A Puzzle in Gradable Adjectives

Karen De Clercq & Guido Vanden Wyngaerd
UGent & KU Leuven

1 Introduction

▷ Many gradable adjectives come in polar antonyms:

(1)
happy	sad
wise	foolish
clean	dirty
friendly	hostile
healthy	sick
kind	rude
true	false
safe	dangerous

▷ the positive poles of the opposition may be prefixed with *un-* (see (2a))
▷ the negative poles cannot be prefixed with *un-* (see (2b); Jespersen 1942:466, Zimmer 1964, Horn 2005)
▷ the negative poles are not resistent to negation *per se*, as they can be negated with *not* (see (2c))

(2)   a.   unhappy   b.   *unsad   c.   not sad
             unwise   *unfoolish   not foolish
             unclean   *undirty   not dirty
             unfriendly   *unhostile   not hostile
             unhealthy   *unsick   not sick
             unkind   *unrude   not rude
             untrue   *unfalse   not false
             unsafe   *undangerous   not dangerous

Aims of this talk:

▷ account for this restriction and the contrast between *un-* and *not*
▷ present additional data supporting the account
▷ in doing so, develop a proposal about the functional superstructure of gradable adjectives

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2   Nanosyntax

Basic principles:

▷ syntax is prior to the lexicon
▷ the syntax works only with features and combinations of features
▷ lexical insertion is postsyntactic
▷ each feature is a syntactic head that projects
▷ morphemes spell out combinations of features, i.e. morphemes do not spell out heads but phrases (*phrasal spellout*)
▷ lexical insertion is subject to the *Superset Principle*

(3)   *Superset Principle*
        A lexical entry may spell out a syntactic node (SN) iff the features of the lexical entry are a superset of the features dominated by the syntactic node.

▷ in case two items compete for insertion, the Elsewhere Principle applies:

(4)   *The Elsewhere Principle*
        In case two rules, R_1 and R_2, can apply in an environment E, R_1 takes precedence over R_2 if it applies in a proper subset of environments compared to R_2.
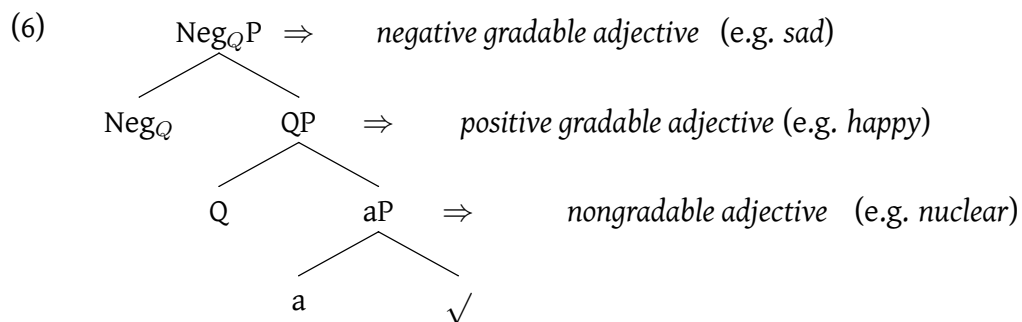
▷ in case two items compete, the more specific item wins

(5)

XP $\langle\, /\alpha/,\ \{A, B, C, D\}\, \rangle$

A   YP $\langle\, /\beta/,\ \{A, B, C, D, E\}\, \rangle$

B   ZP

C
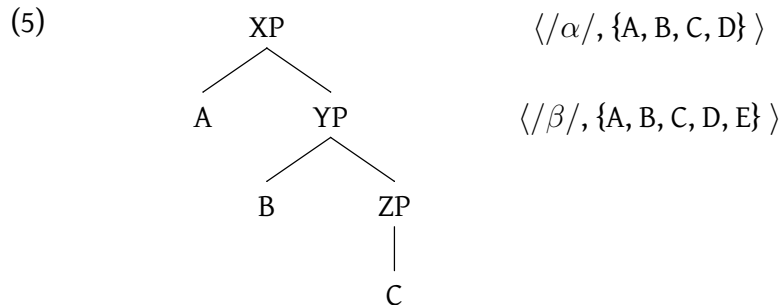
▷ the syntactic tree XP dominates the features A, B, and C
▷ both lexical items α and β are candidates for spelling out XP, because their features are a superset of the features of the syntactic tree
▷ α will win the competition from β because it is is a closer match for the syntactic tree
▷ an informal way of stating the Elsewhere Principle is 'Minimize Junk'

3 Analysis: a difference in size

▷ The difference between polar antonyms (e.g. *happy-sad*) is a difference in the size of the tree, i.e. in the number of features they spell out:

(6)

$\text{Neg}_Q\text{P} \Rightarrow$ *negative gradable adjective*   (e.g. *sad*)

Neg_Q QP $\Rightarrow$ *positive gradable adjective* (e.g. *happy*)

Q   aP $\Rightarrow$ *nongradable adjective*   (e.g. *nuclear*)

a $\sqrt{\ }$

▷ the features involved are Neg_Q, Q, *a* (a categorial head feature), and a (acategorial) root feature ($\sqrt{\ }$)
▷ nongradable adjectives (*nuclear, classical*, …) spell out the aP node (i.e. the features *a* and $\sqrt{\ }$)
▷ positive gradable adjectives (e.g. *happy*) spell out the QP-node (i.e. the features Q, *a*, and $\sqrt{\ }$)
▷ negative gradable adjectives (e.g. *sad*) spell out the Neg_QP-node (i.e. the fea-

tures Neg$_Q$, Q, *a*, and $\sqrt{}$)

4   Evidence for the analysis

4.1   Support for QP

▷ Q is a feature which denotes a positive quantity
▷ *much* spells out this feature

(7)   QP   ⇒   *much*
         |
         Q

▷ positive gradable adjectives spell out the features Q, *a*, and the root feature (ignored in the trees to follow):

(8)   QP   ⇒   *intelligent, tall, happy, warm, long, ...*
           ╱ ╲
          Q   aP

▷ evidence for (8) is found in the semantics
▷ positive gradable adjectives denote a high degree (e.g. Seuren 1978, Bresnan 1973, Kennedy 1999, Kennedy & McNally 2005, Neeleman et al. 2006)

(9)   John is tall.

▷ not: John has a degree on the scale of tallness
▷ but: John's degree of tallness is above the standard degree of tallness, i.e. *John is* MUCH *tall.*

▷ an obvious question raised by this analysis is why (10) is impossible:

(10)   *John is much tall

▷ *much* cannot spell out the tree in (8) because the features of the lexical item *much* (Q) are a subset of the features in the syntactic tree (Q, a, $\sqrt{}$)
▷ in contrast, any positive gradable adjective can spell out the tree in (8) because the features of positive gradable adjectives and those of the tree in (8) are an exact match

▷ **much tall* is ruled out because *tall* already spells out the Q-feature of *much*
▷ the alternative derivation in (11) is ruled out:

(11)

QP   ⇒   *much*

     Q   aP   ⇒   *tall*
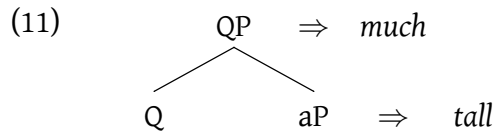
▷ *tall* spells out aP (this is possible in virtue of the Superset Principle)
▷ *much* spells out QP
▷ we take this derivation to be ruled out because there is a competing, simpler, derivation, represented in (8)

▷ support for the analysis comes from the phenomenon of *much*-support (Corver 1997):

(12)   a.   John is fond of Mary. Maybe he is **too** *much* so.
      b.   John is fond of Mary. Maybe he is **as** *much* so as Bill.
      c.   The weather was hot in Cairo—**so** *much* so that we stayed indoors all day.

▷ *much*-support occurs when the adjective is replaced by pro-form so, and is preceded by a degree-modifier like *too/as/that/so*
▷ schematically: **Deg** + *much* + so
▷ *much* is obligatory:

(13)   John is very fond of Mary. *Maybe he is **too** so.

▷ pro-form so spells out aP
▷ *much* is needed to spell out QP since so cannot spell out Q

(14)

DegP   ⇒   **too**

   Deg   QP   ⇒   *much*
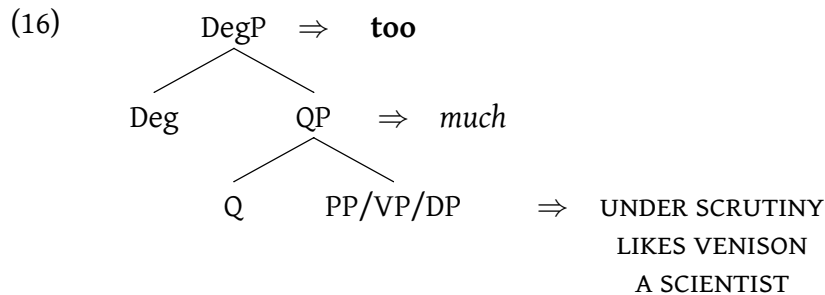
        Q   aP   ⇒   so

           a   √
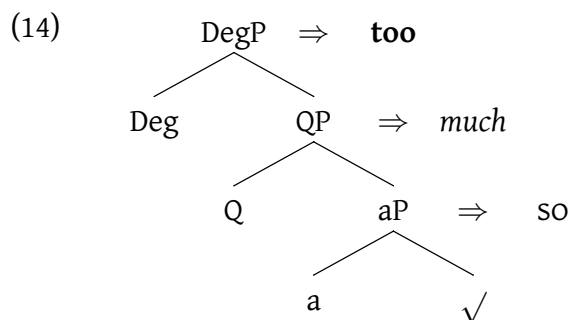
▷ *much* is also visible as a spellout of a Q-feature with nonadjectival predicates (i.e. PP, VP, DP) that semantically may function like gradable predicates

5

(Neeleman et al. 2006):

(15) a. He is **too** *much* [PP under scrutiny] to be elected at this time.
      b. He [VP likes venison] **too** *much* for his own good.
      c. He is **too** *much* [DP a scientist] to care about such problems.

▷ schematically: **Deg** + *much* + PP/VP/DP

(16)

```
        DegP    ⇒    too

    Deg        QP    ⇒    much

          Q        PP/VP/DP    ⇒    UNDER SCRUTINY
                                    LIKES VENISON
                                    A SCIENTIST
```

▷ Q occurs with whatever can be interpreted as gradable
▷ PP/VP/DP cannot spell out QP because no lexical item exists that spells out this structure
▷ as a result, *much* is needed to spell out the Q-feature
▷ the restriction against **much tall* discussed above does not hold in these cases:

(17) a. He is [QP *much* [PP under scrutiny]]
      b. He doesn't [QP [VP like venison] *much*]
      c. He is [QP *much* of [DP a scientist]]

▷ the reason is that no lexical items exist that spell out the entire QP
▷ this is confirmed semantically by the fact that, when *much* is absent, the 'high degree' interpretation also must disappear:
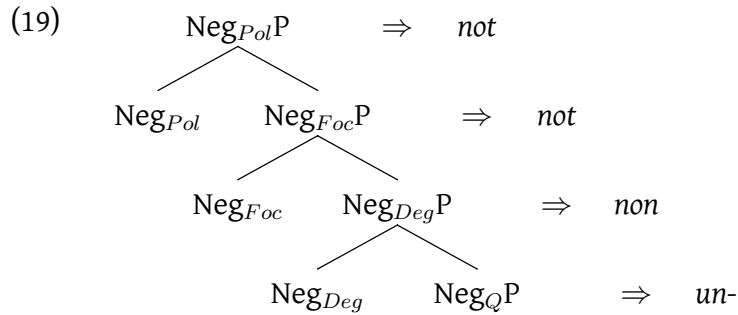
(18) a. He's under scrutiny
      b. He likes venison
   c. He's a scientist

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Summary

▷ The feature Q is present
  ○ semantically: in the high degree reading of gradable adjectives
 ○ visibly: in the phenomenon of *much*-support

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4.2 Support for NegP

▷ recall the contrast in (2) above: **unsad* vs *not sad*
▷ De Clercq (2013): negation is internally complex
▷ different negative markers spell out different Neg-features:

(19)

Neg_{Pol}P $\Rightarrow$ *not*

Neg_{Pol} Neg_{Foc}P $\Rightarrow$ *not*

Neg_{Foc} Neg_{Deg}P $\Rightarrow$ *non*

Neg_{Deg} Neg_{Q}P $\Rightarrow$ *un-*

▷ negative gradable adjectives are like positive ones, but add a Neg_Q-feature:

(20)

Neg_QP $\Rightarrow$ *sad, short, bad, cold, small, ...*

Neg_Q QP

Q aP
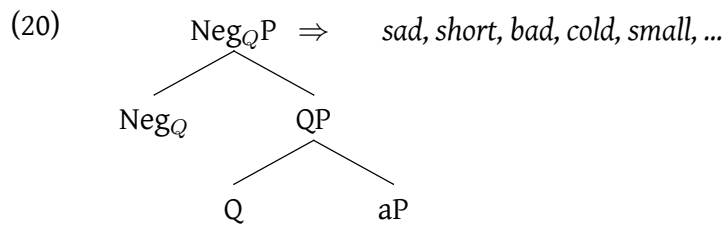
▷ adjectives with the negative prefix *un-* have the same structure, but spell it out differently:

(21)

Neg_QP $\Rightarrow$ *un-*
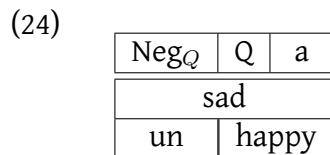
Neg_Q QP $\Rightarrow$ *happy*

Q aP
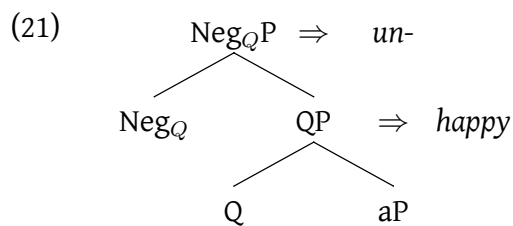
▷ QP spells out as *happy*: the lexical features of *happy* (Q, a, $\sqrt{}$) are identical to those dominated by QP
▷ the lexical entry for *un-* is given in (22):

(22)

Neg_QP $\Rightarrow$ *un*
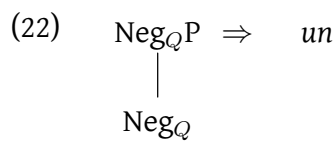
Neg_Q

▷ *un-* spells out the Neg_Q-feature in (21)

▷ *un-* cannot occur with negative adjectives, because they already spell out the entire Neg_QP:

(23) Neg_QP $\Rightarrow$ **un-*   *sad*

        Neg_Q QP

               Q   aP
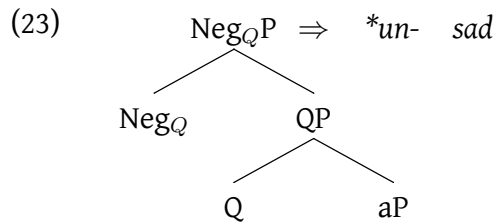
▷ for this reason, *un-* cannot also spell out the Neg_Q feature

(24)

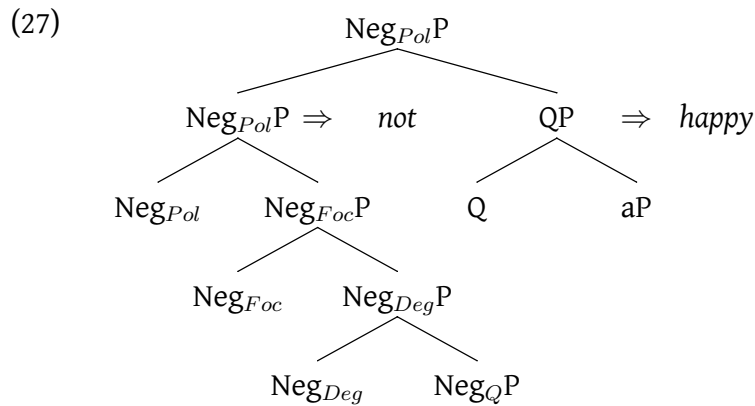| Neg_Q	Q	a
sad		
un	happy ||

▷ **unsad* would not fit into the space provided in (24)

▷ a negative adjective could in principle spell out QP because of the Superset Principle:

(25) Neg_QP $\Rightarrow$ *un-*

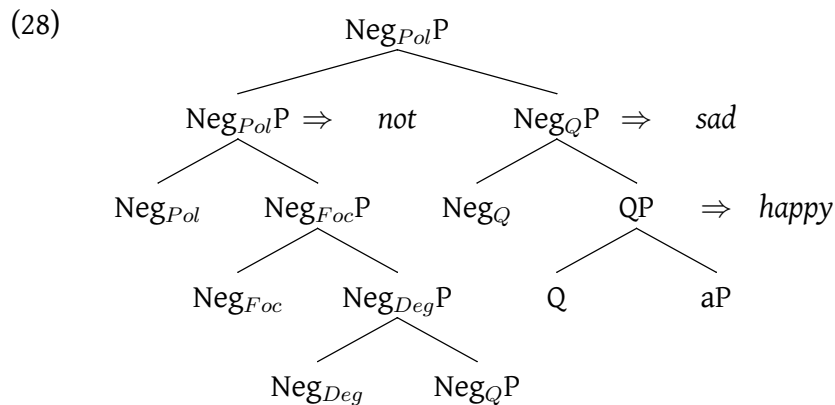 Neg_Q QP $\Rightarrow$ *sad*

               Q   aP
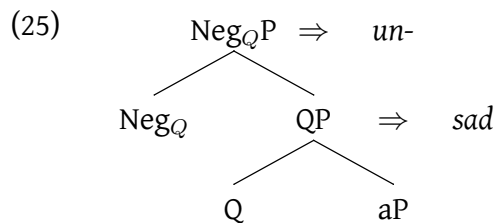
▷ however, the Elsewhere Principle will ensure that positive gradable adjectives always win the competition from their negative counterparts for spelling out QP.

▷ why is (26) good?

(26)   not sad

▷ *not* is internally complex (see (19) above)

▷ this complex negative marker may be merged on top of a positive gradable adjective:

(27)

```
                        Neg_Pol P
                     /            \
            Neg_Pol P ⇒ not        QP ⇒ happy
           /        \              /    \
      Neg_Pol    Neg_Foc P        Q      aP
                 /       \
            Neg_Foc    Neg_Deg P
                       /        \
                  Neg_Deg     Neg_Q P
```

▷ *not* may also be merged on top of a negative gradable adjective:

(28)

```
                          Neg_Pol P
                       /             \
              Neg_Pol P ⇒ not       Neg_Q P ⇒ sad
             /        \             /       \
        Neg_Pol    Neg_Foc P    Neg_Q      QP ⇒ happy
                   /       \               /   \
              Neg_Foc   Neg_Deg P         Q     aP
                        /        \
                   Neg_Deg     Neg_Q P
```

▷ in general, negation markers can be stacked, provided they spell out a different set of Neg features:

(29)   a.   He is**n't sad**
       b.   He's **not sad**
       c.   He is**n't not sad**
       d.   He is**n't un**happy
       e.   He's **not un**happy

▷ however, negative markers spelling out the same features in the same position cannot be stacked:

(30)   a.   *__unsad__
       b.   *__unun__happy
       c.   *He is**n'tn't** happy

9

Summary

▷ negative gradable adjectives spell out an additional Neg$_Q$-feature, as compared with positive ones

▷ since negative gradable adjectives spell out Neg$_Q$P, prefixal *un-* cannot also spell out this feature (whence *unsad)

▷ *not* is internally complex and combines with negative adjectives

5 Further support

5.1 Dutch

▷ the restriction observed in (2) above holds identically in Dutch

▷ the prefixal negative marker *on-* 'un' combines only with positive adjectives:

(31)   ongelukkig/*ondroef, *ontriest   'unhappy/unsad'
        onverstandig, onwijs/*ondom   'unwise/unfoolish'
        onvriendelijk, onaardig/*onvijandig   'unfriendly/unhostile'
        ongezond, onwel/*onziek   'unhealthy, unwell/unsick'
        oninteressant/*onvervelend, *onsaai   'uninteresting/unboring'
        onfraai/*onlelijk   'unnice/unugly'
        onaantrekkelijk/*onafstotelijk   'unattractive/unrepulsive'
        ongemakkelijk/*onmoeilijk   'uneasy/undifficult'
        onprettig/*onvervelend   'unpleasant/unannoying'

▷ the account is identical: negative adjectives already spell out Neg$_Q$P, so that *on-* cannot spell out the Neg$_Q$ feature

▷ additional data supporting this analysis comes from the polar antonyms *veel/weinig* 'much/little'

(32)   a.   *veel*   *meer*   *meest*
              'much'   'more'   'most'
        b.   *weinig*   *minder*   *minst*
              'little'   'less'   'least'

▷ the presence of the degrees of comparison indicates that *veel* and *weinig* are adjectives (Jespersen 1913, Bowers 1975, Kayne 2007)

▷ *veel* 'much' cannot modify adjectives, suggesting that *veel* is the equivalent of

much (recall **much tall*)
▷ however, *weinig* can modify adjectives

(33)   weinig/*veel actief   'little/much active'
            weinig/*veel waarschijnlijk   'little/much likely'
            weinig/*veel geloofwaardig   'little/much credible'
            weinig/*veel verstandig   'little/much intelligent'
            weinig/*veel duidelijk   'little/much clear'

▷ *weinig* 'little' shows the same restriction as the negative prefixes *on-/un-* in not combining with negative adjectives:

(34)   weinig actief/*passief   'little active/passive'
            weinig aangenaam/*vervelend   'little pleasant/annoying'
            weinig vriendelijk/*vijandig   'little friendly/hostile'
            weinig duidelijk/*verward   'little clear/confused'
            weinig interessant/*vervelend   'little interesting/boring'

▷ *weinig* does not modify adjectives with the negative prefix *on-*:

(35)   weinig geloofwaardig/*ongeloofwaardig   'little credible/incredible'
            weinig verstandig/*onverstandig   'little intelligent/unintelligent'
            weinig aantrekkelijk/*onaantrekkelijk   'little attractive/unattractive'
            weinig duidelijk/*onduidelijk   'little clear/unclear'
            weinig geduldig/*ongeduldig   'little patient/impatient'
            weinig zichtbaar/*onzichtbaar   'little visible/invisible'

▷ this looks like a classical case of complementary distribution:
   *weinig aangenaam/*weinig vervelend/*weinig onaangenaam*
▷ the distributional evidence suggests that negative adjectives with and without *on-* share an essential property

▷ we propose that *on-* spells out the Neg_Q-feature, and that *weinig* spells out the features Neg_Q and Q:

(36)   a. $\text{Neg}_Q\text{P} \Rightarrow on\text{-}$ b. $\text{Neg}_Q\text{P} \Rightarrow weinig$

                 Neg_Q Neg_Q QP

                                               Q

▷ the difference is motivated by the fact that *weinig* is itself a gradable adjective:

(37)   Hij kocht   weinig potgrond
          he   bought little   potting-compost

▷ the absence of aP is motivated by the fact that *weinig* is defective as an adjective:

(38)   *Zijn verdiensten zijn weinig
          his   merits   are   little
          'His merits are few.'

▷ *weinig* is a functional, rather than a lexical, adjective
▷ *weinig* may modify positive adjectives:

(39)

$$\text{Neg}_Q\text{P} \Rightarrow \textit{weinig}$$

Neg$_Q$ QP

Q   aP $\Rightarrow$ *verstandig*

▷ *verstandig* spells uit aP (Superset Principle)
▷ *weinig* spells out the Neg$_Q$ and Q features
▷ as we saw, *weinig* does not combine with
     ○ negative adjectives
     ○ *on*-prefixed adjectives
▷ it does so for the same reason that *un-* does not combine with negative adjectives: negative adjectives already spell out the entire Neg$_Q$P, so that *weinig* or *un-* cannot also spell out the same Neg$_Q$-feature

(40)

Neg$_Q$	Q	a
vervelend		
weinig	aangenaam	
on-	aangenaam	

5.2   French

▷ the French data show exactly the same patterns as the Dutch data

▷ negative adjectives cannot be prefixed with the negative prefixes *iN-*, *dé(s)*, or *mal-*:

(41)   injuste   *infaux   'unjust/unfalse'
        ingénéreux   *inavare   'ungenerous/unstingy'
        incroyant   *imméfiant   'unbelieving/undistrusting'
        incomplet   *infragmentaire   'incomplete/unfragmented'
        immmodeste   *inorgeuilleux   'immodest/unproud'
        inactif   *impassif   'inactive/unpassive'
        désagréable   *désennuyeux   'unpleasant/unannoying'
        désordonné   *dénonchalant, *dénégligent   'sloppy/unsloppy'
        malheureux   *maltriste   'unhappy/unsad'
        malhonnête   *malméchant   'dishonest/unbad'

▷ *beacoup/peu* 'much/little' show the degrees of comparison:

(42)   a.   *beaucoup*   *plus*   *le plus*
              'much'   'more'   'most'
        b.   *peu*   *moins*   *le moins*
              'little'   'less'   'least'

▷ *peu* 'little', but not *beaucoup* 'much', may modify adjectives:

(43)   peu/*beaucoup actif   'little/much active'
        peu/*beaucoup probable   'little/much likely'
        peu/*beaucoup crédible   'little/much credible'
        peu/*beaucoup frais   'little/much fresh'
        peu/*beaucoup clair   'little/much clear

▷ *peu* only modifies positive adjectives:

(44)   peu actif/*passif   'little active/passive'
        peu agréable/*embêtant   'little pleasant/annoying'
        peu aimable/*hostile   'little friendly/hostile'
        peu clair/*embrouillé   'little clear/confused'
        peu intéressant/*ennuyeux   'little interesting/boring'

▷ *peu* does not modify *iN*-prefixed adjectives:

(45) peu actif/*inactif 'little active/inactive'
      peu probable/*improbable 'little likely/unlikely'
      peu crédible/*incrédible 'little credible/incredible'
      peu conscient/*inconscient 'little conscious/inconscious'
      peu visible/*invisible 'little visible/invisible'
      peu tolérant/*intolérant 'little tolerant/intolerant'
      peu patient/*impatient 'little patient/impatient'

(46)

Neg$_Q$P ⇒ *peu*

Neg$_Q$ QP

Q   aP ⇒ *intelligent*

(47)

Neg$_Q$	Q	a
ennuyeux		
peu		agréable
iN-/dé(s)-/mal-		probable

5.3 English

▷ English has a slightly different system of functional adjectives:

(48) a. much more most
      b. many more most
      c. little less least
      d. few fewer fewest

▷ *many* and *few* add a feature [+count], and are only used adnominally (ignored in this context)
▷ different from Dutch and French, neither *much* nor *little* may modify adjectives:

(49) a. *much/*little intelligent/foolish
      b. *much/*little likely/unlikely
      c. *much/*little happy/sad

▷ but with the indefinite article, we do get a contrast:

(50) *a much happy/sad a little ??happy/sad
      *a much early/late a little early/late
      *a much clean/dirty a little ?clean/dirty
      *a much pleasant/annoying a little ??pleasant/annoying

▷ *a much* cannot modify adjectives, but *a little* can (with a preference for negative ones)

▷ *a little* is internally complex, just like *not*

▷ like *not*, it may be merged on top of both positive and negative gradable adjectives

▷ possibly, *a much* is ruled out for semantic reasons (Q is already spelled out by the adjective, and *a much* would double this)

▷ the preference of *a little* for negative adjectives is a topic for future research
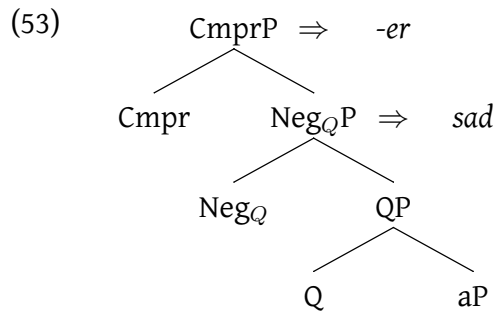
6 Comparatives

6.1 Synthetic comparatives

▷ the synthetic comparative morpheme *-er* spells out a feature Cmpr (Bobaljik 2012)

(51) CmprP ⇒ *-er*
      |
      Cmpr

▷ CmprP dominates QP (in the case of positive adjectives) or Neg_QP (in the case of negative adjectives):

(52) CmprP ⇒ *-er*
     /   \
   Cmpr   QP ⇒ *happy*
         / \
        Q   aP

(53)

```
              CmprP   ⇒    -er
             /    \
        Cmpr      Neg_QP  ⇒   sad
                 /    \
             Neg_Q     QP
                      /   \
                     Q     aP
```

▷ *happy/sad* move into the Spec of CmprP, yielding *happi-er* and *sad-der*

6.2   Analytic comparatives

▷ both *more* and *less* can modify adjectives (unlike the positive degree items *much/little*):

(54)   a.   more/less intelligent
        b.   more/less likely
        c.   more/less interesting

▷ both *more* and *less* can modify negative adjectives:
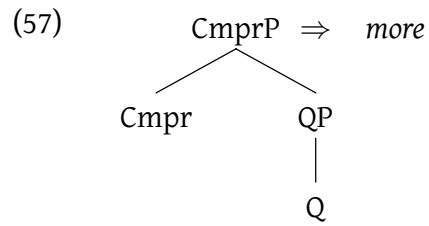
(55)   a.   more/less foolish
        b.   more/less annoying
        c.   more/less dangerous

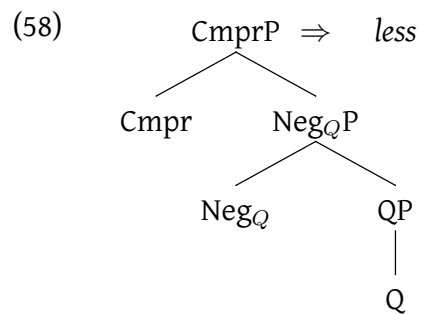▷ both *more* and *less* can modify *un*-prefixed adjectives:

(56)   a.   more/less unfriendly
        b.   more/less unhealthy
        c.   more/less unkind

▷ in sum, none of the restrictions that we observed for *much* and *little* in the previous sections is found in the analytic comparative
▷ we showed this only for English, but the same is true for Dutch (*meer/minder*) and French (*plus/moins*)
▷ this suggests an analysis which allows for more than one Neg_Q-feature (e.g. *less foolish/unfriendly*)
▷ we propose an analysis like the one for *not sad* above
▷ the lexical items for *more* and *less* are internally complex
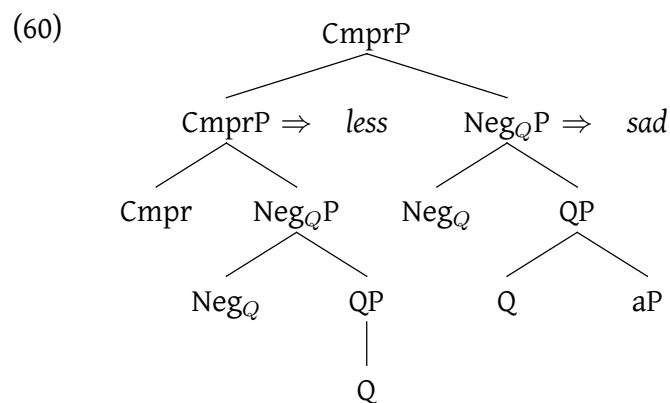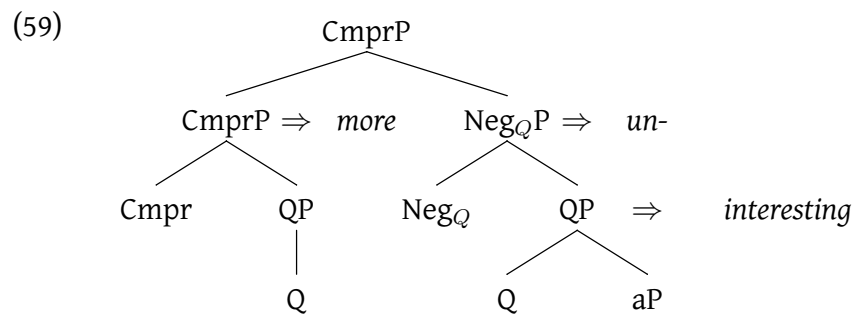▷ *more* is the suppletive comparative of *much*:

16

(57)

$$
\begin{array}{c}
\text{CmprP} \;\Rightarrow\; \textit{more}\\[2pt]
\diagdown\\
\text{Cmpr} \qquad \text{QP}\\
\mid\\
\text{Q}
\end{array}
$$

▷ *less* is the suppletive comparative of *little*:

(58)

$$
\begin{array}{c}
\text{CmprP} \;\Rightarrow\; \textit{less}\\
\text{Cmpr} \qquad \text{Neg}_Q\text{P}\\
\text{Neg}_Q \qquad \text{QP}\\
\mid\\
\text{Q}
\end{array}
$$

▷ *more* and *less* are merged on top of the adjective:

(59)

$$
\begin{array}{c}
\text{CmprP}\\
\text{CmprP} \Rightarrow \textit{more} \qquad \text{Neg}_Q\text{P} \Rightarrow \textit{un-}\\
\text{Cmpr} \quad \text{QP} \qquad \text{Neg}_Q \qquad \text{QP} \;\Rightarrow\; \textit{interesting}\\
\mid\\
\text{Q} \qquad\qquad \text{Q} \qquad \text{aP}
\end{array}
$$

(60)

$$
\begin{array}{c}
\text{CmprP}\\
\text{CmprP} \Rightarrow \textit{less} \qquad \text{Neg}_Q\text{P} \Rightarrow \textit{sad}\\
\text{Cmpr} \quad \text{Neg}_Q\text{P} \qquad \text{Neg}_Q \qquad \text{QP}\\
\text{Neg}_Q \quad \text{QP} \qquad \text{Q} \qquad \text{aP}\\
\mid\\
\text{Q}
\end{array}
$$

7 Conclusion

Summary:

▷ the difference between positive and negative gradable adjectives is a difference in size, which is a difference in the number of features that they spell out.

▷ this proposal allowed us to account for a number of curious restrictions, hitherto unexplained and/or unobserved:
  ○ *un-* does not combine with negative adjectives
  ○ Dutch *weinig* and French *peu* do not combine with negative adjectives

▷ *not* is internally complex and can be combined with positive and negative adjectives alike

▷ the markers of the analytic comparative (*more/less, meer/minder, plus/moins*) are internally complex like *not*, and can be combined with positive and negative adjectives alike

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