Gradability

1. Gradable Adjectives

Consider the following sentences:

Joe is tall; but Ronan is taller than Joe; and Paolo is the tallest of the three.

Thiebaud's Candy Counter of 1962 is good; but his Candy Counter of 1966 is better; and his Candy Counter of 1969 is the best of the three.

These sentences illustrate the fact that "tall" and "good" are gradable adjectives. In the terminology of traditional grammar, "tall" and "good" are the positive grade or form of the adjective; "taller" and "better" are the comparative form; and "tallest" and "best" are the superlative form.

Insofar as the comparative and superlative forms of "good" derive from a distinct root "bet-," the gradability of "good" is morphologically irregular. But semantically, the gradability of "good" is regular. The aim of the present chapter is to clarify central features of the semantics of gradable adjectives, thereby to clarify the semantics of the gradability of "good."

The study of gradable adjectives has been central to the formal semantic theories of adjectives since the seventies. Among formal semantic analyses of gradable adjectives, two principal approaches have been developed: so-called delineation-based

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A fundamental distinction between gradable and non-gradable adjectives is that only gradable adjectives admit degree modifiers. The comparative and superlative morphemes "-er" and "-est" and the semantically akin adverbs "more" and "most" are examples of degree modifiers. As we will see shortly, there are many other degree modifiers and kinds of degree modifiers.

The initial example sentences ("Joe is tall …"; "Thiebaud’s Candy Counter of 1962 is good …") illustrate that "good" or rather "bet" and "tall" admit "-er" and "-est."

Compare the gradable adjectives "flexible" and "sensitive":


4 Cp. Frederike Moltmann: "… what has come to be the current standard approach to the semantics of positive and comparative adjectives, namely the degree-based approach." ("Degree Structure as Trope Structure," Linguistics and Philosophy 32 (2009) 51-94, at 52); Stephanie Solt, "This approach could be described as the current standard in the analysis of gradability and vagueness ..." ("Notes on the Comparison Class," in Vagueness in Communication: Lectures Notes in Computer Science, R. Nouwen et al, eds., vol. 6517, Spring, 2011, 189-206, at 190); Lisa Bylinina and Stas Zadorozhny: "We will use the mainstream semantics for gradable adjectives that treats them as measure functions of type ⟨e,d⟩ from the domain of individuals to degrees ..." ("Evaluative Adjectives, Scale Structure, and Ways of Being Polite," in Aloni et al., eds, Language, Logic, and Meaning, The 18th Amsterdam Colloquium, 2012, 133-42, at 134)


6 A morpheme is a minimal grammatical unit with meaning. For example the word "taller" consists of two morphemes: the root "taller" and the suffix "-er." Morphemes are distinguished as "free" and "bound." A free morpheme can appear on its own, e.g. "tall." A bound morpheme, e.g. "-er," cannot.

7 "a-er" and "a-est" are referred to as "suppletive" forms, while "more a" and "most a" are referred to as "periphrastic" forms.
Gail is more flexible than Wendy.
Ronan is the most sensitive of Joe's sons.

Contrast "tall," "good," "flexible," and "sensitive" with the non-gradable adjectives "even" (in the mathematical sense) and "binary":

# Two is more even/evener than three.
# This predicate is more binary than that predicate.

(It is a convention in linguistics to affix the pound symbol to the beginning of a sentence or expression to indicate that it is semantically unacceptable.)

The meaning of a gradable adjective is partly constituted by a gradable property. For example, the meaning of "tall" is partly constituted by the gradable property of height. I assume that the gradable property partly constitutive of the meaning of "good" is value. (I will examine and argue for this view in chapter four.) Entities can have more or less height and more or less value. Mathematical evenness is a non-gradable property. Entities cannot have more or less (mathematical) evenness. Likewise, binariness is a non-gradable property. Entities cannot have more or less binariness.

A gradable property, in contrast to a non-gradable property, is then a property that an entity can have to various degrees, in other words, in various quantities. The claim that an entity can have a gradable property to various degrees might be misinterpreted. Consider again the gradable property of height. Entities either have height or they do not. For example, Isabella's desire to study environmental design, the Second Amendment, and the number eleven do not have height. So while height is a gradable property, the state of having height is not gradable. There are not degrees of having height. Rather, an entity that has height has some degree of height, and in principle may have various degrees of height. So a height possessing entity in principle may have more or less height, in other words may have a greater or lesser degree of height.

Consequently, both degrees and gradable properties are constituents of the meanings of gradable adjectives. More precisely, the degrees that are constituents of the meanings of gradable adjectives are degrees of gradable properties. For example, the sentence "Joe is tall" entails that Joe has a degree of height. "Wayne Thiebaud's Candy Counter of 1969 is good" entails that Wayne Thiebaud's Candy Counter of 1969 has a degree of value.

The fact that gradable adjectives admit modification by degree modifiers at least in part owes to the fact that the meanings of gradable adjectives consist of degrees of gradable properties. Degree modifiers are precisely linguistic expressions whose semantic function is to modify degrees. Consequently, degree modifiers syntactically

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8 Cp. Christopher Kennedy: "A defining characteristic of gradable adjectives is that there is some gradient property associated with their meaning with respect to which the [individuals] in their domains can be ordered." (Projecting the Adjective, Garland, 1999, 4)
modify expressions whose meanings consist of (or at least are associated with) degrees. For example, "very" is a degree modifier. The gradable adjective "tall" admits "very" modification:

Paolo is very tall.

So, semantically, "very" modifies the degree that "tall" denotes. Evidently, "very" does so by raising that degree. Accordingly, "very" is more precisely a so-called degree intensifier. Contrast "fairly," "rather," "pretty," and "somewhat," which are so-called degree diminishers or hedges.

One basic distinction in kind between degree modifiers may be drawn between those degree modifiers that relate a degree borne by one entity to a degree borne by another entity, call them relational degree modifiers; and those they do not, call them non-relational.9 "Very" and "fairly" are examples of non-relational degree modifiers. For example, as we said, "very" raises the degree denoted by "tall," but it does not do so by relating the degree borne by the entity denoted by the subject of "tall," for example "Paolo," to a degree borne by another entity.

Another type of non-relational degree modifier is a measure phrase. A measure phrase is a nominal expression consisting of a numeral and a noun that denotes a standard of measurement, for example "six feet" and "ten kilometers":

Paolo is six feet tall.
The race is ten kilometers long.

Examples of relational degree modifiers are the adverb "more" and the semantically akin morpheme "-er"; for instance:

Paolo is taller than Isabella.

This sentence can be read as stating that the degree of height that Paolo has is greater than the degree of height that Isabella has. Likewise, the following sentence:

Thiebaud's Candy Counter of 1966 is better than his Candy Counter of 1962.

can be read as stating that the degree of value that Thiebaud's Candy Counter of 1966 has is greater than the degree of value that Thiebaud's Candy Counter of 1962 has.

As noted above, traditionally "more" and "-er" have been described as comparative expressions. However, all relational degree modifiers involve comparison, or at least relations between degrees.10 Consider "less," which is used in relations of deficit:

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9 I note that this is my own terminology and distinction.
10 The qualification here owes to the following consideration. Comparison is a psychological act, the result of which is typically a psychological judgment. On this basis such judgment may of course be described as comparative; likewise the
Jett is less fussy about what he eats than Dax is.

And consider "as," which figures in so-called *equative* constructions:

Jett is as hungry as Dax is.

Superlatives also involve comparison or at least a relation between degree bearing entities; for example:

Bernie is the tallest of Eddie's sons.

Here it is claimed that the degree of Bernie's height exceeds the degrees of heights of Eddie's two other sons.

I note in passing that degree modifiers may themselves be modified in various ways, for example:

Ronan is *much* more interested in real estate than Adam is.
Ronan is *twice* as old as Paolo.
Ronan is *five inches* taller than Adam.

Recall now that, as they occur in the following sentences, gradable adjectives such as "good," "tall," "hot," and "full" have traditionally been said to be of the *positive* form or grade:

The painting is *good*.
Paolo is *tall*.
The stove is *hot*.
The glass is *full*.

Observe that in this sort of construction, the gradable adjective is unmodified. So the positive form of a gradable adjective is the unmodified form. Within the context of semantic theories of gradability, the term "positive" is used in at least three different ways. To avoid confusion, I will hereafter refer to the positive form as the *basic* form. The basic form of a gradable adjective is morphologically basic in that all other gradable adjectival constructions consist of modification of the basic form.

Given its centrality to the ensuing discussion, I will hereafter also refer to the following as the *basic construction*:

propositions that such judgments or correlative sentences express. However insofar as the meanings of such sentences consist of quantitative relations, precisely relations between degrees of gradable properties, it may be more accurate to speak of such linguistic expressions as describing various quantitative relations. I note the idea, but will not press the point.
The basic construction consists of a subject \( x \), a copula, and a predicate, the last of which is an unmodified gradable adjective \( a \), that is, a gradable adjective in the basic form.

2. Scales and Antonyms

A distinction is drawn between two kinds of gradable adjectives: so-called relative and absolute.\(^{11}\) The grounds for the terms "relative" and "absolute" will be made clear in section 4 below. Presently, we can confirm that the distinction between relative and absolute gradable adjectives correlates with the types of degree modifiers these types of gradable adjectives admit. For example, only absolute gradable adjectives admit so-called totality modifiers such as "totally," "100%," "completely," and "fully." Compare the following two sets of examples:

The room was totally empty.
The class is 100% full.
The room is completely quiet.
The cruise is fully booked.

# The painting is totally good.\(^{12}\)
# Paolo is 100% tall.
# Janet is completely beautiful.
# Toby is fully young.

Likewise, although not all absolute gradable adjectives admit fractional modifiers such as "half," "three quarters," "a third," only absolute gradable adjectives do accept fractional modifiers:

The room was half empty.
The class is a third full.
The cruise is three quarters booked.

# The painting is half beautiful.
# Paolo is a third tall.


\(^{12}\) There is a slang use of "totally," which means "very" or "extremely"; and on that reading the sentence is acceptable.
This difference in the admissibility of totality and fractional modifiers is indicative of a further fundamental semantic property of gradable adjectives: the degrees that are constituents of their meanings are themselves constituents of scales. A scale is an ordered set of degrees. More precisely, gradable adjectival degree scales are understood to be ordered by the greater than relation (>), totally ordered, and dense. By "totally ordered" is meant that every degree that is a constituent of a scale is ordered in relation to every other degree that is a constituent of that scale. By "dense" is meant that for any two degrees \( d \) and \( d' \) where \( d > d' \), there is a third degree \( d'' \) such that \( d > d'' > d' \). Consequently, a gradable adjectival scale is continuous. Evidence for the continuity of scales can be adduced in various ways. For example, "Paolo is six feet tall" entails that for any degree \( d' \) less than the degree denoted by "six feet tall" (and down to the minimum degree on the associated scale), Paolo is at least as tall as \( d' \). 

Typically, degrees are conceived as points. An alternative is that degrees are intervals, in other words extents consisting of sets of degrees. For convenience, I will assume that degrees are points. Presently, I conclude that the meaning of a gradable adjective, more precisely, consists of a degree on a scale based on a gradable property.

The admissibility of a totality or fractional modifier indicates that the scale is bounded or closed. Precisely, the scale is bounded at the degree denoted by the phrase "totally/100%/fully/completely a." By "bounded" at this point is meant that the scale does not admit a degree beyond this point. In other words, "x is totally/100%/fully/completely a," but it could be more \( a'' \) is contradictory; for example:

> The room is completely quiet. But it could be quieter.
> The class is 100% full. But it could be more full.
> The cruise is fully booked. But there is still one cabin available.

Note that in the case of absolute gradable adjectives, the meaning of "x is totally/100%/fully/completely a" is equivalent to "x is a"; for example:

\[
\begin{align*}
\text{The room is completely quiet.} & \quad \equiv \quad \text{The room is quiet.} \\
\text{The cruise is fully booked.} & \quad \equiv \quad \text{The cruise is booked.}
\end{align*}
\]

Consequently, we can say that gradable adjective \( a \)'s admission of a totality or fractional modifier indicates that at the degree denoted by the phrase "x is \( a \)" the scale encoded in

\[\text{Contrast "quiet," which does not, at least not easily, accept fractional modifiers: ?? "The room is half/two thirds quiet."}\]


\[\text{An argument for identifying degrees with intervals can be found in Christopher Kennedy, "Polar Opposition and the Ontology of Degrees," Linguistics and Philosophy 24 (2001) 33-70.}\]
the meaning of \( a \) is bounded. Consequently, the scales constitutive of the meanings of absolute gradable adjectives are bounded at the degree denoted by the phrase "\( x \) is \( a \)."

In contrast, since relative gradable adjectives do not admit totality or fractional modifiers, the scale constitutive of the meaning of such an adjective is unbounded or open at the degree denoted by "\( x \) is \( a \)." For example, the following sentences are semantically acceptable:

The building is tall. But it could be taller.
The painting is beautiful. But it could be more beautiful.

The properties of boundedness and unboundedness of scales are referred to as properties of scale structure or scale type.\(^{16}\) I underscore that these claims about scale structure are semantic rather than metaphysical. For example, in a world where individuals had a maximum height, an individual with that height might truly be called "tall"—even though "tall" is a relative gradable adjective, encodes an open scale, and so cannot admit a totality modifier. For example, physical conditions might make it impossible for a tall building to be taller. In that case, the sentence "The building is tall, but it could be taller" would be false. But it remains a semantically felicitous sentence.

I will elaborate on the topic of scales somewhat, further below. The elaboration requires the introduction of another topic associated with gradable adjectives: antonymy. Several types of semantic relations have been discussed under the rubric of antonymy. Examples include: contradiction as in "red" and "not red," so-called conversivity as in "buy" and "sell," and so-called reversivity as in "tie" and "untie."\(^{17}\) Here we are concerned with so-called gradable antonymy, in particular antonymy as it pertains to pairs of gradable adjectives.

Many, although not all, gradable adjectives are members of antonym pairs, for example:

tall/short, deep/shallow, expensive/inexpensive.

full/empty, open/closed, opaque/transparent.

The first set here consists of pairs both of whose members are relative gradable adjectives. The second set consists of pairs both of whose members are absolute gradable adjectives. Antonym pairs may also consist of one absolute and one relative gradable adjective; for example:

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In these examples, the first member of each pair is an absolute gradable adjective and the second is a relative gradable adjective.\(^{18}\)

The following two conditions are required for gradable antonymy. First, for an antonym pair of gradable adjectives \(a\) and \(b\), the scales that are constitutive of the meanings of \(a\) and \(b\) are based on the same gradable property. For example, scales of height are constitutive of the meanings of "tall" and "short." Second, within a given context, those entities that are \(a\) are not \(b\), and those entities that are \(b\) are not \(a\). For example, those entities that are clean are not dirty, and those entities that are dirty are not clean. In other words, the set of entities that are \(a\) and the set of entities that are \(b\) are disjoint.

In the case of antonym pairs exactly one of whose members is an absolute gradable adjective, the individuals in the domain of discourse are exhaustively either \(a\) or \(b\). For example, in the case of "pure/impure," every individual is either pure or impure. In contrast, in the case of antonym pairs both of whose members are relative or absolute gradable adjectives, individuals may be neither \(a\) or \(b\). For example, some individuals may have a degree of height such that they are neither tall nor short or a degree of value such that they are neither good nor bad. Again, some individuals may have a degree of fullness of content such that they are neither full nor empty.

The members of an antonym pair of gradable adjectives are widely believed to be divisible into distinct classes, one of which is typically called "positive" or "unmarked," the other "negative" or "marked." (This is a second way that the term "positive" is used in the context of theories of gradable adjectives.) Hereafter I use the terms "marked" and "unmarked." Various criteria have been adduced to support the distinction between the marked and unmarked members of an antonym pair of gradable adjectives. The criterion with the strongest evidential support is that in questions of the form "How \(a\) is \(x\)?" only one member of the antonym pair, namely the marked member, presupposes that \(x\) is \(a\).\(^{19}\) For example, consider the pair "wide/narrow" in the following two questions:

\begin{align*}
\text{How wide is the river?} \\
\text{How narrow is the river?}
\end{align*}

The first question does not presuppose that the river is wide. The second question presupposes that the river is narrow. Accordingly, "narrow" is the marked member of the antonym pair.

Other criteria that have been proposed for distinguishing marked and unmarked members of antonym pairs of gradable adjectives are more problematic.\(^{20}\) I will discuss four of them. Christopher Kennedy appeals to one criterion in the following remark:

\[^{18}\text{These examples are drawn from Kennedy (2007) 34.}\]
\[^{19}\text{Cp. Lehrer (1985) 401-2.}\]
\[^{20}\text{Lehrer (1985) provides a good critique.}\]
"[Unmarked gradable] adjectives like 'tall,' 'full,' and 'wet' measure increasing amounts of a [gradable] property (if \( x \) is taller than \( y \), then \( x \) has more height than \( y \)), while [marked gradable] adjectives [in this case 'short,' 'empty,' and 'dry'] measure decreasing amounts of [the same gradable] property (if \( x \) is shorter than \( y \), then \( x \) has less height than \( y \))."\(^{21}\)

The problem here is that the principle does not seem to apply to many gradable antonyms. Consider "peaceful/violent," "impulsive/restrained," and "compact/diffuse." Which member of these pairs measures increasing amounts of the relevant gradable property? Relatedly, what justifies the claim that "full" rather than "empty" or "dry" rather than "wet" measures increasing amounts of the relevant gradable property? The answer seems to vary according to context. For example, in a context where the goal is to create a vacuum or to create a moisture-less environment, it would seem that "empty" and "dry" would denote increasing amounts of the gradable property.

Another criterion for distinguishing unmarked and marked members of an antonym pair of gradable adjectives pertains to measure phrase modification. In cases where a gradable adjective admits measure phrase modification, the member of an antonym pair that admits the modification is said to be unmarked, for example:

Paolo is six feet tall.
# Paolo is six feet short.

The pool is five feet deep.
# The pool is five feet shallow.

The canyon is 1.5 miles wide.
# The canyon is 1.5 miles narrow.

The problem here is that the principle cannot be extended to most antonym pairs because only a small number of gradable adjectives admit measure phrase modification.

Finally, Christopher Kennedy, drawing on the work of Pieter Seuren, endorses the following two criteria, which he subsumes under the category of monotonicity properties.\(^{22}\) The first involves the use of so-called positive and negative polarity items. A positive polarity item is an expression that can only occur in a context of affirmation, for example in the clausal complement of an affirmation. A negative polarity item is an expression that can occur only in a context of negation or denial. For example, consider the uses of the negative polarity item "anyone" in the following sentences (note that the complement clauses here are demarcated by straight line dividers):


He denied that anyone had been prosecuted.
* He affirmed that anyone had been prosecuted.

He disliked/did not like that anyone had been prosecuted.
* He liked that anyone had been prosecuted.

(It is a convention in linguistics to affix the asterisk symbol to the beginning of a sentence or expression to indicate that it is syntactically ill-formed.)

The criterion then is that the member of the antonym pair that licenses negative polarity items in a clausal complement is unmarked, whereas the member that does not license negative polarity items in a clausal complement is marked. In the following examples the negative polarity items within the complement clauses are italicized:

It's difficult for Tim to admit that he has ever been wrong.
It's terrible that you have to talk to any of these people at all.
It would be foolish of her to even bother to lift a finger to help.

* It's easy for Tim to admit that he has ever been wrong.
* It's great that you have to talk to any of these people at all.
* It would be clever of her to even bother to lift a finger to help.

According to this criterion, then, "difficult," "terrible," and "foolish" are the marked, and "easy," "great," and "clever" the unmarked members of the antonym pairs.

Second, Kennedy maintains that those members of antonym pairs that license upward entailments in clausal complements are unmarked, whereas those members that license downward entailments in clausal complements are marked. The first set of examples consists of upward entailments:

It is safe to drive fast in Rome.

It is safe to drive in Rome.

It is common to see Frances playing electric guitar poorly.

It is common to see Frances playing electric guitar.

The second set of examples consists of downward entailments:

It is dangerous to drive in Rome.

It is dangerous to drive fast in Rome.

It is strange to see Frances playing electric guitar.

It is strange to see Frances playing electric guitar poorly.

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According to this principle, "safe" and "common" are unmarked, and "dangerous" and "strange" are marked.

For all their interest, however, it is not clear that these two monotonicity criteria for distinguishing unmarked and marked members can be extended to most, let alone all, antonym pairs of gradable adjectives. For example, I see no way to construct diagnostic sentences using pairs such as "tall/short," "fast/slow," "deep/shallow."

The upshot of this discussion of the distinction between unmarked and marked members of antonym pairs of gradable adjectives then is somewhat negative and inconclusive: the distinction between unmarked and marked members rests on a disparate set of principles, each of which in most cases holds for a limited set of gradable adjectives. To be clear, the problem is not that various criteria are being used and may have to be used to diagnose unmarked and marked members. Rather, it is that unless the various criteria depend on a set of unified principles, then the distinction that one criterion reveals may not be the same property as the distinction that another criterion reveals. In other words, there may not be a single property of unmarkedness or of markedness, but several. But we won't know this unless we know that the various criteria do depend on unified principles.

Granted this, consider now the antonym pair of relative gradable adjectives "tall"/"short." Both adjectives denote degrees on open scales based on the gradable property of height. But "tall" and "short" clearly have different meanings. Consequently, the meanings of these adjectives must consist of some additional content. One proposal is that the scales of tallness and shortness have distinct and more precisely inverse scalar orientations. To clarify this point, let's first consider two standard comparative constructions, one incorporating "tall," the other "short":

\[ x \text{ is taller than } y. \]

This sentence compares the degrees of \( x \) and \( y \) on a single scale of tallness. The sentence states that on this scale, \( x \)'s degree is greater than \( y \)'s degree. What does it mean for \( x \)'s degree on the scale of tallness to be greater than \( y \)'s degree on that scale? It means that \( x \) has more height than \( y \). So the scale of tallness is structured in terms of increasing height, which we may represent as follows:

\[
\begin{align*}
\text{TALLNESS} \\
0 & \bullet \bullet \bullet \infty \text{ degrees of height} \\
\text{\( y \)} & \quad \text{\( x \)}
\end{align*}
\]

The arrow here indicates the scalar orientation of the scale of tallness.

Now consider a standard comparative construction involving "short":

\[ y \text{ is shorter than } x. \]

This sentence compares the degrees of \( y \) and \( x \) on a single scale of shortness. The sentence states that on this scale, \( y \)'s degree is greater than \( x \)'s degree. What does it mean for \( y \)'s degree on the scale of tallness to be greater than \( x \)'s degree on that scale? It means that \( y \) has less height than \( x \). So the scale of shortness is structured in terms of decreasing height, which we may represent as follows:

\[
\text{SHORTNESS} \\
\infty \quad \bullet \quad \bullet \quad 0 \text{ degrees of height}
\]

The arrow here indicates the scalar orientation of the scale of shortness. Consequently, the scales of tallness and shortness have inverse orientations: \( 0 \rightarrow \infty \) for tallness; \( \infty \rightarrow 0 \) for shortness.

In light of these points, consider the following sentence:

If \( x \) is taller than \( y \), then \( y \) is shorter than \( x \).

This sentence states that if, on a scale of tallness, \( x \)'s position is greater than \( y \)'s position, then, on a scale of shortness, \( y \)'s position is greater than \( x \)'s position. The explanation of the truth of this sentence is that if \( x \) has more height than \( y \), then \( y \) has less height than \( x \); and the scales of tallness and shortness have inverse scalar orientations.

Consider now the phenomenon Kennedy calls cross-polar anomaly. \(^{25}\) Cross-polar anomaly results from comparison that incorporates both members of a pair of gradable antonyms:

\(? \, x \text{ is taller than } y \text{ is short.}\)

As Kennedy writes: "such sentences demonstrate that comparatives formed out of [polarly antonymous gradable] adjectives are semantically anomalous." \(^{26}\) I suggest that for felicitous comparison to occur, the degrees of the relata (\( x \) and \( y \)) must be located on a single scale. Consequently, insofar as the sentence here is semantically anomalous, the anomaly is explicable on the grounds that degrees on two different scales are being compared. On this reading, the sentence states, anomalously, that \( x \)'s position on the scale of tallness is greater than \( y \)'s position on the scale of shortness.\(^{27}\)

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\(^{26}\) Kennedy (2001) 36.

\(^{27}\) Kennedy offers a different view, which depends on the claim that degrees are intervals.
Granted this, consider the sentence once again, but now in terms of what Kennedy calls *comparison of divergence*. Like cross-polar anomaly, comparison of divergence incorporates both members of a pair of gradable antonyms. However, comparison of divergence felicitously consists in comparison of the relata on a common scale. Precisely, this common scale measures degree of divergence from a common point. For convenience, I repeat the example sentence:

\[ x \text{ is taller than } y \text{ is short.} \]

We can represent this sentence according to its interpretation as a comparison of divergence by means of the following diagram:

\[ \text{DIVERGENCE FROM C} \]

\[ \begin{array}{c}
0 \leftarrow y \mid C \mid x \rightarrow \infty \text{ degrees of height}
\end{array} \]

Observe here that the common scale, divergence from C, is constructed on the basis of the distinct scales, including distinct scalar orientations, that "tall" and "short" lexically encode. This fact at least provides the beginning of an answer to the following question. Since the felicity of comparison of divergence may be based on the same sentence that yields cross-polar anomaly when interpreted in terms of two distinct scales, what determines the common scale that makes the comparison of divergence felicitous? I will not pursue the answer to this question further here, save to note the following. Comparison consisting of two different gradable adjectives triggers a psychological attempt to construct a common scale on the basis of the two distinct lexically encoded scales. I underscore that the two gradable adjectives needn't be antonyms; they need only be different. For example, compare the following two sentences:

\[ \text{The river is wider than it is deep.} \]
\[ \text{The tree is taller than its flowers are beautiful.} \]

To the extent that construction of a common scale is psychologically unachievable, semantic anomaly prevails. To the extent that common scale construction is achieved, comparison of divergence or some other semantically acceptable, but non-standard comparison results.\[29\]

I have introduced the preceding considerations to support the claim that a gradable adjective \( a \) denotes a degree on a scale, which is open or closed, which has a particular orientation, and which is based on a gradable property. I conclude these introductory remarks concerning the semantics of gradable adjectives by considering

\[29\] I have in mind here Kennedy's *comparison of deviation* (2001, 40).
their implications for "good." "Good" is a relative gradable adjective. Accordingly, "good" does not admit totality or fractional modifiers:

# Isabella is completely good at chess.
# Ronan is a fully good with children.
# The painting is half good.
# The meal was three quarters good.\(^{30}\)

Consequently, the scale associated with "good" is unbounded at the degree denoted by "x is good":

Isabella is good at chess. But she could be better.
The essay is good. But it could be better.

Likewise, the gradable antonym of "good," namely "bad," is a relative gradable adjective:

# Isabella is completely bad at chess.
# Ronan is a fully bad with children.
# The painting is half bad.\(^{31}\)
# The meal was three quarters bad.

And the scale associated with "bad" is unbounded at the degree denoted by "x is bad":

The meal was bad. But it could have been worse.
The essay is bad. But it could be worse.

With respect to the criteria for distinguishing unmarkedness and markedness—ineffective and problematic as they are—consider the following observations. First, compare the following questions:

How good is the film?
How bad is the film?

The presuppositions of these questions differ. The second question presupposes that the film is bad. The first question does not presuppose or only weakly presupposes that the film is good. The fact that questions of the form "How good is x?" may weakly presuppose that x is good is perhaps explicable on the grounds that questions of the

\(^{30}\) Contrast these last two sentences with the following two, with which they are not to be confused: "Half of the painting is good"; "Three quarters of the meal was good."
\(^{31}\) I note in passing the colloquial use of "half bad" in a negation: "The meal was not half bad." The intuitive meaning of this sentence is that the meal was, for the most part, good.
form "How is x?"—that is, without the adjective "good"—can be used to inquire into the value of x; for example:

How is the book?
How was the restaurant?

In that case, "good" is somewhat anomalous with respect to this diagnostic for un/markedness.

Second, "good" appears to be associated with having value, and "bad" with lacking value. The better x is, the more value x has. The worse x is, the less value x has. Accordingly, the scales of "good" and "bad" have inverse scalar orientations.

Third, recall that the measure phrase modification criterion is not applicable here since "good" and "bad" do not admit measure phrase modification. We simply lack general standards of measurement for value. "General" here is emphasized because we do have standards of measurement for some types of value, for example financial value. However, it is noteworthy that even in such cases measure phrase modification is unacceptable:

# He's earning a six figure good salary.
# She received a 89 point good score on her exam.32

Fourth, "good" does not license negative polarity items in clausal complements, whereas evaluative "bad" does:

* It's good that you have to talk to any of these people at all.
It's bad that you have to talk to any of these people at all.

Finally, "good" does not consistently license upward entailments in clausal complements; for example:

It's good to drive fast in Rome.
# It's good to drive in Rome.

It's good to see Frances playing electric guitar poorly.
# It's good to see Frances playing electric guitar.

32 I note in passing that "better" does admit some measure phrase modifiers: "My score on the first exam was two points better than on the second one." "The salary they're offering is three times better than what I'm getting paid now." Compare so-called factorial phrase modification of an equative phrase modifying "good": "My score on the first exam was twice as good as my score on the second exam."
And "bad" does not consistently license downward entailments in clausal complements; for example:

- It's bad | to drive in Rome |.
- It's bad | to drive fast in Rome |.
- It's bad | to see Frances playing electric guitar |.
- # It's bad | to see Frances playing electric guitar poorly |.

In sum, although the diagnostics for un/markedness are generally problematic, the evidence overwhelmingly supports the view that "good" is the unmarked and "bad" the marked member of the antonym pair.

3. The Problems of Compositionality and Significance

To this point we have suggested that the meaning of a gradable adjective consists of a degree on a scale, which is open or closed, which has a particular orientation, and which is based on a gradable property. For example, on this view, the meaning of "tall" is a degree on a scale, which is open, whose orientation is the inverse of that of "short," and which is based on the gradable property of height; and the meaning of "good" is a degree on a scale, which is open, whose orientation is the inverse of that of "bad," and which is based on the gradable property of value.

In the present section, I further refine this view by focusing on the degree constitutive of the meaning of the gradable adjective. Above we said that in the case of an absolute gradable adjective in the basic construction, the degree denoted by that adjective is the degree on the encoded scale at which that scale is bounded. For example, in "x is full," "full" denotes the degree on the scale of fullness at which the scale is bounded. Accordingly, as we also said, the degree denoted by "x is full" and "x is completely/100% full" are the same.

Granted this, consider now relative gradable adjectives. Since the scale encoded in the meaning of a relative gradable adjective is open, the degree denoted by the adjective in the basic construction appears to be indeterminate. For example, where on the scale of tallness does the degree denoted by "x is tall" lie? Let us assume that a relative gradable adjective \(a\) indeed denotes an indeterminate degree on the \(a\)-encoded scale. We may conceive of this indeterminate degree as a variable \(d\). Accordingly, \(a\) denotes a degree \(d\) on the \(a\)-encoded scale. Let's call this the indeterminacy interpretation of the semantics of relative gradable adjectives.

Consider now the following instance of the basic construction:

Paolo is tall.

According to the indeterminacy interpretation of the meaning of relative gradable adjectives such as "tall," this sentence should mean:
Paolo has a degree $d$ of height.

(Note that, for convenience, here and often hereafter I elide reference to the scale and its properties.)

Now, it is true that "Paolo is tall" entails that Paolo has a degree $d$ of height. But this itself does not entail that "Paolo is tall" means "Paolo has a degree $d$ of height." Indeed, "Paolo is tall" does not mean "Paolo has a degree $d$ of height." Every vertically extended entity has a degree $d$ of height. But not every vertically extended entity is tall. More precisely, "Paolo is tall" means:

Paolo has a significant degree of height.

We may gloss this sentence more simply as:

Paolo has significant height.

Generalizing, I will hereafter assume that when a relative gradable adjective occurs in the basic construction, the sentence can be glossed as:

$x$ has a significant degree of the $a$-encoded gradable property.

or more simply as:

$x$ has significant $G$ (where $G$ stands for the $a$-encoded gradable property).

In short, significance of degree (or something to that effect) is semantic feature of the basic construction when this construction incorporates a relative gradable adjective. For this reason, the property of significance of degree requires scrutiny. But it requires scrutiny for at least two additional reasons. One is that "significant" is itself a gradable adjective, indeed a relative gradable adjective. Hence, strictly speaking, the claim that the basic construction means that $x$ has a significant degree of the $a$-encoded gradable property entails a regress. I will return to this problem in section 6 below.

Presently, the property of significance of degree requires scrutiny because the sense of significance in the basic construction contradicts the indeterminacy interpretation. Of course, we could easily resolve the contradiction by simply jettisoning the indeterminacy interpretation. But there are compelling reasons not to. These reasons relate to a foundational principle of semantic theory: the principle of compositionality.

According to one version of the principle of compositionality, the literal meaning of a complex expression depends on the literal meanings of its constituents and the syntactic structure of those constituents. The basic construction is a complex expression. Again, it consists of a subject $x$, a copula, and a gradable adjective $a$. So the meaning of the complex should depend on the meanings of these constituents and their syntactic structure. The problem is that, in the case of relative gradable adjectives, the property of
significance of degree does not seem to derive from the meanings of any of the constituents, let alone the syntax of the basic construction.

To appreciate this claim, again consider the sentence "Paolo is tall." We maintain that this sentence means "Paolo has a significant degree of height" or simply "Paolo has significant height." Accordingly, as we've said, it appears that "tall" denotes a significant degree of height. After all, for any $x$, "$x$ is tall" means "$x$ has a significant degree of height." But now assume that Paolo is a full-grown man whose height measures five feet exactly; and consider the following sentence:

Paolo is five feet tall.

Here "tall" appears not to denote a significant degree of height. On the contrary, if Paolo is a full-grown man and he is five feet tall, then he is short. Yet "Paoli is five feet tall" is true; "tall" is a constituent of the sentence; and again, according to one version of the principle of compositionality, the literal meaning of the sentence depends on the meanings of its constituents and their syntax.

In contrast to the significant degree associated with a relative gradable adjective $\alpha$ in the basic construction, in the measure phrase construction the degree that $\alpha$ denotes does not have the sense of significance. Accordingly, I will speak of the sense of the degree denoted by the gradable adjective in the measure phrase construction as non-significant. The non-significant sense in a wide range of constructions. For example, consider the following dialogue:

A: How tall is Paolo? (NON-SIGNIFICANT)
B: He's five feet tall. (NON-SIGNIFICANT)
A: That's not tall; in fact, five feet tall (NON-SIGNIFICANT)
is short. (SIGNIFICANT)

In A's initial interrogative, "tall" has a non-significant sense. In the measure phrase constructions in B's reply and A's reply, "tall" has a non-significant sense. In the negated clause in A's reply, "tall" has a significant sense. And at the end of A's reply, "short" has a significant sense.

Compare "good." To be sure, "good" does not admit measure phrase modification. Also, as we've noted, the interrogative "How good is $x$?" may weakly presuppose that $x$ is good. Nonetheless, consider the comparatives "better" and "best" in the following, semantically felicitous sentences:

This cell phone may be better than that one, but neither is good.
This is the best solvent the hardware store sells; but it's not good.

Compare:

Dax is taller than Jett, but neither is tall.
Dax is the tallest of Adam's sons; but none of them is tall.

The point here is that the meanings of the comparatives and superlatives derive from the meaning of the basic form. But, more precisely, the meaning of the basic form from which they derive is non-significant. So if, as the basic construction indicates, the meaning of the basic form has a significant sense, then we have a compositionality problem.

Finally, in introducing the compositionality problem in terms of a distinction between significant and non-significant senses of the relative gradable adjective, I have not specified the relation between the indeterminacy interpretation and the non-significant sense. The relation is precisely that the non-significant sense is the indeterminate sense. I will clarify this claim in the next section.

4. The Standard Solution to the Compositionality and Significance Problems

As we have said, the indeterminacy interpretation holds that the meaning of a relative gradable adjective $a$ encodes an indeterminate degree $d$ on a scale based on the $a$-encoded gradable property. Granted this, the indeterminacy interpretation facilitates compositionality as follows. In complex constructions, that is, in constructions that involve modification of the basic form of the relative gradable adjective, the modifier either binds or saturates the degree variable $d$. It is such binding or saturation that endows the sentences with their intuitive meanings. For example, consider the measure phrase construction:

Paolo is five feet tall.

Here the measure phrase "five feet" saturates the degree variable $d$ denoted by "tall," and thereby yields the expected meaning that the degree to which Paolo has height has the value of five feet.

Compare the following comparative construction:

Paolo is taller than Isabella.

In this case, the comparative morpheme "-er" introduces a complement clause headed by "than," namely "than Isabella." The complement clause in fact involves predicate ellipsis:

Paolo is taller than Isabella is tall.

So both the main clause "Paolo is tall" and the complement clause "than Isabella is tall" introduce degree variables: the degree $d$ to which Paolo is tall and the degree $d'$ to which Isabella is tall. Assume that the comparative morpheme "-er," which modifies "tall" in the main clause, denotes a binary degree operator that takes two degrees and
orders them according to the greater-than relation. In that case, "Paolo is taller Isabella" is interpreted, as expected, to mean that the degree of height that Paolo has \( d \) is greater than the degree of height that Isabella has \( d' \).

Finally, consider the equative construction:

Paolo is as tall as Ronan.

Here the equative degree modifier "as" (the first "as") introduces a complement clause headed by (the second) "as," namely "as Ronan." Here too the complement clause involves predicate ellipsis:

Paolo is as tall as Ronan is tall.

Again assume that the equative modifier "as," which modifies "tall" in the main clause, denotes a binary degree operator that takes two degrees and orders them, in this case according to the at-least-as-great-as (\( \geq \)) relation. In that case, "Paolo is as tall as Ronan" is interpreted, as expected, to mean that the degree of height that Paolo has \( d \) is at least as great as the degree of height that Ronan has \( d' \).\(^{33}\) (I underscore that in the comparative and equative constructions, the degrees of height Paolo and Isabella and in turn Paolo and Ronan have are specified only in relation to one another.)

These considerations provide support for the indeterminacy interpretation of relative gradable adjectives. Granted this, the problem of the significant sense of the degree in the basic construction has not been unaddressed. Again, since the basic form is unmodified, according to the indeterminacy interpretation the meaning of the basic construction is predicted to be: \( x \) has degree \( d \) of the \( a \)-encoded gradable property. By means of what is called *existential closure*, the interpretation of an unbound or unsaturated free variable defaults to an existential reading. That is, "Paolo has height to degree \( d \)" defaults to "Paolo has height to some degree." But this result is unsatisfactory since, as we've claimed, the basic construction actually means that \( x \) has a significant degree of the \( a \)-encoded gradable property. Where then does the sense of significance in the basic construction come from? Let's call this aspect of the compositionality problem the *significance problem*.

The earliest and most common solution to the significance problem is the postulation of a covert (hidden, phonologically null) degree morpheme in the (overtly) unmodified basic construction. By "covert" is meant that the degree morpheme is not expressed in the surface syntax; hence it is not pronounced or written. This covert morpheme is standardly called *pos*, short for "positively" or "positive form."\(^{34}\) On this view, the basic construction is not in fact unmodified; again it contains a degree

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\(^{33}\) For a more thorough and formal analysis of these constructions, cp. e.g. Sigrid Beck, "The Meaning of Too, Enough, and So ... That," *Natural Language Semantics* 11 (2003) 69-107, at 77-81.

\(^{34}\) The name derives from the term "positive" first mentioned with respect to grades of comparison.
modifier, but again covertly. The full form of the basic construction may be represented as:

\[ x \text{ is } \text{pos-}a. \]^{35}

Since \text{pos} was introduced precisely to explain the sense of significance in the basic construction, the semantic function of \text{pos} is to boost to a level of significance the indeterminate degree \( d \) encoded in the meaning of the relative gradable adjective. Typically, \text{pos} is understood to perform this semantic function analogously to the operation of the comparative and equative degree modifiers, that is, by relating a degree borne by one entity to a degree borne by another entity. In the case of the basic construction, one degree is of course derived from the subject \( x \) of which \( a \) is predicated. For example, in "Paolo is tall," it is the degree of height that Paolo has. In contrast to the comparative and equative constructions, however, the basic construction lacks a complement clause. What then is the source of the second degree?

The basic answer to the source of the second degree is: context. More precisely, the second degree is typically referred to as the standard of comparison or standard degree. The intuitive idea is that for \( x \) to be \( a \), for example, for Paolo to be tall, \( x \) must meet or exceed a standard. The standard degree or standard of comparison is based on a so-called comparison class. A comparison class is a subset of the universe of discourse specified by the context in which \( a \) is used.\(^{36}\) For example, in one context "Paolo is tall" may be used to mean that Paolo is tall relative to his siblings; in another context, that Paolo is tall relative to his classmates. In the former case, Paolo's siblings constitute the comparison class; in the latter case, Paolo's classmates do.

Observe that comparison class specification can be overtly lexicalized by an adjoined "for"-prepositional phrase:

Paolo is tall for a twelve year old boy.
Paolo is tall for his class.

Consider also cases where the gradable adjective attributively modifies a noun phrase, for example:

Paolo is a tall sixteen year-old boy.

\(^{35}\) \text{pos} was first proposed by Bartsch and Venneman (1972, 175).

\(^{36}\) Cp. Ewan Klein: "A comparison class is a subset of the universe of discourse which is picked out relative to the context of use. A similar idea is involved in restricting the range of quantifier phrases. The truth, in a context [C], of everybody is having a good time, depends on the domain of quantification, and this will typically be a small subset of all things that could possibly be talked about in [C]." (1980, 13) Klein notes that the concept of a comparison class is used as early as R. M. Hare, The Language of Morals, Clarendon Press, 1952. Precisely, R. M. Hare introduces the phrase "class of comparison" first at 133.
The nominal expression, here "sixteen year old boy," typically makes salient a property that determines membership in the comparison class. Once again, however, no such overt lexical specification or indication of the comparison class is required for an instance of the basic construction to be felicitous.\(^{37}\)

Granted this, it is contested how the standard of comparison is determined on the basis of the comparison class. For the sake of simplicity, assume for now that the standard of comparison is derived through an average function. Consequently, in a context where the sentence "Paolo is tall" is used to mean that Paolo is tall relative to his classmates, the standard of comparison derives from the average of the set of degrees of the heights of Paolo's classmates. In that case, we may assume, \( \text{pos} \) relates Paolo's degree of height \( d \) to the degree that is the standard of comparison \( d' \) according to the greater-than (>) relation. Consequently, in this context "Paolo is tall" is interpreted to mean that the degree of height that Paolo has \( d \) is greater than the average of the degrees of height that his classmates have \( d' \).

In short, \( \text{pos} \) denotes a context sensitive function that determines a standard of comparison by distinguishing a comparison class and deriving a degree value through some algorithm, perhaps the average function, based on the members of that class.

Compare Christopher Kennedy's remark:

"\( \text{pos} \) is a context-sensitive function that chooses a standard of comparison in such a way as to ensure that the objects that the [basic] form is true of [in our example, Paolo] 'stand out' in the context of utterance, relative to the kind of measurement that the adjective encodes."\(^{38}\)

I will return to Kennedy's remark below, and in particular to the idea of "standing out." Presently, we can suggest that to "stand out" in the context of utterance is equivalent to having a significant degree of the \( a \)-encoded gradable property.\(^{39}\)


\(^{38}\) Kennedy (2007) 17.

\(^{39}\) An alternative solution, noted by Kennedy, is that in the basic construction, \( a \) undergoes a type-shift that is equivalent to \( \text{pos} \ a \): "the content of my proposals and argumentation remains the same if we assume instead that 'the positive degree morpheme \( \text{pos} \)' is really 'the positive type-shifting rule \( \text{pos}.\)'" (2007, 7) But cp. Rett's remarks on type-shifters: "The phrase 'positive type-shifting rule' obscures the fact that degree-semantic approaches to the meaning of gradable adjectives require two distinct fixes, a type fix (addressing the extra argument problem) and a meaning fix (addressing the [significance] problem). Traditionally, type-shifters only provide the former sort of fix; a type-shifter that affects the truth-conditions of a sentence isn't a mere type-shifter. In a compositional theory in which the meaning of a sentence is composed of the meaning of its parts and the rules used to combine those parts, type-shifters fall into the latter category, but \( \text{pos} \) is a member of the former." (2015, 31)
In concluding this standard account of the compositionality problem for complex constructions that incorporate relative gradable adjectives and the significance problem for basic constructions incorporating relative gradable adjectives, we can now clarify the terminology "relative" and "absolute" employed to distinguish the two classes of gradable adjectives. A relative gradable adjective is so-called precisely insofar as the degree it denotes in the basic construction varies in relation to a contextually sensitive standard of comparison. In contrast, as we have seen, the degree denoted by an absolute gradable adjective in the basic construction is fixed. Precisely, it is fixed to the degree at which the scale encoded in the adjective is bounded. In other words, it invariably denotes the maximal degree on the scale.

5. Rett's Implicature Theory

Among degree-based theories, appeal to pos or at least to some such covert degree morpheme, is the standard solution to the compositionality problem and to the sub-problem of significance. Recently, however, Jessica Rett has adduced several reasons for rejecting pos. In doing so, she has also advanced an ingenious alternative, which I will explain here.40

The most important reason Rett endorses for rejecting pos as a solution to the compositionality and significance problems is that the sense of significance of degree is not restricted to the basic construction.41 For example, consider:

Paolo is as short as Ronan.

This sentence entails that Paolo is short, hence that Paolo has a significant degree of shortness or a significant lack of height. Generalizing, the sense of significance of degree occurs with the marked member of a pair of gradable antonyms in equative constructions. In addition, as we have seen, the sense of significance of degree is presupposed in degree questions with the marked antonym. For example, the question:

How short is Toby?

presupposes that Toby is short.

The sense of significance of degree also occurs in degree demonstratives that employ the marked antonym.42 For example, imagine that the speaker is pointing to a height:

Toby is that short.

This sentence entails that Toby is short.

41 The property I am calling "significance of degree," Rett calls "evaluativity." (2015, 1)
In sum, the pos theory cannot explain and, more damagingly, is inconsistent with this distribution of the sense of significance of degree.

Another reason that appeal to pos is untenable is that the sense of significance of degree is a universal property of certain gradable constructions. By "universal" property here is meant that the sense of significance of degree is a property of certain gradable constructions throughout the world's languages. Consequently, if pos existed, we would expect it "to be (overtly) lexicalized in at least some languages." But there is no compelling evidence that it is. How then is the sense of significance of degree and its peculiar distribution — for example, in "x is as short as y," but not "x is as tall as y" — to be explained? Rett's solution is inspired and informed by the theory of implicature. As Grice, who first introduced the theory, understands it, an implicature is the content of an expression, for example of a sentence, that is non-deductively implied by the use of that expression, where the implied content differs from the literal, conventional, or explicitly encoded meaning of the expression, which Grice calls "what is said." For example, consider the following sentence:

Joe ate lunch and took a walk.

This sentence implicates:

Joe took a walk (shortly) after eating lunch.

However, the truth-conditions of "Joe ate lunch and took a walk" merely require that Joe performed each of the acts: eating lunch and taking a walk.

Grice further distinguishes conventional from conversational implicatures. In the former case, the implicature is encoded lexically and is never cancellable. For example, consider the following sentence:

Gail is taking Chinese cooking lessons, so Joe bought her a wok.

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Here "so" conventionally implicates that the second clause explains the first. Consequently, the following continuation is unacceptable:

Joe is taking Chinese cooking lessons, so Gail bought him a wok.

But Gail did not buy Joe a wok because he is taking Chinese cooking lessons.

As Yan Huang remarks:

"a conventional implicature is a non-truth-conditional inference that is not deductive in any general, natural way from the saying of what is said, but arises solely because of the conventional features attached to particular lexical items and/or linguistic constructions."

In contrast to conventional implicatures, conversational implicatures are the result of a hearer reasoning about the utterance relative to the utterance context or conversation. For example:

Bernie has two children.

conversationally implicates that Bernie has exactly two children. Grice holds that because conversational implicature is not lexicalized, it is cancellable. For example, the following is acceptable:

Bernie has two children. In fact he has four, two are from his former marriage.

Here the cancellation signifier "in fact" in the second sentence indicates that the implicature of the first sentence, that Bernie has exactly two children, is being cancelled.

Grice further distinguishes between generalized and particularized conversational implicatures. Generalized conversational implicatures do not require any particular contextual conditions, while particularized conversational implicatures do. For instance:

Most of Joe's siblings live in the United States.

This sentence implicates that not all of Joe's siblings live in the United States. This is a generalized conversational implicature since any sentence of the form "most Fs are G" implicates that not all Fs are G. One might then wonder why this implicature is not conventional. One reason is that the implicature is cancellable:

47 The example is adapted from Yan Huang, Pragmatics, Oxford University Press, 2007, 55.
48 Huang (2007) 54.
Most of Joe's siblings live in the United States. In fact all of them do.

Contrast this with the following exchange:

A: Where is Joe?
B: The light is on in his office.

Here speaker B's statement implicates that Joe is in his office. But this implicature requires particular contextual conditions.

Grice holds that conventional and conversational implicature are categorically distinct in virtue of properties such as cancillability. In contrast, Rett maintains that "there is a continuum from conventionalized to particularized conversational implicature based on the varying extent to which an implicature is grammaticalized ('conventionalized') in a lexical entry or phrase." Rett (2015) 71. This point is crucial to Rett's account since she argues that the sense of significance of degree is a conversational implicature, but a non-cancellable one.

More precisely, Rett explains the sense of significance of degree in a basic construction incorporating a relative gradable adjective as a so-called quantity implicature, and the sense of significance of degree in equative constructions and degree demonstratives and questions incorporating a relative gradable adjective with antonymously marked gradable adjectives as a so-called manner implicature. The terms "quantity implicature" and "manner implicature" derive from Grice's pragmatic maxims of conversation, among which are maxims of quantity and manner. I will limit my discussion here to Rett's account of the sense of significance degree in the basic construction and so in terms of quantity implicature.

Let us return to our paradigm sentence "Paolo is tall." According to the indeterminacy interpretation, "tall" denotes an indeterminate degree of height. Given existential closure, the sentence is then be interpreted as:

Paolo has height to some degree.

Or simply:

Paolo has some height.

Recall that while this result is consistent with the composition of complex constructions derived from the basic form of a relative gradable adjective, it is untenable for the basic construction itself since every individual that has height will satisfy the description of being tall. With this in mind, consider Grice's first maxim of quantity:


And consider Grice's remark on tautologies:

"Extreme examples of a flouting of the first maxim of quantity are provided by utterances of patent tautologies like 'Women are women' and 'War is war.' I would wish to maintain that at the level of what is said, in my favored sense, such remarks are totally uninformative and so, at that level, cannot but infringe the first maxim of Quantity in any conversational context. They are, of course, informative at the level of what is implicated, and the hearer's identification of their informative content at this level is dependent on his ability to explain the speaker's selection of this particular patent tautology."\footnote{Rett (2015) 119, citing Grice (1975, 52).}

The tautologous meaning of sentences of the form "x is \( \varphi \)" would flout Grice's first quantity maxim. Consequently, Rett argues, such constructions undergo semantic adjustment. The adjusted sense of "x is \( \varphi \)" is closer to:

\[ x \text{ has the } \varphi\text{-encoded gradable property to a significant degree.} \]

Granted this, as Rett observes, an individual x may have a significant degree of the gradable property in one of two ways: by significant excess or significant deficit. The adjusted sense of "x is \( \varphi \)" is in fact intensified rather than diminished. Rett remarks that she cannot explain why the semantic adjustment operates through intensification rather than diminution; however she cites evidence, originally adduced by Dwight Bolinger, that "degree constructions or other gradable forms systematically receive intensified readings where they are logically compatible with other interpretations."\footnote{Rett (2015) 101.} For example, ambivalent degree modifiers such as "so" and "how,"\footnote{Note that "ambivalent" is my term. Rett uses "neutral."} that is, modifiers that in principle should be able to intensify or diminish, only receive intensifying interpretations; for example:

- He is so smart.
- How beautiful she looks.\footnote{Other examples are given at Rett (2015) 102. Rett writes: "The relevant observation is that these examples all unambiguously involve intensification despite the fact that they}
Compare the interpretations of the indefinite article and the existential quantifier in the following sentences:

Now that's a catch.
What a performance.
That's some fish you've caught.
She is some woman.

I will not attempt to explain the intensifications involved in the noun phrases. But the intensification of degree with gradable adjectives seems explicable in terms of the property of scalar orientation — rather than the mere gradable property — encoded in the adjective. For example, if the semantic adjustment of "x is tall" involved a diminution of degree, then "x is tall" would mean what "x is short" intuitively means; and vice versa. In other words, informally "tall" means "has height to some/to a significant degree," while "short" means "lacks height to some/to a significant degree."

In short, according to Rett's theory, in the basic construction the degree $d$ that $a$ denotes is semantically intensified or strengthened through a quantity implicature, more precisely through what Rett describes as an "un-informativity-based" quantity implicature. Consequently, Rett achieves a similar result to the pos solution, without resorting to pos.57

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57 Rett's interpretation should be also compared to D. Lassiter and N. Goodman, "Context, Scale Structure, and Statistics in the Interpretation of Positive-Form Adjectives," SALT 23 (2013) 587-610. Like Rett, Lassiter and Goodman do not subscribe to pos. Hence they maintain that when a gradable construction contains no degree operator (as in the case of the basic construction), the standard degree remains unsaturated and pragmatic inference must determine its value. (With respect to compositionality, they suggest that in other gradable constructions the denotation of the unmodified gradable adjective may be "type-shifted to allow composition to proceed.") Their pragmatic solution depends on game-theoretic and Bayesian theories of linguistic coordination. "Speaker and listener share the goal of coordinating utterance and interpretation so as to maximize the probability that the listener" will interpret the utterance correctly. Lassiter and Goodman define the "utility of [an utterance] for a reflective speaker to be proportional to [the] informativity [of the utterance] to the literal listener about the [true content], minus a non-negative cost." And they "quantify informativity ... as surprisal." For example, consider a case such as "Paolo is tall," where both speaker and listener understand that Paolo is an adult male and share background knowledge about heights for adult males. If the value of the standard degree were extremely small, for example, one inch, then, since the utterance would be highly uninformative, the probability that the speaker would intend to convey such a proposition would be extremely low. "The informativity of [the sentence, thus,]
Finally, it must be stressed that while Grice's theory of implicature is a pragmatic theory, Rett maintains that the meaning adjustment that the relative gradable adjective in the basic construction (and elsewhere) undergoes is semantic, not pragmatic. In other words, recall that Grice holds that implicatures do not affect a sentence's truth-conditions and so are not entailments of the sentence. However, Rett suggests that this depends on the content at issue in the context of utterance. For example, compare the following two exchanges, derived from Jan van Kuppevelt's discussion of implicatures as topic-dependent inferences:

A: Who bought four books?
B: Harry bought four books. In fact he bought five.

A: How many books did Harry buy?
B: He bought four books. # In fact he bought five.

In the first exchange the identity of the buyer is at issue. In the second, it is the number of books he bought. Where the number is at issue, the implicature— that Harry bought exactly four books— is not cancellable. Hence, as van Kuppevelt suggests and Rett maintains, in this context "He bought exactly four books" appears to be an entailment of "He bought four books."  

Likewise, Rett maintains, the quantity implicature that occurs in the basic construction is an entailment and so constitutive of truth-conditional content. For example, it can be embedded under truth-conditional operators such as negation and conditionals:

Paolo is not tall.
If Paolo is tall and Ronan is taller than Paolo, then Ronan is tall.

Compare Rett's statement:

increases [as the value of the standard increases]." On the other hand, informativity does not lead to extremely high values for the standard, since the "low prior probability of the [sentence's] truth under [very high] values" counter-balances such interpretations. The result is that the preferred interpretations "make [Paolo] fairly tall, but not implausibly so." In short "background knowledge ... interacts with lexical meaning and the pragmatic preference for informativity to yield a context-sensitive probabilistic meaning." The concept of informativity, understood in terms of surprisal, is evidently akin to the concept of significance that is central to Rett's account. Moreover, the pragmatically saturated value of the standard is equivalent to the significant degree.

"I'm happy to admit, for instance, that [such] implicature differs from other sorts in that it occurs in embedded contexts, so must be calculated subsententially, and, then, is arguably not pragmatic."\textsuperscript{60,61}

6. Significance

So what is the meaning of a gradable adjective? More precisely, what is the meaning of the basic form of the unmarked member of a relative gradable adjective \textit{a}, for example "tall" or "good"? The answer crucially depends on how we respond to the significance problem and in turn on the context in which \textit{a} occurs. By itself and in non-significant constructions, \textit{a} has an indeterminate meaning: it denotes an indeterminate degree \textit{d} on an open scale, with a particular scalar orientation, based on an \textit{a}-encoded gradable property such as height or value. But given the untenability of the \textit{pos} theory and following Rett's implicature theory, in significant constructions such as the basic construction, \textit{a} undergoes a semantic adjustment through an uninformativity-based quantity implicature so that \textit{a} denotes a significant degree on the scale based on the \textit{a}-encoded gradable property.

\textsuperscript{60} Rett, p.c.

\textsuperscript{61} I note here a problem for both Rett's theory and for the \textit{pos} theory. This problem concerns the interpretation of absolute gradable adjectives. Consider first the \textit{pos} theory, according to which \textit{pos} relates one degree \textit{d} to a standard of comparison \textit{d}' based on a contextually sensitive comparison class. In an instance of the basic construction that incorporates an absolute gradable adjective, for example "\textit{x} is full," the absolute gradable adjective cannot be covertly modified by \textit{pos}. That is, the full form of the basic construction cannot be: "\textit{x} is \textit{pos}-full." So absolute gradable adjectives in the basic construction require a distinct account. But complex constructions, that is, constructions involving modification of the absolute gradable adjective, also require a distinct account. For example, consider the comparative sentence: "Paolo's cup is fuller/more full than Isabella's cup." If we could apply the indeterminacy interpretation to absolute gradable adjectives, the meaning of this sentence would be: the degree to which Paolo's cup is full \textit{d} is greater than the degree to which Isabella's cup is full \textit{d}'. However, our account of the indeterminacy interpretation was of relative, not absolute, gradable adjectives. Alternatively, we might propose to extend the indeterminacy interpretation to include all gradable adjectives. But then we would have to find an alternative to \textit{pos} to explain the reading of absolute gradable adjectives in the basic construction. In short, if absolute gradable adjectives denote indeterminate degrees, then how do they denote maximal degrees in the basic construction? For a response to this problem by an advocate of \textit{pos}, cp. Kennedy (2007) 36. Turning to Rett's implicature theory — this theory proposes to explain the semantics of relative gradable adjectives, and does \textit{not} focus on the semantics of absolute gradable adjective. As such, the implicature theory is incomplete. This is a serious limitation of Rett's account. But consider her remarks at (2015) 130-146.
This result leaves several crucial questions unanswered. One question is what significance of degree consists in. Recall and compare here Kennedy's expression: the degree to which an x has the a-encoded gradable property must "stand out" in the context of utterance. I underscore that, while things may stand out or be significant in any number of ways, in the present context we are concerned with something's standing out or being significant with respect to the quantity of the degree of the gradable property that that thing has.

In the discussion of pos, I suggested — merely for convenience — that the standard of comparison might be computed through an average function. For example, on this view "Paolo is tall for his class" means that the degree of Paolo's height exceeds the average height of Paolo's classmates. Regardless of pos, on this view significance of degree is equivalent to the degree exceeding an average. But this is untenable. If Paolo's height exceeded the average of his classmates' heights, but only by a tiny amount, Paolo would not be tall for his class.

The phrases "standing out" and "being significant" may encourage the idea that the property of significance of degree should be explained as relative to a cognitive state, namely the cognitive state of the individual assessing that significance. But Kennedy suggests that significance might be explicable according to a "purely distributional criterion." In support of this hypothesis, consider the following example. Assume that in the region where you have always lived the apples tend to be small. If you travel elsewhere and for the first time encounter an apple that, while being of average size, is significantly larger than the apples in your region, you might remark: "This apple is large." In this case the apple is large compared to your regional apples. But according to terms of the example, the apple is not in fact large, but of average size.

The apple is, then, large to you or for you. But the "to"- or "for"-prepositional phrases here precisely serve to restrict the comparison class to those that you have encountered. Furthermore, although in the present case "This apple is large to/for you" (in contrast to "This apple is large") is true, in general even when the comparison class is restricted to entities that the assessor has experienced, the assessor's judgments of significance may be mistaken. So this result further encourages the hypothesis that significance is purely distributional.

Granted this, what sort of distribution might significance of degree consist in? The topic has received surprisingly little attention. Among the few treatments it has received, the following proposal by Stephanie Solt seems to me an attractive, if underdeveloped line of inquiry.

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64 Solt (2011).
Assume that we are concerned with the unmarked member of the antonym pair $a$, and that $a$, qua unmarked, measures increasing amounts of the gradable property, for example height. Individuals assessable for possession of the gradable property in question, say height, may be neither $a$ nor the antonym of $a$, for example, neither tall nor short. Accordingly, in a given context there is a range of neutral degrees, again degrees whose possession entails that $x$ is neither $a$ nor the antonym of $a$. Let $s_+$ symbolize significant excess of the gradable property. So to determine $s_+$, we must determine the upper bound of the range. The range depends on the dispersion of values of the members of the comparison class. Solt formalizes these ideas using a median and the statistical concept of a median absolute derivation MAD.\footnote{Solt (2011) 193-95.}

Observe that in a symmetric distribution, the central fifty percent of cases fall within one MAD of the median.\footnote{Solt (2011) 194.} Accordingly, an individual that is $a$ will belong to the upper quartile relative to the comparison class (while an individual that is the antonym of $a$ will belong to the lower quartile). The value of the range can therefore be given as:

$$R = MED(m(x)) \pm n \times MAD(m(x)).$$

Here $R$ stands for the range relative to a given comparison class; $MED$ stands for a median function; $m$ stands for a function that returns the degree of the scale based on the gradable property at issue for each individual $x$ that is a member of the comparison class. Since we are proposing to determine one MAD of the median, assume $n = 1$.\footnote{Since $1 \times MAD(m(x)) = MAD(m(x))$, the inclusion of $n$ is unnecessary if its value = 1. However it is included here precisely because the value of $n$ as 1 is questioned below.} Accordingly, this formula states that the range $R$ relative to a given comparison class equals the median value of the gradable property based on the individuals $x$ in the comparison class plus or minus 1 times the median absolute derivation of the gradable property based on the individuals in the comparison class. Let $R_+$ stand for the upper bound of $R$. Then on this view, $s_+ > R_+$.

As Solt notes, however, an empirical study on "tall" in fact suggests that this unmarked relative gradable adjective is used to denote approximately the upper third, rather than quartile, of individuals in a given domain.\footnote{Solt (2011) 194, citing D. Barner and J. Snedecker, "Compositionality and Statistics in Adjective Acquisition: 4-Year-Olds Interpret Tall and Short Based on the Size Distributions of Novel Noun Referents," Child Development 79 (2008) 594-608.} Assuming that this fact is representative of unmarked relative gradable adjectives generally, the value of $n$ must be lowered. Regardless, the gist of Solt’s hypothesis, which again is consistent with Kennedy’s suggestion that significance is purely distributional, is that significance of degree is a statistical concept and in particular based on the concept of deviation from a norm.

Clearly more empirical work needs to be done on a wider range of gradable adjectives in order to corroborate the core idea as well as to specify the value of $R$ and
the statistical operations on which it is based. Moreover, in considering the relevance of such work for the semantics of an adjective such as "good," it must be borne in mind that "good" does not license measure phrase modification. More fundamentally, as noted above, in contrast to height for example, there is no single standard of measurement for value and in most cases no standard of measurement at all.

Finally, recall the problem that the adjective "significant" is itself gradable. Consequently, the claim that the basic construction means "x has a significant degree of the a-encoded gradable property G" or simply "x has significant G" yields a regress. In light of Solt's account of significance, we can skirt the regress problem by simply acknowledging that the terms "significant" and "significance" are here employed for convenience and as heuristics. What it means for a subject x to have a significant degree of the a-encoded gradable property is for x to have a degree of the gradable property that exceeds R+ (or some such value). Throughout this study, I will continue to use the terms "significant" and "significance," but again for convenience and heuristically.

7. A Historical Coda

As a coda to the preceding discussion of the semantics of gradable adjectives, I offer the following historical reflection on the importance of the thesis that "good" is a gradable adjective.

Throughout the history of Western philosophy, philosophers who have focused on what is good have expressed the concept corresponding to "good" in terms of their written and spoken languages; for example, "ἀγαθόν," "bonum," "bon," and "gut"—all of which are relative gradable adjectives. For example, Plato maintains that the Form of the Good is the supreme Form. But surely the Form of Excellence would be better than the Form of the Good. In fact, in Gorgias Plato has the character Socrates explicitly claim that everything that is good is good in virtue of some excellence (aretē) that it possesses. But that cannot be true; x may be good simply in virtue of possessing goodness or some good.

Aristotle begins the Nicomachean Ethics with the psychological claim that everything strives for what is good. Setting aside the psychological possibility of pursuing the bad qua bad, some things surely desire what is best. The Stoics maintain that the only thing that is good is excellence and what depends on excellence. Even if that were true, excellence and what depends on it would be best, not just good.

Spinoza maintains that a thing is objectively good insofar as it is powerful. Assuming so and assuming the existence of a supremely powerful God, such power

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69 Republic 504eff.
70 Gorgias 506d.
71 Nicomachean Ethics 1094a.
72 Or, more egregiously, cp. Magna Moralia 1182b: "By 'good' we may signify either what is best (ariston) in each class of things or …"
73 Stobaeus 2.57.19 (= SVF 3.70).
74 Cp. Ethics, Part 1, Appendix.
would be objectively excellent, not merely good. Rousseau claims that in its savage state humanity was naturally good. But he also maintains that the savage state is a state of human perfection.\textsuperscript{75} So he should hold that the savage state is best, not merely good. Kant claims that the only thing that is unconditionally good is a good will.\textsuperscript{76} But surely such a will is, at least for humans, optimal, and not merely good. In the \textit{Philosophy of Right} Hegel claims that the ethical life "is the Idea of freedom as the living good which has its knowledge and reason in self-consciousness, and its actuality through self-conscious action."\textsuperscript{77} But once again the condition here described is by Hegel's own lights optimal, not merely good.

All of these philosophers might have used the words "ἀγαθόν," "bonum," "bon," "gut," and "good" to express different concepts. Some might have had the concept \textsc{Excellent} in mind. Spinoza in particular probably had the concept \textsc{Perfect} in mind. Kant perhaps had in mind the concept \textsc{Right}. Reading texts may require mindreading. But it is a substantive thesis that "good" does not mean "excellent" or "perfect" or "right." "Right" is not a gradable adjective. "Perfect" is not a relative gradable adjective. And "excellent" is a so-called extreme adjective; it denotes a very high degree on a scale.\textsuperscript{78} Compare "huge" and "tiny" in contrast to "large" and "small." Moore defines ethics as "the general inquiry into what is good."\textsuperscript{79} But evidently ethics has been concerned and should continue to be concerned with superlative as well as merely significant value.

\textsuperscript{75} Cp. Beaumont 935-6; Dialogues III: 934; Second Discourse 151; Emile II: 92.
\textsuperscript{76} Groundwork 393.
\textsuperscript{77} §142.
\textsuperscript{78} Cp. Morzycki (2015) 140-44.
\textsuperscript{79} \textit{Principia Ethica} §2.