Hadas Kotek

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Total-Partial Gradable Adjectives in Plurals and Donkey Sentences: a Scale Analysis

I The basics:

Total-Partial Gradable Adjectives (TPGAs) are antonymous pairs in which one member is interpreted as *existential* (dirty, open, dangerous...) or *Partial*; and the other as *universal* (clean, closed, safe...), or *Total*, in compliance with the observation in (1):

(1)	*Dirty*	≈ has some degree of dirtiness	!≈ has no degree of cleanliness
	Clean	≈ has no degree of dirtiness	!≈ has some degree of cleanliness
	Dangerous	≈ has some degree of danger	!≈ has no degree of safety
	Safe	≈ has no degree of danger	!≈ has some degree of safety.

Types of gradable adjectives:

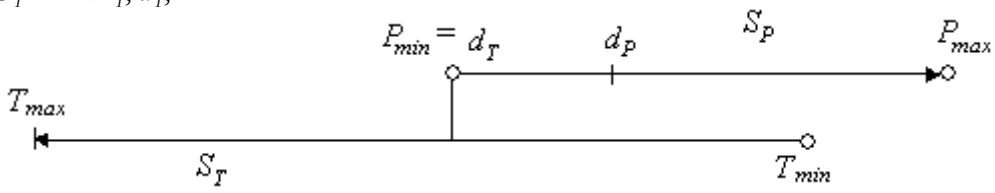
- *Complementary* antonyms [true-false, complete-incomplete, pure-impure] are such, that one is the negation of the other.
- *Non-complementary* antonyms [ugly-beautiful, sick-healthy] differ from complementary antonyms, in that their arguments do not obligatorily divide the scale into two mutually exclusive regions, though in the default state they are interpreted as complementary.
- *Not complementary* antonyms [tall-short, fat-thin] are pairs that do not divide the scale into two regions, both in the default state or otherwise, but rather always leave at least one mid-interval.

TPGAs can be either complementary or non-complementary, but not: not complementary.

II The Rotstein&Winter (2004) analysis of TPGAs in singular cases:

- The Total and Partial adjectives are situated on two separate parallel scales: S_T ($T_{min} > d_T \geq T_{max}$) and S_P ($P_{min} \leq d_P < P_{max}$), where $\infty < T_{max} \leq P_{min} < P_{max}$, $T_{min} \leq \infty$.
- For each scale, we define a contextually variable standard value *d*. The standard value of the Partial adjective d_P is stipulated to be necessarily different than P_{max}. No such stipulation is made for d_T and T_{max}.
- As a consequence, the *P* scale is always an interval, but the *T* scale can also be a point.

(2) a. $S_P = < D_P, d_P, \leq >$
b. $S_T = < D_T, d_T, > >$
c.



This predicts:

- Total adjectives → universal meaning; Partial adjectives → existential meaning:
  (3) a. ?? The red dress is dirtier than the blue dress, but both are clean
  b. The red dress is cleaner than the blue dress, but both are dirty.
- the vagueness and relativity of the use of TPGAs (*d* is contextually determined);
- complementary ($d_T=d_P$) and non-complementary ($d_T \neq d_P$) TPGAs;
- TPGAs' distribution with the modifiers *almost* and *slightly* (see appendix)

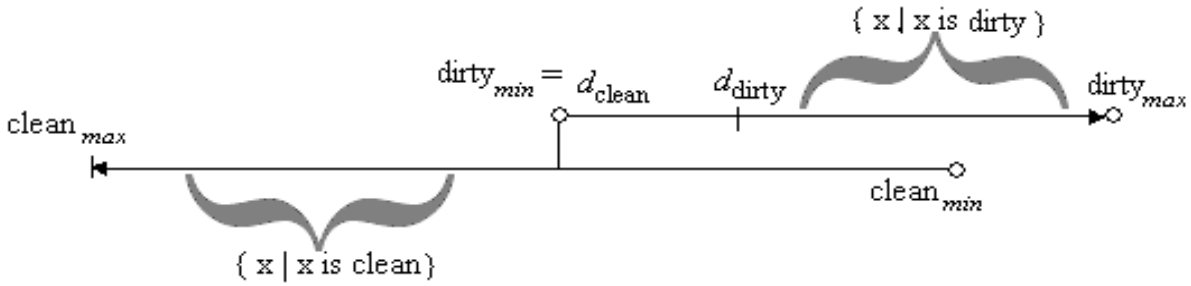
III Where I come in:

A reformulation of R&W's truth conditions for the singular case:

(4) $P(x) = 1$ iff $d_P \leq P(x)$
$T(x) = 1$ iff $d_T > T(x)$

(where $P(x)$ and $T(x)$: *the degree of P-ness or T-ness of x* are functions that take an individual x and return its degree on the relevant scale).

(5) The shirt is *dirty (clean)*
'the shirt is *dirty* is true iff $d_{dirty} \leq$ *dirty*(shirt)
'the shirt is *clean* is true iff $d_{clean} >$ *clean*(shirt)



IV Plurals:

(6) a. The glasses are *dirty*
b. The glasses are *clean*

(6a) is ambiguous between a collective and a distributive reading.

Yoon (1996): collective readings of sentences containing Partial adjectives have existential interpretations; sentences containing Total adjectives have universal interpretations.

We represent plural NPs as a sum individual: X = the set of all its atomic parts). Then:
(7) a. $P(X) = 1$ iff $d_P \leq \max[\{P(x) \mid x \in X\}]$
b. $T(X) = 1$ iff $d_T > \max[\{T(x) \mid x \in X\}]$

Yoon's observation follows directly from this formulation. For example:
(8) 'The glasses are *dirty*' is true iff $d_{dirty} \leq \max[\{dirty(\text{glass}) \mid \text{glass} \in \text{GLASSES}\}]$
This is true if the dirtiest glass is dirty, i.e., if <u>some</u> glass is dirty.

(9) 'The glasses are *clean*' is true iff $d_{clean} > \max[\{clean(\text{glass}) \mid \text{glass} \in \text{GLASSES}\}]$
This is true iff the least clean glass is clean, i.e., if <u>all</u> the glasses are clean.

It follows that the singular case formulated in (4) is simply a special case of the more general plural case, as formulated in (7)

V Donkey sentences:

(10) a. Most of the boys who owned a baseball card got it *dirty* while playing in the mud
b. Most of the boys who owned a baseball card kept it *clean* while playing in the mud

10a is true if most of the boys soiled at least one of the cards in their possession;
10b is true only if most of the boys kept all their cards clean.

Recall:
(7) a. $P(X) = 1$ iff $d_P \leq \max[\{P(x) \mid x \in X\}]$
b. $T(X) = 1$ iff $d_T > \max[\{T(x) \mid x \in X\}]$

We can use (7) to interpret (10) as we did for plurals above, but we require one extra step:

For every boy $x \in X$, Y represents the set of cards owned by x.

(11) a. Most of the boys who owned a baseball card got it *dirty* while playing in the mud
The restriction 'got them dirty' will be true for Y iff $d_{dirty} \leq \max[\{\text{dirty}(y) \mid y \in Y\}]$, which is true iff the dirtiest card is dirty, i.e., if <u>some</u> card is dirty.

b. Most of the boys who owned a baseball card kept it *clean* while playing in the mud
The restriction 'kept them clean' will be true for Y iff $d_{clean} > \max[\{clean(y) \mid y \in Y\}]$, which is true iff the least clean card is clean, i.e. if <u>all</u> the cards are clean.

IV Conclusion, or 'so why did we need this?'

- Greater explanatory power than either R&W or Yoon have on their own:
  R&W fail to represent totality in the plural cases;
  Yoon fails to represent totality in the singular cases (as well as other phenomena explainable by scale analyses).

- Elegant: I achieve this greater coverage by making one simple and natural generalization of R&W's theory, which succeeds in yielding Yoon's predictions.

References

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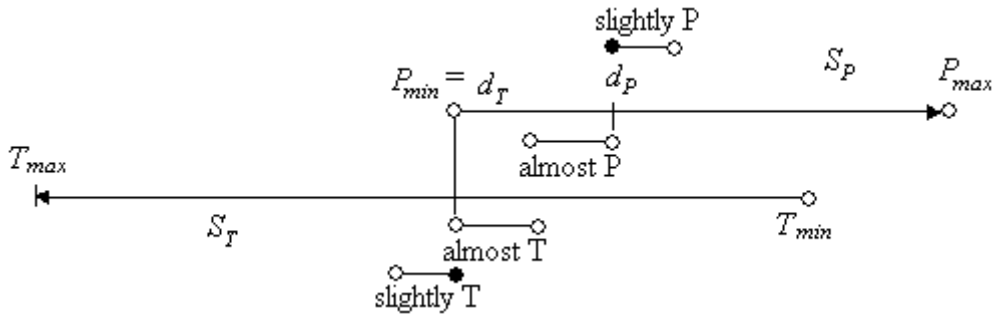
IV Appendix: How almost/slightly are explained:

(12) a. The work is almost *complete/*incomplete*
b. The child is slightly *sick/*healthy*
c. The denotations of 'almost A' and 'slightly A' are given graphically below:



'almost A' is analyzed as denoting an interval disjoint from the denotation of A but adjacent to it from below on its scale. Since d_T is determined by the theory to be necessarily different than T_{min}, there is always room on the $[d_T, T_{min}]$ interval for an interval denotation of 'almost T.' It is therefore predicted that 'almost T' will be felicitous regardless of context,

(13) a. This glass is *almost clean*
b. This road is *almost safe*.

By contrast, the denotation of 'almost P' is well defined if and only if $P_{min} < d_P$, that is, only if the adjectives are non-complementary. If the adjectives are complementary ($d_P = d_T$) then there will be no room for the interval denotation of 'almost P.'

(14) a. This glass is *almost dirty*. It is certainly not clean, since it has some small spots on it, but it is not really dirty, and I am willing to drink from it, if you insist.
b. This road is *almost dangerous*. Is has many bumps and it is certainly not safe, but a careful driver could cope with it.

(15) a. The work is almost *complete/*incomplete*
b. The patient is almost *dead/*alive*.

'slightly A' denotes an interval open at one end at the beginning of the denotation of ⟦A⟧ on the scale S_A. This analysis accounts for the acceptability of *slightly* with many Partial adjectives and its unacceptability with many Total adjectives:

(16) a. The work is *slightly incomplete/*complete*
b. The argument is *slightly imperfect/*perfect*
c. The jar is *slightly cracked/*whole*
d. The line is *slightly curved/*straight*
e. The child is *slightly sick/*healthy*
f. The claim is *slightly unclear/*clear*.

The scale of the Partial adjectives is always an interval, and cannot be a point. Thus, 'slightly P' can always denote an interval on the Partial scale. On the other hand, the denotation of Total adjectives can (in many cases) be a point. If the denotation is pointal, there will be no room for an interval denoting 'slightly T.' This explains the intuition of many speakers that 'slightly T' is unacceptable for any total adjective.