 'short' scale:

(12) a. Amy's tallness: $\{1ft, 2ft, 3ft, 4ft, 5ft\}_{tall}$
b. Amy's shortness: $\{5ft, 6ft, 7ft, 8ft, 9ft, \ldots\}_{short}$

Notice that the set of degrees to which Amy is tall and the set of degrees to which Amy is short have an endpoint in common. This is a factor of their antonymy.

(13) For all adjectives $A, A'$ and for all $x$ in the domain of $A, A'$,
$A$ and $A'$ are antonyms iff: $\text{MAX}\,[A(x)] = \text{MAX}\,[A'(x)]$
$\wedge A(x) \cap A'(x) = \{\text{MAX}\,(A(x))\}$,
Where MAX is defined relative to the direction of the scale:

(14) Let $D$ be a set of degrees ordered by the relation $<_\Upsilon$, then
$\text{MAX}(D) = \iota d[d \in D \wedge \forall d' \in D\,[d' \leq_\Upsilon d\,]\,]$

The fact that the two antonyms share an endpoint and are otherwise complements is one important characteristic of antonyms for evaluativity: we can reliably infer from Amy's tallness to Amy's shortness, and vice-versa.

A second important characteristic of antonyms is the fact that negative antonyms are marked with respect to positive ones. To support this claim, I will review some distributional data; for more explanatory accounts (ones that correlate semantic markedness with morphological markedness), see Sapir (1949), Lyons (1977), Rullman (1995) and Heim (2007).

Lyons says, "We tend to say that small things lack size, that what is required is less height, and so on, rather than that large things lack smallness and that what is required is more lowness" (Lyons 1977: 275). The conclusion that follows is that, e.g., "*long* is unmarked with respect to *short* because it occurs in a variety of expressions from which *short* is excluded" (Cruse 1986: 173). (15) shows that some positive antonyms can occur with measure phrases, but their negative counterparts cannot; (16) shows that positive antonyms but not negative ones can have nominal forms.

(15) a. This one is 10ft long.
     b. *This one is 10ft short.

(16) a. What is its length?
     b. *What is its shortness?

Also see Higgins (1977) for a psycholinguistic study of the interpretational differences between marked and unmarked adjectives in comparatives. Both properties of polar antonyms play a role in the distribution of evaluativity.

### *4.2. Polar-(In)Variance*

This section examines polar-(in)variance by studying relevant semantic properties of the comparative and equative constructions as a case study. The generalizations made here can be extended to other polar-(in)variant degree constructions.

Equatives are polar-variant while comparatives are polar-invariant. A symptom of this difference is the difference in the entailment patterns of these two constructions. For a polar-variant construction, the negative-antonym form entails its positive-antonym counterpart (17a);[2] for a polar-invariant construction, the negative-antonym form does not entail its positive-antonym counterpart (17b)

(17) a. Amy is as short as Betty. $\Rightarrow$ Amy is as tall as Betty.
     b. Amy is shorter than Betty. $\nRightarrow$ Amy is taller than Betty.

These entailment patterns are due to the fact that the negative-polarity form in (17a) is true if two conditions hold: i) that Amy and Betty are the same height, and ii) that Amy and Betty are short. The positive-polarity form in (17a) is true only if one condition holds: that Amy and Betty are the same height. In contrast, for the negative form in (17b) to be true, Betty's height needs to exceed Amy's height; and for the positive form in (17b) to be true, Amy's height needs to exceed Betty's height. The difference can be summarized as follows: for polar-variant constructions, the truth conditions of a negative form are a subset of the

[2]This is true for *how many* questions as well, assuming the semantics of questions from Groenendijk and Stokhof (1984) in which a question $Q_1$ entails a question $Q_2$ iff the denotation of $Q_1$ is a subset of the denotation of $Q_2$. Thus *How short is Amy?* $\Rightarrow$ *How tall is Amy?*

truth conditions of its corresponding positive form. For polar-invariant constructions, the truth conditions of a negative-antonym form and its positive-antonym counterpart are contradictory.[3]

Because of the nature of EVAL (9), the analysis presented here predicts that each degree construction has an evaluative and a non-evaluative interpretation available. I'll first examine polar-variant constructions by discussing what it means for the equative to be polar-variant.

(18) Amy is as tall as Betty.
  a. NON-EVALUATIVE: $\{d_1\text{:tall'}(\text{a},d_1)\} = \{d_2\text{:tall'}(\text{b}d_2)\}$
  b. EVALUATIVE: $\{d_1\text{:tall'}(\text{a},d_1) \wedge d_1 > \text{s}_{\text{tall}}\} = \{d_2\text{:tall'}(\text{b},d_2) \wedge d_2 > \text{s}_{\text{tall}}\}$

(19) Amy is as short as Betty.
  a. NON-EVALUATIVE: $\{d_1\text{:short'}(\text{a},d_1)\} = \{d_2\text{:short'}(\text{b}d_2)\}$
  b. EVALUATIVE: $\{d_1\text{:short'}(\text{a},d_1) \wedge d_1 > \text{s}_{\text{short}}\} = \{d_2\text{:short'}(\text{b},d_2) \wedge d_2 > \text{s}_{\text{short}}\}$

Here I crucially take the bare equative to have an 'exactly' interpretation, rather than an 'at least' interpretation. I'll return to this assumption in §7. I also assume a general presupposition that the sets above are non-empty.

Important for the distribution of evaluativity is that the two non-evaluative interpretations, (18a) and (19a), mean the same thing (are mutually entailing). (18a) says that Amy's and Betty's heights are at the same point on the 'short' scale. Given what we know about the relationship between the 'tall' and 'short' scales, we can infer that for Amy and Betty to satisfy the truth conditions of (18a) is for Amy and Betty to satisfy the truth conditions of (19a). The synonymy of the two non-evaluative interpretations is a factor of the first characteristic of polar antonyms (that we can infer from one scale to the other).

The two evaluative interpretations, (18b) and (19b), do *not* have the same meaning because they make reference to the 'tall' and 'short' standards respectively. (18b) says that Amy and Betty are of equal height and are tall; (19b) says that Amy and Betty are of equal height and are short. Given that (18a) and (19a) have the same truth conditions, and given a (universal) principle that tells speakers to avoid using a marked form whenever possible, only the positive-antonym version of the two non-evaluative forms is available. This is an effect of the second characteristic of polar antonyms.

(20) Amy is as tall as Betty. $\rightarrow$ NON-EVALUATIVE
  $\rightarrow$ EVALUATIVE

(21) Amy is as short as Betty. $\rightarrow$ ~~NON-EVALUATIVE~~
  $\rightarrow$ EVALUATIVE

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[3]For quantifiers like the comparative and the equative, which take two sets of degrees as arguments, polar-(in)variance could have to do with whether or not the quantifier is symmetric (i.e. whether Q(A)(B) $\Leftrightarrow$ Q(B)(A). However, this property cannot be generalized to *how A*, which displays polar-(in)variance despite its only taking one set of degrees as its argument.

This means that from *Amy is as short as Betty* we can safely conclude that Amy is short, as it is unambiguous and the proposition expressed is evaluative. From *Amy is as tall as Betty*, we can't conclude that Amy is tall because this sentence could be expressing the meaning in (18a), which is unevaluative.

The situation differs for polar-invariant constructions, which I'll discuss by examining the comparative. For polar-invariant constructions, the non-evaluative positive-antonym interpretation (22a) and the non-evaluative negative-antonym interpretation (23a) do *not* have the same truth conditions.

(22) Amy is taller than Betty.
   a. NON-EVALUATIVE: $\{d_1\text{:tall}'(a,d_1)\} \supset \{d_2\text{:tall}'(b,d_2)\}$
   b. EVALUATIVE: $\{d_1\text{:tall}'(a,d_1) \wedge d_1 > s_{tall}\} \supset \{d_2\text{:tall}'(b,d_2) \wedge d_2 > s_{tall}\}$

(23) Amy is shorter than Betty.
   a. NON-EVALUATIVE: $\{d_1\text{:short}'(a,d_1)\} \supset \{d_2\text{:short}'(b,d_2)\}$
   b. EVALUATIVE: $\{d_1\text{:short}'(a,d_1) \wedge d_1 > s_{short}\} \supset \{d_2\text{:short}'(b,d_2) \wedge d_2 > s_{short}\}$

Unlike polar-variant forms, polar-invariant constructions with different antonyms differ in more than just their evaluativity. With both interpretations of each comparative, for (22) to be true, (23) must be false and vice-versa. This means that the non-evaluative negative-antonym form is not blocked, and both constructions can have either meaning.

(24) Amy is taller than Betty. $\longrightarrow$ NON-EVALUATIVE
$\searrow$ EVALUATIVE
(25) Amy is shorter than Betty. $\longrightarrow$ NON-EVALUATIVE
$\searrow$ EVALUATIVE

This analysis crucially assumes that a [–E] construction *can* – but need not – have an evaluative interpretation. This is a harmless assumption. There are two possible situations in which an ambiguous degree construction (let's use *Amy is as tall as Betty*) could be uttered. The first is one in which the hearer knows that Amy or Betty are tall relative to the contextually-valued standard. In this case, he can interpret the utterance to have an evaluative interpretation without running into any problems. The second situation is one in which the hearer does not know whether Amy or Betty are tall, in which case he can interpret the utterance to have a non-evaluative interpretation.

The availability of an evaluative interpretation for a [–E] construction surfaces in some constructions, although I do not have anything to say on which constructions and why. Below is a construction in which a [–E] form – a positive-antonym question – is directly juxtaposed with its negative-antonym counterpart.

(26) a. I don't know how tall or short Amy is.
   b. I don't know whether Amy is tall or short (or the extent to which).

An intuitive gloss of (26a) is (26b), which gives the positive-polarity question an evaluative reading. This, I think, speaks in favor of a theory which allows [–E] to be optionally evaluative.[4]

To summarize, the distribution of evaluativity among constructions with overt degree morphology is determined by two factors exhibited by the degree construction: the polarity of the predicate, and whether or not the construction is polar-variant. If it is polar-variant, the positive-polarity and negative-polarity forms differ only insofar as they refer to a contextual standard, rendering a *short* non-evaluative interpretation synonymous to a *tall* non-evaluative interpretation. This makes these readings subject to a markedness competition and so the non-evaluative reading of the *short* form is blocked by its *tall* counterpart. As a result, negative-polarity polar-variant constructions are [+E], while positive-polarity polar-variant constructions, as well as polar-invariant constructions, are [–E].

### *4.3. The Positive Construction*

I demonstrated in §3 that EVAL *can* contribute to the semantics of the positive construction, but not that it needs to. The theory as I've spelled it out predicts that each of the positive constructions in (27) and (28) can have two possible readings.

(27) Amy is tall.
  a. NON-EVALUATIVE: $\exists d.\text{tall}'(\text{a},d)$
  b. EVALUATIVE: $\exists d.\text{tall}'(\text{a},d) \wedge d > \text{s}_{\text{tall}}$

(28) Amy is short.
  a. NON-EVALUATIVE: $\exists d.\text{short}'(\text{a},d)$
  b. EVALUATIVE: $\exists d.\text{short}'(\text{a},d) \wedge d > \text{s}_{\text{short}}$

However, these non-evaluative readings do not seem to be available. Positive constructions, as we've seen, seem to always be evaluative. Notice though that the non-evaluative interpretations both assert something very trivial about Amy: that she has a height (a degree of tallness and shortness, respectively). We can imagine that such an interpretation is out for pragmatic reasons, making the evaluative interpretation of the positive construction much more salient.

There are in fact instances of the positive construction being given a non-evaluative interpretation. In 'exceed' comparatives, the positive form introduces the scale on which the two arguments are being compared.[5]

(29) Mti hu ni mrefu ku -shinda ule *Swahili* (Stassen 1985: 43)
  tree this is big INF -exceed that
  'This tree is taller than that tree.'

[4]Remember that EVAL occurs with sets of degrees, so each adjective in (26b) introduces a distinct and co-indexed EVAL (and has a corresponding contextual standard).

[5]Thanks to Pam Munro and Russ Schuh for pointing out the significance of this data.

In (29), the positive construction in the first clause ('This tree is big') contributes to the comparative construction by establishing the dimension of measurement on which the 'exceed' relation is calculated. Despite this, (29) can receive a non-evaluative reading, just like English comparatives. It can be used to discuss the heights of two relatively short trees.

On the other hand, this explanation for the evaluativity of the positive form predicts that *any* positive construction can have a non-evaluative interpretation whenever this reading is not trivial. For instance, it predicts that the sentence *Sue is (once again) heavy/light* can be meaningfully uttered to describe the absence of weightlessness after Sue's reentrance into the Earth's atmosphere, despite Sue being relatively light, or the lightest of the astronauts on the mission.

Although my intuitions waiver, I suspect that this construction cannot be so used. If that is the case, then it is possible that the restriction against using positive constructions could be due to a general pragmatic preference against ambiguity. In the astronaut example, then, the use of *Sue is heavy* to describe her absence of weightlessness is blocked by e.g. the less ambiguous *Sue (once again) has a weight*, although this is not an entirely satisfactory explanation.

The general conundrum is this: both positive constructions and constructions with overt degree morphology exhibit evaluativity. The positive construction seems to do so obligatorily – with a few exceptions, i.e. (29) – and constructions with overt degree morphology seem to do so optionally. A general account of evaluativity, then, has to decide which is a primary characteristic of evaluativity and which is secondary. I am confident given the discussion above that a successful analysis of evaluativity characterizes it as optional and derives any obligatoriness secondarily, via pragmatics.

There is one other way in which the manifestation of evaluativity differs in the positive construction from constructions with overt degree morphology: in the type of meaning it contributes. For all intents and purposes, evaluativity in the positive construction is assertive: it can be directly denied (30), and it does not project out of the antecedent of a counterfactual (31)

(30) a. Amy is tall.
b. No, she's not, she's below the average height for women her age.

(31) If Amy were tall, she would be a supermodel. $\not\Rightarrow$ Amy is tall.

This appears to be incompatible with the type of meaning contributed by constructions with overt degree morphology; for these constructions, evaluativity seems to be presuppositional.

(32) A: Amy is as short as Betty.
B: No, she's not, she's taller than Betty.
B':*No, she's not, she's actually taller than the average height.

(33) If Amy were as short as Betty, she would not win. $\Rightarrow$ Betty is short.

This is another instance in which evaluativity behaves differently for the two different sorts of constructions, and an optimal solution would be able to derive one behavior from the other. I take evaluativity to be assertive, staying true to its behavior in the positive construction. As I've defined the comparative and the equative – in terms of relations between sets of degrees – the fact that evaluativity comes out as a presupposition in these constructions falls out of the semantics of degree quantifiers and a presupposition that the sets of degrees are non-empty.[6]

To sum up, evaluativity in the positive construction differs from evaluativity in constructions with overt degree morphology. These differences can be reconciled by assuming that the positive construction is [–E], but is almost always interpreted as evaluative for pragmatic reasons; and that evaluativity is assertive, but passes presupposition tests in constructions with overt degree morphology because of the semantics of these quantifiers.

## 5. Localizing the Competition

The analysis above relies on the notion of semantic competition to determine which forms can enter a markedness competition. I've assumed above that semantic competition occurs between two mutually entailing expressions. This is what allows for markedness to effect the evaluativity of polar-variant forms. The theory as it stands incorrectly predicts that (34a) and (34b) enter into a semantic competition.

(34) a. Amy is shorter than Betty.
b. Betty is taller than Amy.

These two forms differ in the polarity of their predicate and the value of their individual arguments. They are mutually entailing. The fact that (34a) includes the predicate *short* means that it is more marked than (34b). The analysis above predicts, then, that the non-evaluative interpretation of (34b) suffices to block the non-evaluative interpretation of (34a), which would render (34a) evaluative. This is the wrong prediction. For some reason, the relationship between (34a) and (34b) doesn't result in a semantic competition for the purpose of evaluativity.

It seems reasonable to conclude that this difference (the fact that 34a,b don't result in a competition but 22,23 do) is correlated with the fact that (34a,b) differ from each other additionally in the order of their arguments. The same sort

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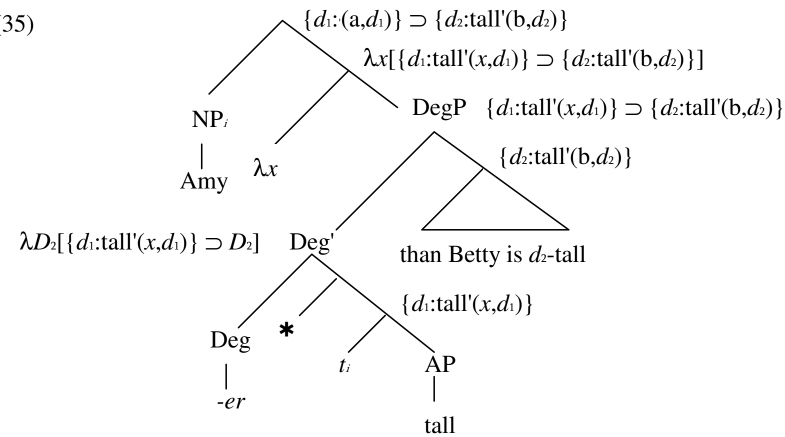
[6](33) demonstrates that only the evaluativity of the degree clause (Betty's height) is projected in an *if*-clause. Even though the semantics of the equative asserts that Amy and Betty are the same height, this is an asymmetry. This may be due to the fact that the degree clause itself is presuppositional, rendering the evaluativity in the degree clause part of a larger presupposition. Thanks to Roger Schwarzschild for this idea; see von Stechow (1984) for an analysis of the comparative compatible with this suggestion.

of problem can arise with tests for the monotonicity of an argument of an individual quantifier. To test e.g. the left argument, the quantifier and its right argument need to be held fixed while the left argument is changed. To vary the left argument *and* e.g. the quantifier is to render the test ineffective.

We can imagine that the same sort of test holds for testing the polar-(in)variance of a quantifier: a competition that crucially involves the polar-(in)variance of a quantifier needs to be constrained in such a way that its arguments are held constant and only the quantifier is varied. We can do this by localizing the competition to a subcomponent of the degree construction: one that minimally involves the quantifier and the predicate.

Assuming a structure in which the quantifier and predicate form a constituent (Abney 1987, Larson 1988, Corver 1997, Kennedy 1999, Grosu & Horvath 2006), the compositional semantics are as follows:

(35)




This is not an evaluative expression, but if it were, ∗ marks where EVAL would be located in the tree.

This configuration gives us a way of isolating the effects of the degree quantifier and the predicate. We can restrict the semantic competition from equivalent CPs to equivalent Deg's. Establishing semantic equivalence between Deg's requires a generalized notion of entailment:

(36) $\forall f,g \in D_{\langle\sigma,t\rangle}: f \Rightarrow g \text{ iff } \forall x \in D_{\sigma}, f(x) \Rightarrow g(x)$

The two equatives *Amy is as short as Betty* and *Amy is as tall as Betty*, for instance, can enter into a semantic competition in this new sense because their DegPs are mutually entailing in a generalized sense.

(37) a. $\lambda D_2[\{d_1{:}\mathrm{short}'(x,d_1)\} = D_2] \quad \Leftrightarrow \lambda D_2[\{d_1{:}\mathrm{tall}'(x,d_1)\} = D_2]$
b. $\lambda D_2[\{d_1{:}\mathrm{short}'(x,d_1)\} \supset D_2] \quad \not\Leftrightarrow \lambda D_2[\{d_1{:}\mathrm{tall}'(x,d_1)\} \supset D_2]$

Because this theory differentiates between sets of 'tall' degrees and sets of 'short' degrees, the two Deg's in (37a) aren't equivalent. If Amy is 5ft tall, remember, her 'tall' degrees are $\{1\text{ft}, 2\text{ft}, 3\text{ft}, 4\text{ft}, 5\text{ft}\}_{\text{tall}}$ and her 'short' degrees are $\{5\text{ft},6\text{ft},7\text{ft},8\text{ft},\ldots\}_{\text{short}}$. However, the fact that *tall* and *short* are polar antonyms enables us to infer from *x*'s degrees of tallness to *x*'s degrees of shortness. In this sense, then, the set of degrees that are equal to *x*'s 'short' degrees mutually entails (in a general sense) the set of degrees that are equal to *x*'s 'tall' degrees. Not so for polar-invariant constructions like the comparative, in (37b): despite any inference from 'short' degrees to 'tall' degrees, the two Deg's in (37b) are not mutually entailing.

Localizing the competition in this way has the added benefit of accounting for the perhaps surprising evaluativity of modified equatives.[7]

(38) a. Amy is at least as short as Betty.
b. Amy is almost as short as Betty.

The sentences in (38) are evaluative, presumably because they involve the quantifier *as*. However, the fact that they are modified e.g. by *at least* means that, semantically, they are more like the comparative (the proposition *Amy is at least as short as Betty*, even under the 'exactly' semantics of the equative, does not mutually entail *Amy is at least as tall as Betty*). The current account captures the intuition that all equatives are evaluative, regardless of how they are modified, by restricting the competition to the Deg'.[8]

To summarize: the previous section described the distribution of evaluativity in terms of a competition, which dealt with entailment at the propositional level. The pair in (34), along with the evaluativity of modified equatives like *Amy is at least as tall as Betty*, demonstrate that the competition needs to be localized. Given that the two factors that determine the distribution of evaluativity are the polarity of the predicate and the polar-(in)variance of the quantifier, I've reasoned that the area of localization is the Deg' in which the predicate and quantifier form a constituent. Adapting the notion of generalized

[7]Thanks to Hans Kamp (p.c.) for bringing this problem to my attention.

[8]Daniel Büring (p.c.) has pointed out that factor modifiers differ from e.g. *at least* and *almost* in that they *don't* preserve the ealuativity of [+E] constructions.

(i) Amy is twice as short as Betty, but neither woman is short.

This seems to be evidence that factor modifiers are base-generated in Deg' and, unlike *at least* and *almost*, can effect the semantics of the construction for the competition. I do not currently know enough about the syntax and semantics of factor modifiers to be able to explain this very interesting difference.

entailment between objects of type $\langle\langle d,t\rangle,t\rangle$ and drawing on the important relation between polar antonyms is sufficient to preserve the results that made the proposition-level account successful.

## 6. A Typology of Gradable Adjectives

Until now, the main focus of this paper has been the distribution of evaluativity among degree constructions with the antonyms *tall* and *short*. With these antonyms, degree constructions display the evaluativity pattern shown in (8); however, the presence of different types of antonyms effects the pattern of evaluativity across degree constructions.

(39) a. Amy is taller than Betty. $\not\Rightarrow$ Amy is tall.
b. Amy is shorter than Betty. $\not\Rightarrow$ Amy is short.
(40) a. This glass is cleaner than that glass. $\not\Rightarrow$ This glass is clean.
b. This glass is dirtier than that glass. $\Rightarrow$ This glass is dirty.
(41) a. This glass is more opaque than that glass. $\Rightarrow$ This glass is opaque.
b. This glass is more transparent than that glass. $\Rightarrow$ This glass is transparent.

Looking at just the comparative construction for simplicity's sake, we get three different patterns: 1) antonyms like *tall* and *short* whose comparative forms are never evaluative; 2) antonyms like *clean* and *dirty* whose positive comparative form is not evaluative, but whose negative comparative form is; and 3) antonyms like *opaque* and *transparent*, whose comparative forms are both evaluative.

Rotstein & Winter (2004) and Kennedy & McNally (2005) observe that scales associated with different gradable adjectives differ in scale structure: they can have only a lower bound, only an upper bound, be completely open or completely closed.

(42) *Open scales*
a. ??perfectly/??slightly tall b. ??perfectly/??slightly short
(43) *Lower/upper closed scales*
a. ??perfectly/slightly dirty b. perfectly/??slightly clean
(44) *Closed scales*
a. perfectly/slightly opaque b. perfectly/slightly transparent

In relation to these scale structures, Kennedy (2007) postulates an economy principle: "Maximize the contribution of the conventional meanings of the elements of a sentence to the computation of its truth conditions." The assumption of this economy principle explains the connection between these predicates' scale structures and evaluativity patterns: because the scales associated with e.g. *tall* and *short* lack bounds, their standards must be contextually determined. Adjectives associated with bounded scales have natural standards in their endpoints, and these become the value of the standard.

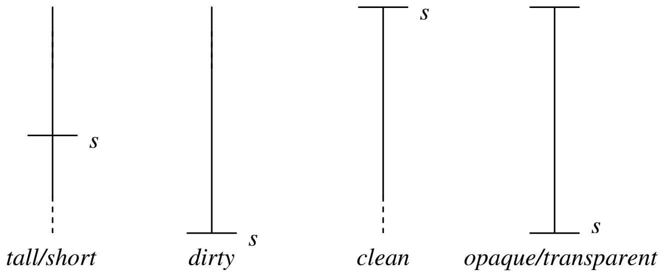



Figure 2: Scale structures and standard placement

If we assume that EVAL has the same optional distribution, the evaluativity patterns demonstrated in (42) through (44) fall out of the different structures of the scales associated with the predicates. Constructions with closed-scale adjectives (44) and lower-bound adjectives (43a) are always evaluative because their standard always corresponds to their lower bound: to be on the scale is to be above the standard on the scale, with or without EVAL. Constructions with upper-bound adjectives (43b) are never evaluative because their standards are set at their upper bound. To be on the scale is to be below the standard on the scale, with or without EVAL. This demonstrates that a degree-modifier analysis of evaluativity can account for the distribution of evaluativity across all gradable predicates: the distribution of EVAL is held constant, but its effects differ based on the structure of the scale invoked by the construction.[9]

## 7. Conclusion

I have shown that the distribution of evaluativity is too wide to be accounted for with a morpheme that is in complementary distribution with overt degree morphology (e.g. POS). However, the distribution of evaluativity is too narrow to be accounted for with a degree modifier like EVAL, unless we make additional assumptions about polarity and polar-invariance. The polar-(in)variance of a quantifier determines whether or not the polarity of the predicate will affect a construction's non-evaluative interpretations.

[9] 'Extreme adjectives' (Paradis 2001) are those like *gorgeous* and *brilliant* which behave like closed-scale and lower-bound adjectives in being evaluative even in comparative constructions. I assume that this is because they are associated with subscales of those scales like 'pretty' and 'smart,' which gives them a natural lower bound like these other predicates.

There is a debate about whether the equative has an 'at least' reading (a weak reading) or an 'exactly' reading (a strong reading). From Horn (1972):

(45) Amy is as tall as Betty.
a. No, she's not, she's taller. b. Yes, in fact, she's taller.

The traditional way to derive a weak/strong ambiguity is to assign the form the weak reading and to derive the strong reading pragmatically, via scalar implicature (however, see Fox 2006).

Where evaluativity is concerned, the issue is simple: equatives and comparatives simply behave differently with respect to evaluativity, and we can give a good account of *why* equatives pattern with questions rather than with the comparative if we assume it has an 'exactly' meaning (or a still weaker meaning which can become either 'exactly' or 'at least' with the presence of a modifier, as in Schwarzschild & Wilkinson 2002 and Bhatt & Pancheva 2007). Whatever the solution is, I believe that the distribution of evaluativity and the encouraging success of this analysis suggests that we have an empirical reason to distance the equative from its 'at least' interpretation.

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