Differential Degrees and Cross-Categorial Measure-Phrase Modification

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1 Introduction

The starting point:

(1)   a. Clyde is six feet taller.
       b. Clyde is taller by six feet.

(2)   a.   Clyde is six feet tall.
       b. *Clyde is tall by six feet.

What accounts for this contrast? How do *by* measure phrases work?

A larger issue, to which the contrast in (1–2) is related:

(3)   a. six feet tall
       b. 40 years old
       c. 20 minutes long

(4)   a. six feet taller
       b. 40 years older
       c. 20 minutes longer

Examples such as those in (3), in which a measure phrase occurs with a positive (i.e., non-comparative) adjective, have often been taken to be prototypical of measure-phrase modification.

But there are reasons to think they may actually be misleading, and that *differential* measure phrases such as those in (4) are more basic.[1]

The goal: Develop an account of the grammar of *by* measure phrases, and use this to approach broader questions about measure-phrase modification more generally.

2 Some Data

2.1 By *Measure Phrases*

By MPs occur in a number of syntactic categories:

(5)   a. Floyd was late by 15 minutes.
       b. That book is overdue by six days.
       c. Floyd is taller than Clyde by six inches.

(6)   a. The soup cooled by several degrees.
       b. The meeting was delayed by an hour.

(7)   a. The flight is behind schedule by two hours.
       b. The gas station is past the intersection by about a mile.
       c. The arrow is above the target by a few inches.

(Caveat: the PP judgments sometimes seem a little more brittle than the others.)

These are categories that generally accommodate ordinary (bare) measure phrases—in one form or another—as well:

(8)   a. Floyd was 15 minutes late.
       b. That book is six days overdue.
       c. Floyd is six inches taller than Clyde.

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[1]Schwarzschild (2005) most directly; also Kennedy & Levin (to appear) on 'measure of change' in degree achievements and Svenonius & Kennedy (2006) on a corresponding adjectival syntax).

(9) a. The soup cooled several degrees.
     b. The meeting was delayed an hour.

(10) a. The flight is two hours behind schedule.
     b. The gas station is about a mile past the intersection.
     c. The arrow is a few inches above the target.

But it's not the case that *by* MPs and bare MPs occur with exactly the same predicates.

AP contrasts:

(11) a. Floyd is six feet tall.
     b. *Floyd is tall by six feet.

(12) a. The meeting is an hour long.
     b. *The meeting is long by an hour.[3]

(13) a. Clyde is 40 years old.
     b. *Clyde is old by 40 years.

VP contrasts:

(14) a. Floyd slept six hours.
     b. *Floyd slept by six hours.

(15) a. Norma talked an hour.
     b. *Norma talked by an hour.

In PP, *by* MPs and bare MPs seem to generally have the same distribution. Possible exceptions:

(16) a. The meeting was half an hour ago.
     b. *The meeting was ago by half an hour.

(17) a. The monkey was two meters from the tree.
     b. *The monkey was from the tree by two meters.

So: *by* MPs group together comparatives, some PPs, and some VPs, excluding positive APs. Common thread: *by* MPs do 'differential measurement'.

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[3]In the right contexts this may have a 'too long' interpretation on which it's grammatical—more on that below.

2.2 Slightly *and* Somewhat *(and Lexicalized MPs)*

Slightly and *somewhat* also have a cross-categorial distribution—one that mirrors that of *by* MPs rather than bare MPs:

Adjectives:

(18) a. Floyd is $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$ taller than Clyde.
     b. Floyd is taller than Clyde by several feet.

(19) a. This box is $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$ too wide.
     b. This box is too wide by a few centimeters.

(20) a. *Floyd is $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$ tall.
     b. *Floyd is tall by several feet.

(21) a. *This box is $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$ wide.
     b. *This box is wide by a few centimeters.

Verbs:

(22) a. The soup cooled $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$.
     b. The soup cooled by several degrees.

(23) a. The meeting was delayed $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$.
     b. The meeting was delayed by an hour.

(24) a. *Floyd slept $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$.
     b. *Floyd slept by six hours.

(25) a. *Norma talked $\left\{\begin{array}{l}\text{slightly}\\\text{somewhat}\end{array}\right\}$.
     b. *Norma talked by an hour.

Prepositions:

(26) a. The flight is $\begin{Bmatrix} \text{slightly} \\ \text{somewhat} \end{Bmatrix}$ behind schedule.

   b. The flight is behind schedule by two hours.

(27) a. The gas station is $\begin{Bmatrix} \text{slightly} \\ \text{somewhat} \end{Bmatrix}$ past the intersection.

   b. The gas station is past the intersection by about a mile.

(28) a. The arrow is $\begin{Bmatrix} \text{slightly} \\ \text{somewhat} \end{Bmatrix}$ above the target.

   b. The arrow is above the target by a few inches.

(29) a. *The meeting was $\begin{Bmatrix} \text{slightly} \\ \text{somewhat} \end{Bmatrix}$ ago.

   b. *The meeting was ago by half an hour.

(30) a. *The monkey was $\begin{Bmatrix} \text{slightly} \\ \text{somewhat} \end{Bmatrix}$ from the tree.

   b. *The monkey was from the tree by two meters.

To some extent, fixed lexicalized MPs such as *a little* and *a bit* have a distribution similar to that of *by* MPs:

(31) a. Floyd is $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ taller than Clyde.

   b. This box is $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ too wide.

(32) a. *Floyd is $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ tall.[4]

   b. *This box is $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ wide.

(33) a. The flight is $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ behind schedule.

   b. The gas station is $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ past the intersection.

   c. The arrow is $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ above the target.

(34) a. *The meeting was $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ ago.

   b. *The monkey was $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$ from the tree.

These lexical MPs differ from *slightly* and *by* MPs in their behavior in the verbal domain:

(35) a. The soup cooled $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$.

   b. The meeting was delayed $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$.

(36) a. Floyd slept $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$.

   b. Norma talked $\begin{Bmatrix} \text{a little} \\ \text{a bit} \end{Bmatrix}$.

I don't know why there should be this difference between the behavior of lexicalized MPs and *slight/somewhat*. More generally, lexicalized MPs give rise to various idiosyncrasies that deserve separate consideration.[5]

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[4]These impossible on the relevant interpretation, but more or less perfect on the *too tall/wide* interpretation.

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[5]For example, *a great deal* and *a lot* are somewhat odd with some PPs (*a great deal behind schedule* vs ?*a great deal past the intersection*), and *much* seems largely restricted to AP (??*Floyd slept much*, ??*much past the intersection*). Schwarzschild & Wilkinson (2002) suggest that degree *much* is essentially a kind of mass quantifier, like determiner *much*, and Schwarzschild (2006) discusses mass quantifiers in the adjectival domain more broadly; Kennedy & McNally (2005) suggest that *much* is sensitive to whether a standard normally defaults to the bottom of a scale.

So: *slightly* and *somewhat* group together comparatives, some PPs, and some VPs, excluding positive APs. Common thread: these modifiers too do 'differential measurement'.[6]

2.3 *Schwarschild's Bare MP Observations*

Schwarzschild (2005): Adjectives in general permit MPs with the comparative, but there are many that do *not* permit MPs with the positive:

(37) a. *6 lbs heavy/light
      b. *30 degrees hot/cold/warm
      c. *80 mph fast/slow
      d. *$5 cheap/expensive
      e. *2 inches big/small
      f. *3 shades dark/light
      g. *50 decibels loud/soft
      h. *$106 rich/poor
      i. *20 IQ points intelligent/stupid
      j. *2 percentage points likely
      k. *2 degrees acute
      l. *200 pounds fat/thin
      m. *The winds are 25 mph strong.
      n. *30 miles close/far/near
      o. *600 watts powerful
      p. *20 points popular

These are all good in the comparative.

So: MPs are possible with comparative adjectives in general, but not necessarily with corresponding positive forms. Again, they seem to do differential measurement.

2.4 *Beyond English*

A number of languages do not allow MPs with positive adjectives, but *do* allow them with comparatives and with PPs.[7]

Positive APs:

(38) POLISH:
      *dwa metry duży
       two meters big

(39) JAPANESE:
      *kono nekutai-wa 65-inchi nagai
       this   necktie-TOP 65-inch long

(40) RUSSIAN: (after Matushansky 2002)
      *(na) dva metra vysokij
       (on) two meters tall

(41) FRENCH: (Schwarzschild 2005)
      *grand de 1,27m
       big   of 1.27m
       '1.27 meters tall'

Comparatives:

(42) POLISH:
      dwa metry większy
      two meters bigger

(43) JAPANESE:
      kono nekutai- wa ano nekutai- yori 5-inch nagai
      this   tie-   TOP that tie-   than 5-inch long
      'This tie is 5 inches longer than that tie.'

(44) RUSSIAN:
      na 20 samtimetrov vyshe
      on 20 centimeters taller
      '20 centimeters taller'

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[6]The correspondence isn't perfect, though, if we take *ago* and *from* to be differential.

[7]This section exists largely because of data from Ai Matsui, Olga Eremina, and Ania Łubowicz. Schwarzschild (2005) notes the comparative-positive asymmetry in French, Bosque (1999) in Spanish, Snyder et al. (1995) in Japanese; Matushansky (2002) notes the PP-AP asymmetry in Russian and French.

(45) FRENCH: (Schwarzschild 2005)
      *plus grand que Marie de 2 centimetres
       more big   than Marie of 2 centimeters
      '2 centimeters bigger than Marie'

PPs:

(46) POLISH:
      a. kilka   metrów przed szczytem
         several meters from summit
      b. dwa metry ode mnie
         two meters from me

(47) JAPANESE:
      a. Wells Hall- wa koko- kara 500 fiito hanarete- iru
         Wells Hall- TOP here- from 500 feet away-   be
         'Wells Hall is 500 feet away from here'
      b. kaigi-   no 10- ppun   mae
         meeting- GEN 10 minutes before

(48) RUSSIAN:
      a. (v) 10   metrov za   perekrestkom
         10 meters behind intersection
      b. v metrax ot   perekrestka
         in meters from intersection
         'some distance from the intersection'

(49) FRENCH: (Matushansky 2002)
      à 10 mètres de   l'intersection
      at 10 meters from the-intersection

So: cross-linguistic data groups comparatives with some PPs, and
some VPs, excluding positive APs. Same common thread: MPs are
systematically possible where there is differential measurement.

2.5 *Generalizations and Conclusions So Far*

- *by* MPs and various related degree modifiers are possible with
  comparative APs, PPs, and some VPs, but *not* with positive APs

- bare MPs are possible with comparative APs, but not with
  many positive APs that one might have expected to permit
  them

- in various languages, MPs are possible with comparative APs,
  PPs, and some VPs, but *not* with positive APs

- more generally, then MPs in comparative APs and PPs and
  some VPs form a natural class that *excludes* those that modify
  positive APs

- MPs in positive APs are the marked case, not only relative to
  MPs in comparatives (as Schwarzschild 2005 suggests), but
  relative to MPs in other syntactic categories as well

- MPs tend to do differential measurement (in some languages
  and for *by* MPs, this is the only option)

3 Theoretical Tools: Points, Intervals, and Degree Morphemes

3.1 *Schwarzschild (2005): Points vs Intervals*

Schwarzschild (2005) proposes an understanding of the unmarked
character of MPs in comparatives, which I will build on below.

The core intuition:

(50) 'If the purpose of a measure phrase is to describe a gap, and
      comparatives necessarily entail the presence of a gap, it is
      no surprise that they fit together so snugly.'

To implement this, he treats measure phrases as predicates of *inter-
vals* on a scale (extents):[8]

(51) a. John is two inches taller than Mary.

      b. $two\text{-}inches'\left(\begin{bmatrix} \text{MAX}\{d : tall'(m, d)\}, \\ \text{MAX}\{d : tall'(j, d)\} \end{bmatrix} \right)$

      c. 'the size of the interval from Mary's height to John's
         height is two-inches'

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[8]I've changed his logical representation here by replacing some operators
with their definitions. I've also changed his $UpLim$ upper-limit predicate to
MAX, which I think will do the same thing, given that he assumes in this
paper that $tall$ is a predicate of points on a scale rather than intervals.

He treats adjectives themselves as predicates of *points* on a scale. Thus (52a) is correctly predicted to be ill-formed:

(52) a. *Mary is 50 pounds heavy.
      b. $\exists d[heavy'(m, d) \land 50\text{-}pounds'(d)]$

If d is a point, $50\text{-}pounds'(d)$ will be undefined (because $50\text{-}pounds'$ is a predicate of intervals); if d is an interval, $heavy'(d)$ will be undefined (because $heavy'$ is a predicate of points).

What to do for (53), which for the same reasons is also predicted to be bad?:

(53) a. *Mary is 5 feet tall.
      b. $\exists d[tall'(m, d) \land 5\text{-}pounds'(d)]$
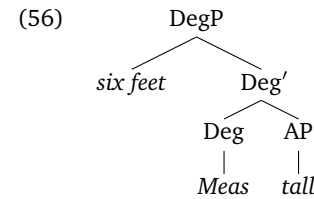
He proposes a lexical rule:

(54) HOMONYM RULE, from degrees to intervals:

      If A has meaning A' that relates individuals to degrees then A has a secondary meaning relating individuals to sets of degrees (intervals). The secondary meaning is given by: $\lambda I \lambda x \,.\, I = \{d : A'(x, d)\}$

(55) Homonym Rule applies to *tall, wide, deep, thick, old, long, high*

This correctly predicts that MPs in comparatives should be basic, and that MPs in positive forms are marked and require special machinery.

Also, gives substance to the tendency to talk about 'differential(degree)s' as though they were an ontologically distinct object from ordinary degrees.

3.2 *Degree Morphemes*

Svenonius & Kennedy (2006)'s syntax for MP modification (building on Abney 1987, Corver 1990, and others):

(56)
```
              DegP
             /    \
         six feet  Deg'
                  /    \
                Deg     AP
                 |      |
               Meas    tall
```

A null degree head *Meas*[9] specifically for introducing MPs.

Makes possible explanations in terms of syntactic terms of MP distribution:

- Why not **six pounds heavy*? *Meas* doesn't select *heavy*.
- Why no MPs with positive adjectives in some languages? *Meas* doesn't select comparative morphology in some languages.[10]
- Why *by* MPs possible where bare MPs aren't? *By* MPs aren't introduced by *Meas*.

A related idea: Kennedy & Levin (to appear) observe that in degree achievements, measurement is inherently differential:

(57) The gap boats widened six inches.

This doesn't mean that the gap came to be six inches.

Both comparatives and degree achievements involve 'a difference function with a scale whose minimal element—the 'derived zero'—corresponds to the degree introduced by' the standard of comparison. 'One of the general properties of this morpheme, however, is that it can always combine with difference functions.'

3.3 *Worries*

On the points vs. intervals approach: How to reconcile the point-based degree semantics of adjectives with arguments that degrees are *always* intervals (Kennedy 2001, Schwarzschild & Wilkinson 2002, among others)?

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[9]Kennedy & Levin (to appear) call it μ.

[10]Another option: distinguish specialized degree morpheme for positive adjectives (Kennedy 1997, 2007, Kennedy & McNally 2005, elsewhere).

In particular: If positive *tall* and *short* are predicates of points on a scale, we lose Kennedy (2001)'s explanation of *five feet short (and of polar anomaly as well).

The Kennedy (2001) account: Degrees of tallness can be measured because they are finite intervals on a scale, as in (58); degrees of shortness are degrees of not-tallness and hence not finite, as in (59), so can't be measured by e.g. *five feet*:

(58)

HEIGHT SCALE

$tall(Floyd)$

$short(Floyd)$
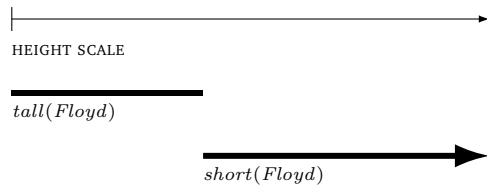
On the degree-morpheme approach:

- The notion of a 'difference function' is pretty intuitive, but why would measure phrases (or their associated degree head) tend to *insist* on this? Why would the default/unmarked case be to measure on a *derived* scale, and the special/marked case be to measure on a basic scale? Shouldn't it be the reverse?

- Secondary concern: it is not MPs themselves that require differential measurement, so it's not clear that this reflects that this is more basic than the alternative (if both require additional degree morphology).

## 4 Differential Degrees as Discontinuous Extents

4.1 *Sorts of Degrees*

Desiderata:

- ontological (sortal) distinction between differential and 'ordinary' degrees, as in Schwarzschild (2005)

- preserving Kennedy (2001) satisfying account of *tall* vs. *short*

- preserving Schwarzschild (2005)'s satisfying account of why MPs by default do differential measurement

One way of thinking about the problem: We'd like for *both* ordinary and differential degrees to be intervals, as in (59):

(59)

HEIGHT SCALE

$tall(Floyd)$

$tall(Clyde)$

$tall(Clyde) - tall(Floyd)$
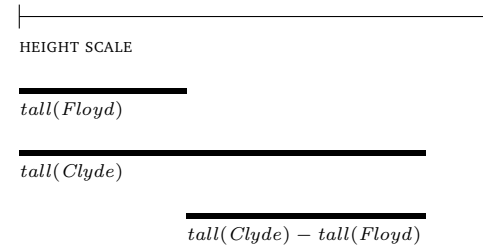
We'd like to do this in a way that allows making a sortal distinction between differential and ordinary degrees.

The representation in (59) *does* allow making such a distinction: differential degrees are those that start measuring in the middle of a scale.

But why would MPs *prefer* to measure from the middle, rather than from an endpoint? Why would they be so perverse?

An answer: Take the intuition that measure phrases are 'predicates of gaps' (McConnell-Ginet 1973, Schwarzschild (2005)) *very* seriously. A differential degree is not an interval in the middle of a scale, as in (59), but rather a *gap* in a scale, as in (60):

(60)

HEIGHT SCALE

$tall(Floyd)$

$tall(Clyde)$

$tall(Floyd) \cup -tall(Clyde)$
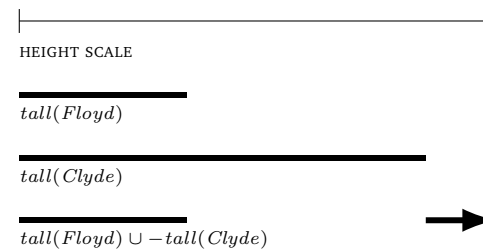
So why do MPs insist on measuring from somewhere other than the bottom of a scale (or else, on measuring on a derived scale)? They don't. They just require two (nonzero) intervals to measure the distance between.

This is compatible with—and in fact naturally complements—the Kennedy (2001) conception.

Sortal typology of degrees:

- finite degree: finite interval on a scale
- non-finite degree: non-finite interval on a scale
- differential degree: two intervals on a scale separated by a gap; the union of a finite and negative degree

Measure phrases can thus be predicates of a particular sort of degree, as Schwarzschild (2005) would have it—crucially, differential degrees.

4.2 Differential Comparatives

(61)   Clyde is ten centimeters taller than Floyd.

(62) $ten\text{-}centimeters(tall(Floyd) \cup -tall(Clyde))$

Assuming a syntax in which there are no additional degree heads beyond the comparative morpheme and a Kennedy (1997)-style adjective semantics:

(63)
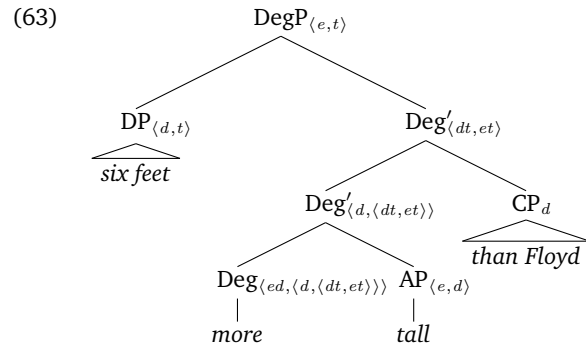
(64) $[\![\,tall\,]\!] = \lambda x \,.\, tall(x)$
$[\![\,more\,]\!] = \lambda a_{\langle e, d \rangle} \lambda d \lambda m_{\langle d, t \rangle} \lambda x \,.\, m(d \cup -a(x))$
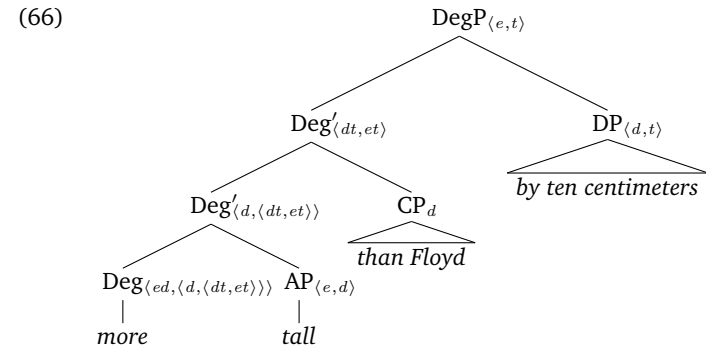$[\![\,than\ Floyd\,]\!] = tall(Floyd)$

$[\![\,more\ tall\ than\ Floyd\,]\!]$
$= \lambda m_{\langle d, t \rangle} \lambda x \,.\, m(tall(Floyd) \cup -tall(x))$
$[\![\,six\ feet\ more\ tall\ than\ Floyd\,]\!]$
$= \lambda x \,.\, six\text{-}feet(tall(Floyd) \cup -tall(x))$

Aside: *early* and *late, flat* and *sharp, fast* and *slow* when predicated of timepieces are in a sense inherently comparative Kennedy (2001), Schwarzschild (2006). Both members of each pair allow measure phrases, in a number of languages, and both allow *by* MPs. These could be understood as inherently providing differential degrees.[11]

4.3 By *Phrases*

By MPs can have exactly the same denotation as the corresponding bare MPs:

(65)   Clyde is taller than Floyd by ten centimeters.

(66)

(67) $[\![\,more\ tall\ than\ Floyd\ by\ ten\ centimeters\,]\!]$
$= \lambda x \,.\, [\![\,by\ ten\ centimeters\,]\!] \,(tall(Floyd) \cup -tall(x))$
$= \lambda x \,.\, ten\text{-}centimeters(tall(Floyd) \cup -tall(x))$

4.4 Positive Adjectives

What to make of positive adjectives?

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[11] To spell this out in this sort of system, adopting single MP-licensing head, as Svenonius & Kennedy (2006) do, would be helpful.
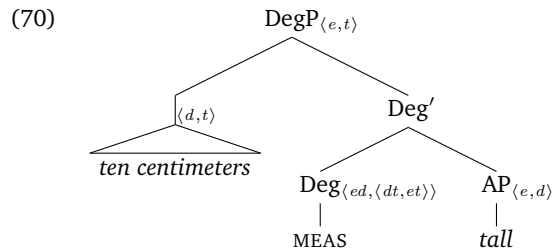
In cases where the measure phrase is not possible—as is the case for many measure phrases and in many languages—nothing special needs to be said, beyond some form of standard assumptions (for this kind of syntax):[12]

(68)

DegP$_{\langle e,t \rangle}$
|
Deg$'$
Deg$_{\langle ed,et \rangle}$ AP$_{\langle e,d \rangle}$
|
POS   *heavy*
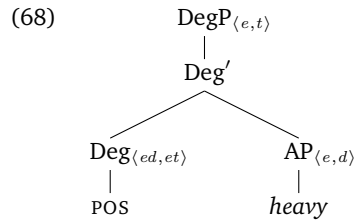
(69) $[\![\text{POS}]\!] = \lambda a_{\langle e, d \rangle} \lambda x \, . \, a(x) \geq d_s$

MPs are impossible here for straightforward type-theoretic reasons. Even apart from that, $heavy(x)$ could not be measured, since it isn't a differential degree.

How to account for the marked cases where an MP *is* possible with a positive adjective? Something like the MP-licensing head of Svenonius & Kennedy (2006):

(70)

DegP$_{\langle e,t \rangle}$
$\langle d,t \rangle$ Deg$'$
ten centimeters   Deg$_{\langle ed,\langle dt,et \rangle \rangle}$ AP$_{\langle e,d \rangle}$
|
MEAS   *tall*

A syntactic assumption: MEAS requires that its specified be filled (for case reasons, say).

(71) $[\![\text{MEAS}]\!] = \lambda a_{\langle e, d \rangle} \lambda m_{\langle d, t \rangle} \lambda x \, . \, m \left(\begin{array}{c} -a(x) \, \cup \\ \text{MIN}(\text{SCALE}(a(x))) \end{array} \right)$

(where $\text{SCALE}(d)$ is the scale on which d is located)

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[12]The standard is represented here for simplicity as just d_s. See e.g. Kennedy (2007) for a more serious implementation.

This is a weird denotation. (Why the extrinsic reference to the bottom of the scale? What independent reason for manipulating $tall(x)$ at all?) Good.

This 'builds' a differential degree roughly as in (72):

(72)

HEIGHT SCALE

$tall(Floyd)$

$tall(Floyd) \cup -tall(Clyde)$
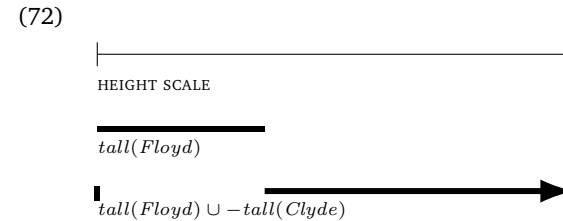
Why *six feet tall* but not **tall by six feet*?

- POS *tall by six feet* is uninterpretable for both type-theoretic and sortal reasons
- MEAS *tall by six feet* is syntactically ill-formed (because MEAS requires an MP in its specifier)

5   Brief Speculation About Prepositions

These are all good with bare MPs, as (72) reflects, and with *by* MPs as well:

(73)   a. The gas station is (two blocks) $\left\{ \begin{array}{c} \text{past} \\ \text{beyond} \end{array} \right\}$ the intersection.

b. The coffee table is (two feet) $\left\{ \begin{array}{c} \text{in front of} \\ \text{behind} \end{array} \right\}$ the sofa.

c. The meeting is (15 minutes) $\left\{ \begin{array}{c} \text{after} \\ \text{before} \end{array} \right\}$ class.

d. The bird is (15 feet) $\left\{ \begin{array}{c} \text{above} \\ \text{below} \end{array} \right\}$ the farm.

All in a particular sense sense inherently comparative, much as *early* and *late*, *flat* and *sharp* are. They all involve measurement that can be construed as involving the middle of a scale (rather than an

interval that includes an endpoint)—that is, as involving a differential degree.

In the case of *past, beyond, in front of, behind, above*, and *below*, the scale seems to start at the speaker (point-of-view 'pivot'). The scale for *after* and *before* seems to either be open on both ends.

PPs that don't have this property tend *not* to allow MPs:[13]

(74)   a. *The gas station is two blocks around the intersection.
       b. *The coffee table is two feet on the sofa.
       c. *The meeting is 15 minutes at six.
       d. *The bird is 15 feet near the farm.

In these cases, the scale seems to start at the reference point provided by the object.

Working in terms of Vector Space Semantics, Zwarts & Winter (2000) and Winter (2005) propose an understanding of such restrictions in terms of a 'Modification Condition' which permits only PPs which do not impose a minimal or maximal distance between the located object and reference point to be modified.

The distinction between differential and ordinary degrees may provide another way of looking at this restriction.

6   Final Remarks

Summary:

- MPs tend to occur in differential structures, not only across language, but also across categories

- even in English, as *by* MPs reflect, positive adjectives that take bare MPs are unusual

- to model this, a sortal distinction should be made between ordinary and differential degrees

- MPs should be understood as inherently predicates of differential degrees

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[13]These observations are rooted in Zwarts & Winter (2000) and Winter (2005).

- differential degrees should be construed as gaps on a scale

- construing differential degrees this way allows degrees in general to be intervals

- it also explains why MPs should prefer to measure from non-zero points on a scale, an otherwise mysterious requirement

Among the remaining issues: PP? VP? Connection to e.g. telicity?

References

Abney, Steven. 1987. *The English Noun Phrase in Its Sentential Aspect*. Doctoral dissertation, MIT, Cambridge, MA.

Bosque, Ignacio. 1999. 'El sintagma adjetival: Modificadores y complementos del adjetivo: Adjetivo y participio'. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática Descriptiva de la Lengua Española*, vol. 1, chap. 4, pp. 217–310. Espasa Calpe, Madrid.

Corver, Norbert. 1990. *The Syntax of Left Branch Extractions*. Doctoral dissertation, Tilburg University.

Kennedy, Christopher. 1997. *Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison*. Doctoral dissertation, UC Santa Cruz. Published in 1999 by Garland, New York.

Kennedy, Christopher. 2001. 'Polar opposition and the ontology of 'degrees''. *Linguistics and Philosophy* **24**(1), 33–70.

Kennedy, Christopher. 2007. 'Vagueness and grammar: the semantics of relative and absolute gradable adjectives'. *Linguistics and Philosophy* **30**(1), 1–45.

Kennedy, Christopher & Beth Levin. To appear. 'Measure of change: The adjectival core of degree achievements'. In Christopher Kennedy & Louise McNally (eds.), *Adjectives and Adverbs: Syntax, Semantics, and Discourse*. Oxford University Press, Oxford.

Kennedy, Christopher & Louise McNally. 2005. 'Scale structure, degree modification, and the semantics of gradable predicates'. *Language* **81**(2), 345–381.

Matushansky, Ora. 2002. 'Tipping the scales: The syntax of scalarity in the complement of seem'. *Syntax* **5**(3), 219–276.

McConnell-Ginet, Sally. 1973. *Comparative Constructions in English: A Syntactic and Semantic Analysis*. Doctoral dissertation, University of Rochester.

Schwarzschild, Roger. 2005. 'Measure phrases as modifiers of adjectives'. In *L'adjectif*, *Recherches Linguistiques de Vincennes*, vol. 35, pp. 207–228.

Schwarzschild, Roger. 2006. 'The role of dimensions in the syntax of noun phrases'. *Syntax* **9**(1), 67–110.

Schwarzschild, Roger & Karina Wilkinson. 2002. 'Quantifiers in comparatives: A semantics of degree based on intervals'. *Natural Language Semantics* **10**(1), 1–41.

Snyder, William, Ken Wexler, & Dolon Das. 1995. 'The syntactic representation of degree and quantity: Perspectives from Japanese and child English'. In Raúl et al Aranovich (ed.), *Proceedings of the West Coast Conference on Formal Linguistics (WCCFL) 13*. CSLI, Stanford.

Svenonius, Peter & Christopher Kennedy. 2006. 'Northern Norwegian degree questions and the syntax of measurement'. In Mara Frascarelli (ed.), *Phases of Interpretation*, *Studies in Generative Grammar*, vol. 61. Mouton de Gruyter, Berlin.

Winter, Yoad. 2005. 'Cross-categorial restrictions on measure phrase modification'. *Linguistics and Philosophy* **28**(2), 233–267.

Zwarts, Joost & Yoad Winter. 2000. 'Vector space semantics: A model-theoretic analysis of locative prepositions'. *Journal of Logic, Language and Information* **9**, 171–213.

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