A Puzzle in Gradable Adjectives

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1 Introduction

- ▷ Many gradable adjectives come in pairs of polar antonyms (e.g. *happy-sad, true-false*, etc.)
- ▷ the positive poles of the opposition may be prefixed with *un-* (see (1a))
- ▷ the negative poles cannot be prefixed with *un-* (see (1b); Jespersen 1942:466, Zimmer 1964, Horn 2005)
- ▷ the negative poles are not resistent to negation *per se* (see (1c))

(1)

a.	b.	c.
unhappy	*unsad	not sad
unwise	*unstupid	not foolish
unkind	*unrude	not rude
untrue	*unfalse	not false
uneasy	*undifficult	not difficult

- ▷ corpus data support these judgments
  - ○ *British National Corpus* (BNC): 100m words
  - ○ *Corpus of Contemporary American English* (COCA): 450m words

Table 1: *un-* (BNC, COCA)

	PosA	**un-PosA**	**not PosA**	**NegA**	**un-NegA**	**not NegA**
	wise	unwise	not wise	foolish	unfoolish	not foolish
BNC	2,118	399	39	1,088	0	7
COCA	10,018	792	117	4,406	0	33
	happy	unhappy	not happy	sad	unsad	not sad
BNC	11,166	1,822	285	3,241	1	9
COCA	55,400	5,763	1,623	17,549	0	84
	kind	unkind	not kind	rude	unrude	not rude
BNC	23,349	257	17	942	0	8
COCA	1,855,404	512	102	3,386	0	39
	true	untrue	not true	false	unfalse	not false
BNC	17,577	277	652	3,529	0	11
COCA	90,165	1,195	5,687	14,944	0	35
	easy	uneasy	not easy	difficult	undifficult	not difficult
BNC	14,143	915	890	21,433	0	350
COCA	65,942	3,386	3,049	72,543	1	659

▷ the 2x1 example for *unsad* and *undifficult* are the following:
- ‘…invent one, on the spur of the moment. Examples of such nonce-words include **unsad**, coffinish, and Eurodrivel. The existence of this phenomenon is nothing new.’
- ‘…as the one that had received me when I had returned home, my not **undifficult** mission completed.’

▷ A possible account of these facts runs like this:

(2) “Negative affixes are not used with adjectival stems that have a ‘negative’ value.” (Zimmer 1964:15)

▷ this is a restriction on morphological vs syntactic negation
▷ this is a restriction on *negating negative* adjectives; this is not a coincidence!

Aims of this talk:

1. to show that the restriction in (1) can be observed both with morphological and syntactic negation.
2. to show that it is no coincidence that certain *negative* markers are excluded with *negative* adjectives, i.e. to develop a principled account for the data pattern in (1).

2 Some background

- ▷ Fodor et al. (1975) make a distinction between four types of negative elements:
  - ○ Class 1: explicitly negative free morphemes, e.g. *not*
  - ○ Class 2: explicitly negative bound morphemes, e.g. *un-*, *n-ever*
  - ○ Class 3: implicitly negative morphemes, e.g. *doubt*
  - ○ Class 4: pure definitional negatives (PDNs), e.g. *kill* (cause to become not alive), *bachelor* (man who is not married).
- ▷ Fodor et al. (1975) argue that Class 2 and Class 3 items pattern together, e.g. in their ability to trigger NPIs, and in RTs on sentences containing these items.
- ▷ our results corroborate these findings:
  - ○ Class 2: *un-happy* etc.
  - ○ Class 3: *sad, false, rude*, etc.
- ▷ we shall argue that Class 3 items contain a *Neg*-feature (a property they share with Class 1 and Class 2 items)

3 Nanosyntax

Basic principles (Starke 2009, Caha 2009):

- ▷ the syntax works only with features and combinations of features
- ▷ each feature is a syntactic head that projects
- ▷ lexical insertion is postsyntactic
- ▷ *phrasal spellout*: morphemes do not spell out terminal nodes, but phrases, i.e. combinations of features
- ▷ 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:

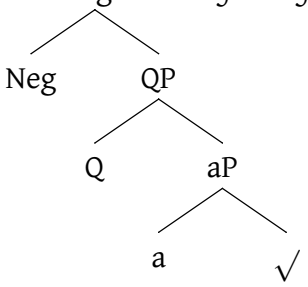
(4) *The Elsewhere Principle*
In case two rules, R_1 and R_2, can apply in an environment E, R_1 takes precedence over R_2 if it applies in a proper subset of environments compared to R_2. (cf. Kiparsky 1973)

4 Prerequisites for the Analysis

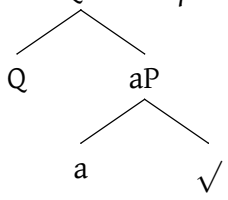
4.1 A difference in size

▷ 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:

(5) a. NegP ⇒ *negative gradable adjective* (e.g. *sad*)



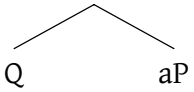
b. QP ⇒ *positive gradable adjective* (e.g. *happy*)



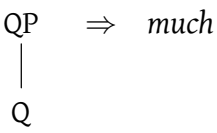
4.2 QP

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

(6) QP ⇒ *intelligent, tall, happy, warm, long, ...*



▷ Q is a feature which denotes a positive quantity
▷ evidence for Q is found in the semantics: *John is tall* is in fact *John is MUCH tall* (Bresnan 1973).
▷ *much* spells out QP

(7) 

▷ *much* is a representative of the system of the Q-adjectives (Solt 2015):

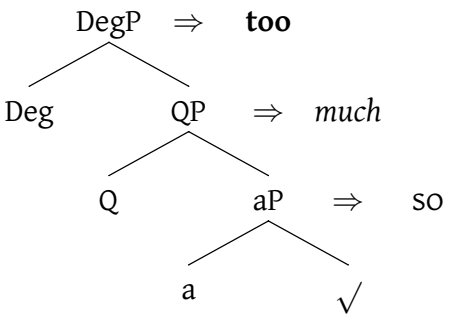
(8)

	positive		comparative		superlative	
	count	mass	count	mass	count	mass
positive	many	much	more		most	
negative	few	little	fewer	less	fewest	least

▷ evidence also comes from the phenomenon of *much*-support (Corver 1997), where *much* appears overtly:

(9) 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.

▷ schematically: **Deg** + *much* + SO

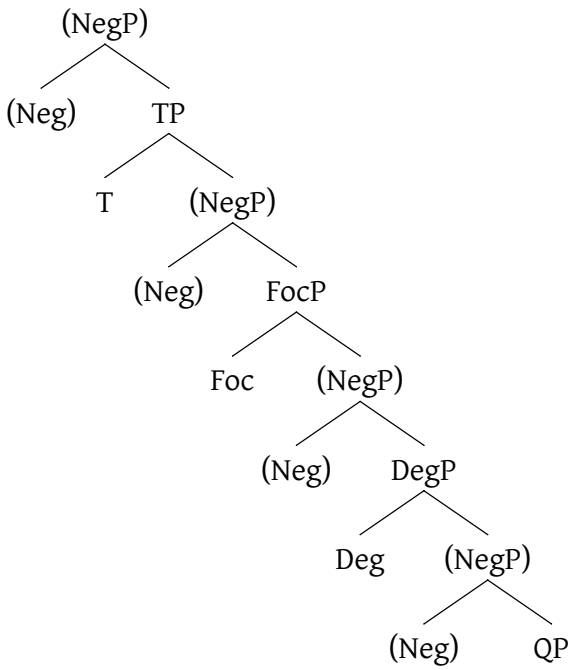
(10) 

4.3 Negation

▷ negative markers (like *not, non-, un-*) are internally complex (De Clercq 2013, to appear)
▷ all negative markers contain a negative feature *Neg*, expressing semantic negation (¬)
▷ *Neg* is never spelled out alone: different negative markers spell out different sets of features
▷ concretely:
  ○ assume a (portion of the) functional sequence <T, Foc, Deg, Q>

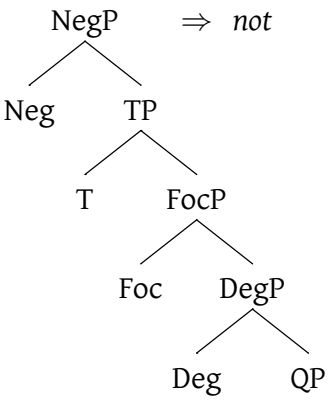
- in the default case, this is interpreted affirmatively
- at each level, a negative feature Neg expressing semantic negation may be inserted

(11)



▷ tree (11) is shorthand for a series of four different trees, each corresponding to a particular negative marker
▷ for example, (12) gives the lexical tree for the lexical item *not*:

(12)



▷ negative markers also have an external syntax: in particular, they take scope in various positions in the clause (e.g. sentential scope, constituent scope)
▷ the *fseq* in the nanospine in (12) mirrors that of the clausal spine

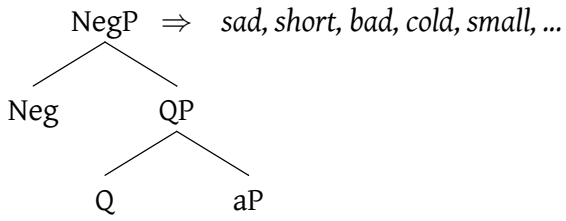
▷ the highest non-negative feature in the nanospine indicates where negation will take scope in the clause
  ○ if the nanospine spells out as *not*, its highest non-negative feature is either T or Foc; negation will then take scope high in the clausal spine, i.e. be inserted in either SpecFocP or SpecTP
  ○ if the nanospine has Q as its highest non-negative feature (as in the case of *un-*), its scope will be limited to those positions in the clausal spine where a QP occurs. Since Q only occurs low in the clausal spine, the scope of *un-* will also be low.

5 Solving the puzzle

5.1 Negative gradable adjectives

▷ negative gradable adjectives add a Neg feature to the structure of positive gradable adjectives given in (6) above:

(13)

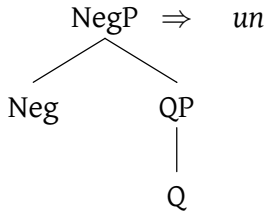


▷ all (and only) negative gradable adjectives are candidates for spelling out the structure in (13)
▷ since they are all in a tie with respect to the Elsewhere Principle, any one of them may undergo lexical insertion

5.2 *Un-*prefixed positive gradable adjectives

▷ the *un-*prefix spells out a Neg and a Q-feature:

(14)



▷ an argument for the presence of Q in *un-* concerns the fact that the meaning of *un-* involves an element of scalarity (Zimmer 1964:33):

(15)

christian	non-christian	'(not) related to, pertaining to, characteristic of certain religious doctrines'
christian	un-christian	'a scale of conformity or opposition to certain norms'

(16)

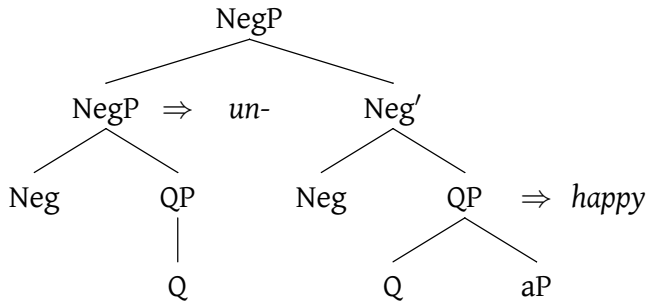
A	**non-A**	**un-A**
American	non-American	unamerican
grammatical	nongrammatical	ungrammatical
Cartesian	non-Cartesian	un-Cartesian
maternal	nonmaternal	unmaternal
motherly	??nonmotherly	unmotherly

(17) a. This sentence is more ungrammatical than that one.
b. *This sentence is more nongrammatical than that one.

▷ *un-* is a scalar negator
▷ *un-* spells out both a Neg and a Q-feature

▷ the structure for positive gradable adjectives prefixed with *un-*:

(18)



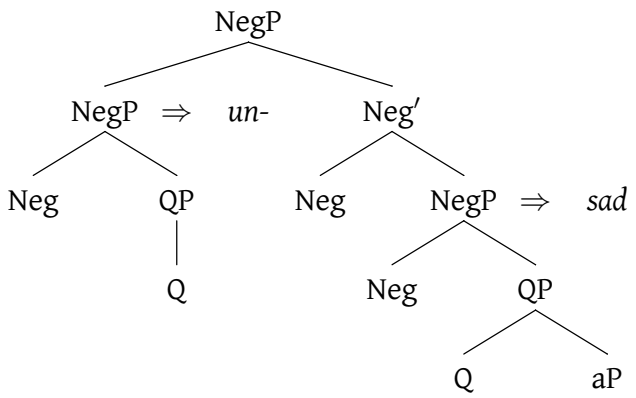
▷ *happy* is spelled out in the usual way
▷ in a parallel derivation, a complex specifier is created, which spells out as *un-*
▷ this NegP is merged in the Spec of a Neg head dominating the QP of *happy*, creating the structure in (18)

5.3 *Un-*prefixed negative gradable adjectives

▷ recall the contrast **unsad* vs *not sad*
▷ both *sad* and *un-* contain a negative feature

▷ because the position where these features take scope is identical (QP), stacking them will lead to an illegitimate functional sequence: <Neg, Neg, Q, a>
▷ the structure of **unsad*:

(19)



▷ *sad* is spelled out in the usual way
▷ in a parallel derivation, a complex specifier is created, which spells out as *un-*
▷ *un-* takes scope at QP, but *sad* already contains a Neg-feature with QP-scope
▷ building the tree in (19) violates the functional sequence, since we now have a sequence <Neg, Neg, Q>

▷ **unsad* is representative of a more general pattern where negative markers having identical scope positions cannot be stacked:

(20) a. ***unun**happy
b. *He is**n't tn't** happy

▷ negative markers with different scope positions are stackable:

(21) 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.
f. ?He is**n't not un**happy

▷ the restriction against prefixing negative adjectives with *un-* extends to derived negative adjectives: nouns suffixed with *-less* resist *un-*prefixation:

(22)

breath	breathless	*unbreathless	not breathless
sense	senseless	*unsenseless	not senseless
use	useless	*unuseless	not useless
mercy	merciless	*unmerciless	not merciless

Table 2: *-less* (BNC, COCA)

	N-less	**un-N-less**	**not N-less**
	breathless	unbreathless	not breathless
BNC	459	0	5
COCA	1,505	0	2
	senseless	unsenseless	not senseless
BNC	175	0	0
COCA	1,088	0	0
	merciless	unmerciless	not merciless
BNC	122	0	0
COCA	611	0	0
	useless	unuseless	not useless
BNC	1,244	0	5
COCA	4,529	0	20

▷ these contrast with positive noun-derived adjectives ending in *-ful*:

(23)

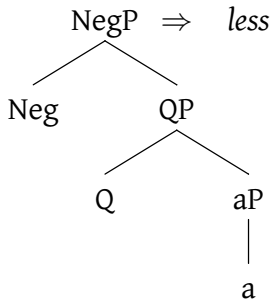
success	successful	unsuccessful	not successful
law	lawful	unlawful	not lawful
event	eventful	uneventful	not eventful

Table 3: *-ful* (BNC, COCA)

	N-ful	**un-N-ful**	**not N-ful**
	successful	unsuccessful	not successful
BNC	10564	921	59
COCA	40400	2711	275
	lawful	unlawful	not lawful
BNC	503	896	5
COCA	827	892	12
	eventful	uneventful	not eventful
BNC	105	118	1
COCA	255	429	1

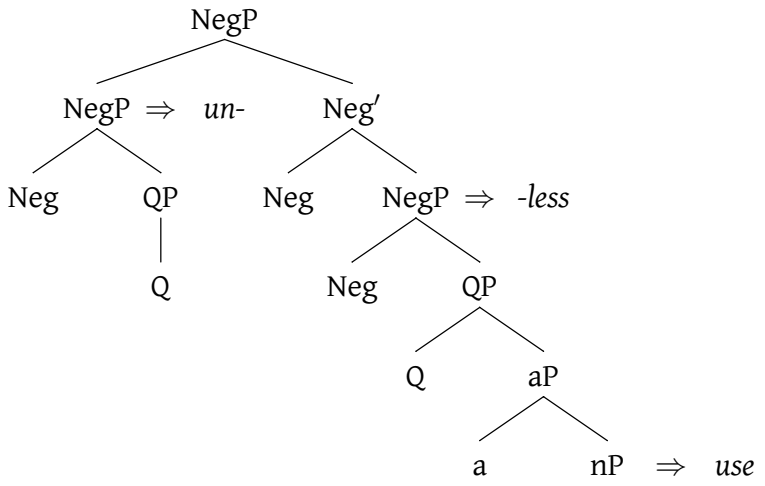
▷ this suggests that *-less* spells out the same features as *un-* (plus an additional *a*-feature, since it adjectivises nouns):

(24)



▷ the tree of **unuseless*:

(25)

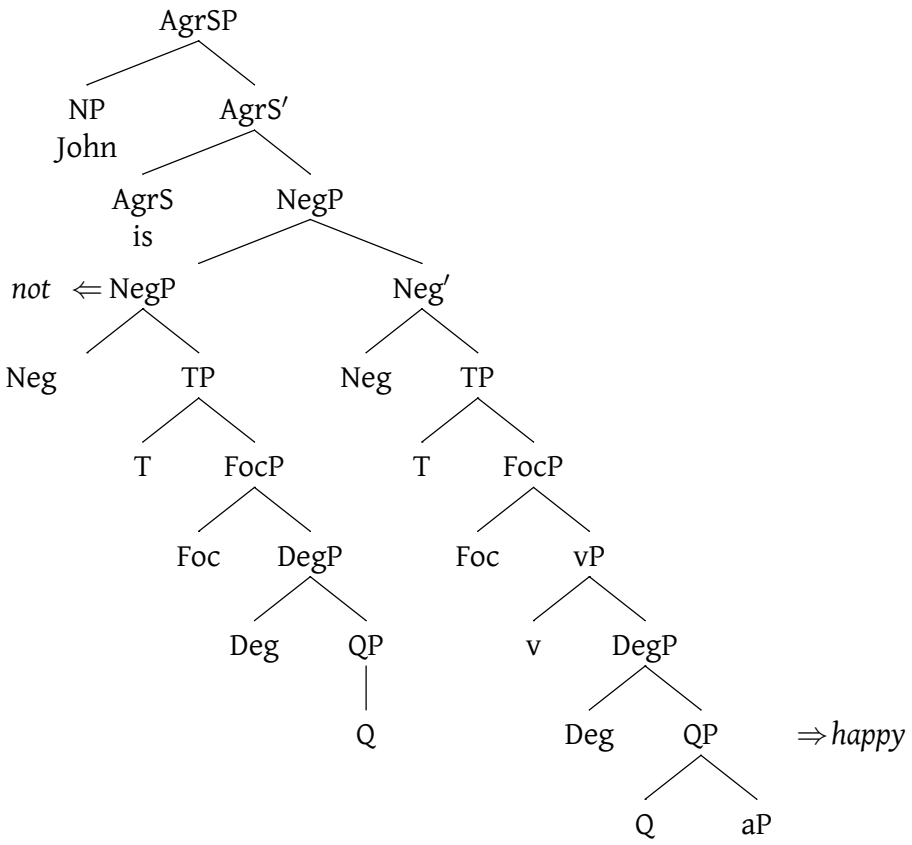


▷ not shown here: nP moves into SpecNegP to derive the suffixal nature of *-less*
▷ (25) has the same violation of the *fseq* as *unsad* in (19): <Neg, Neg, Q, a>

5.4 *Not* + adjective

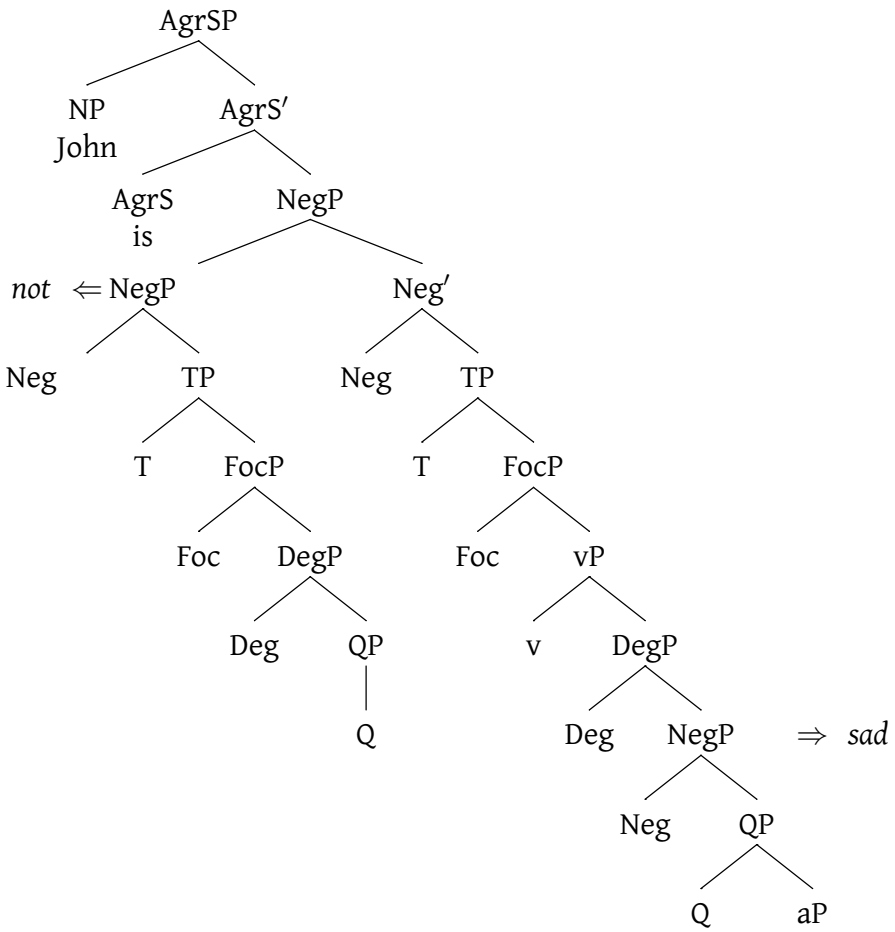
▷ *not* minimally spells out a negative FocP, and possibly also a TP
▷ the tree for *John is not happy* is given in (26) (various details omitted):

(26)



- ▷ *happy* is spelled out in the usual way
- ▷ in a parallel derivation, a complex specifier is created, which spells out as *not*
- ▷ the complex specifier takes scope at TP
- ▷ all the parts of the tree respect the functional sequence
- ▷ a negative adjective adds a Neg-feature and a NegP in the main spine, but for the rest works identically:

(27)



▷ all the parts of the tree continue to respect the functional sequence

Summary

- ▷ **unsad* involves a restriction against the stacking of two Neg-features with identical scope, violating the *fseq*
- ▷ the same restriction is observed (in a different form) in **ununhappy* and **unuseless*
- ▷ this analysis improves on (2), in that there is a principled reason why *negative* affixes do not combine with *negative* adjectives
- ▷ *not sad* is good because two different Neg-complexes, with different scope positions, are stacked.

6 Further support

▷ we discuss a similar restriction against stacking two negative features with identical scope, but not involving morphological negation
▷ this provides a further argument against (2)

6.1 *on-* (Dutch)

▷ the restriction observed in (1) above holds identically in Dutch, i.e. the prefixal negative marker *on-* 'un' combines only with positive adjectives:
▷ negative adjectives can be negated with *niet* 'not' (e.g. *niet droef* 'not sad').

(28)

ongelukkig/*ondroef, *ontriest	'unhappy/unsad'
onverstandig, onwijs/*ondom	'unwise/unfoolish'
ongezond, onwel/*onziek	'unhealthy, unwell/unsick'
oninteressant/*onvervelend, *onsaai	'uninteresting/unboring'
onfraai/*onlelijk	'unnice/unugly'
ongemakkelijk/*onmoeilijk	'uneasy/undifficult'
onprettig/*onvervelend	'unpleasant/unannoying'

▷ Corpus data: *Corpus Hedendaags Nederlands*, approx. 50m words

Table 4: *on-* (CHN)

PosAdj	**unPosAdj**	**NotPosAdj**	**NegAdj**	**unNegAdj**	**notNegAdj**
gelukkig	ongelukkig	niet gelukkig	droef	ondroef	niet droef
46,223	5,374	2,109	270	0	6
			triest	ontriest	niet triest
			2,877	0	27
			verdrietig	onverdrietig	niet verdrietig
			1,610	0	44
verstandig	onverstandig	niet verstandig	dom	ondom	niet dom
7,137	1,592	1,143	8,792	0	365
gezond	ongezond	niet gezond	ziek	onziek	niet ziek
15,043	1,899	578	16,903	1	707
interessant	oninteressant	niet interessant	saai	onsaai	niet saai
19,769	512	916	5,613	0	298
prettig	onprettig	niet prettig	vervelend	onvervelend	niet vervelend
7,646	357	771	5,865	0	204
fraai	onfraai	niet fraai	lelijk	onlelijk	niet lelijk
5,990	10	226	4,101	0	73
gemakkelijk	ongemakkelijk	niet gemakkelijk	moeilijk	onmoeilijk	niet moeilijk
25,422	2,369	4054	85,836	0	2,987
actief	onactief	niet actief	passief	onpassief	niet passief
39,937	1	793	2,214	0	115

▷ the account is the same as for English:
- negative adjectives spell out a NegP
- *on-* is a complex specifier spelling out Q+Neg, which takes scope at Q
- merging *on-* in the Spec of NegP at QP violates the functional sequence (as shown in the tree in (27) above)

6.2 *weinig* 'little' (Dutch)

▷ additional evidence supporting this analysis comes from the Q-adjectives *veel* 'much' and *weinig* 'little'

(29)
a.	*veel*	*meer*	*meest*
	'much'	'more'	'most'
b.	*weinig*	*minder*	*minst*
	'little'	'less'	'least'

▷ the positive Q-adjective *veel* 'much' cannot modify adjectives, suggesting that *veel* is the equivalent of *much* (compare **much tall*)

▷ *weinig* can modify adjectives:

(30) a. weinig/*veel waarschijnlijk
little/much likely
b. weinig/*veel geloofwaardig
little/much credible
c. weinig/*veel verstandig
little/much intelligent
d. weinig/*veel duidelijk
little/much clear

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

(31) a. weinig actief/*passief
little active/passive
b. weinig aangenaam/*vervelend
little pleasant/annoying
c. weinig vriendelijk/*vijandig
little friendly/hostile
d. weinig duidelijk/*verward
little clear/confused
e. weinig interessant/*saai
little interesting/boring

▷ this distributional pattern is the same as in (1), but since *weinig* 'little' is syntactic (not affixal) negation, it is not accounted for by (2)
▷ *weinig* cannot modify derived adjectives with the negative prefix *on-*:

(32) a. weinig geloofwaardig/*ongeloofwaardig
little credible/incredible
b. weinig verstandig/*onverstandig
little intelligent/unintelligent
c. weinig aantrekkelijk/*onaantrekkelijk
little attractive/unattractive
d. weinig duidelijk/*onduidelijk
little clear/unclear
e. weinig zichtbaar/*onzichtbaar
little visible/invisible

Table 5: *weinig* (CHN)

weinig PosA	**weinig on-PosA**	**weinig NegA**
weinig aangenaam	weinig onaangenaam	weinig vervelend
11	0	1
weinig vriendelijk	weinig onvriendelijk	weinig vijandig
9	0	0
weinig duidelijk	weinig onduidelijk	weinig verward
47	0	0
weinig interessant	weinig oninteressant	weinig saai
71	0	0
weinig geloofwaardig	weinig ongeloofwaardig	
103	0	
weinig verstandig	weinig onverstandig	weinig dom
7	0	1
weinig aantrekkelijk	weinig onaantrekkelijk	weinig afstotelijk
137	0	0
weinig actief	weinig onactief	weinig passief
53	0	0
weinig zichtbaar	weinig onzichtbaar	
110	0	

▷ *weinig* cannot modify noun-derived adjectives with the negative suffix *-loos* '-less':

(33) a. *weinig ademloos
little breathless
b. *weinig zinloos
little senseless
c. *weinig genadeloos
little merciless
d. *weinig nutteloos
little useless

▷ *weinig* can modify noun-derived adjectives with the positive suffix *-vol* '-ful':

(34) a. weinig berouwvol
little remorseful
b. weinig begripvol
little understanding
c. weinig hoopvol
little hopeful

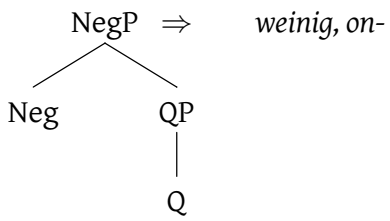
d. weinig succesvol
little successful

Table 6: *weinig -vol/-loos* (CHN)

weinig N-loos	**weinig N-vol**
weinig ademloos	weinig waardevol
0	6
weinig zinloos	weinig begripvol
0	5
weinig genadeloos	weinig hoopvol
0	70
weinig nutteloos	weinig succesvol
0	127
weinig sfeerloos	weinig sfeervol
0	2
weinig belangeloos	weinig belangrijk
0	11

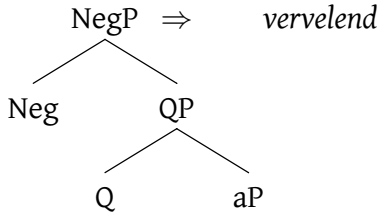
▷ the distributional evidence suggests that negative adjectives (whether underived, derived with the prefix *on-*, or the suffix *-loos*) share an essential property, *viz.* the presence of a *Neg* feature
▷ *weinig* has the same internal makeup as the prefix *on-* (and closely resembling that of the suffix *-loos*):

(35)



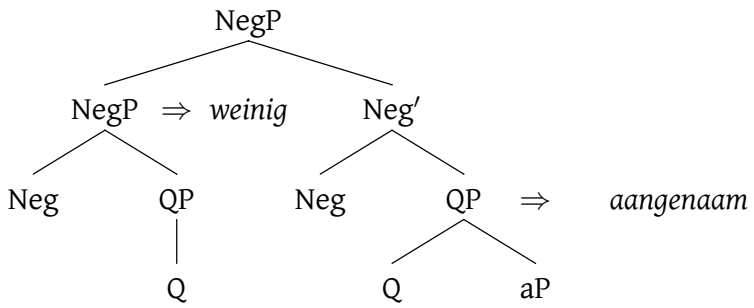
▷ underived negative adjectives also contain a Neg-feature:

(36)



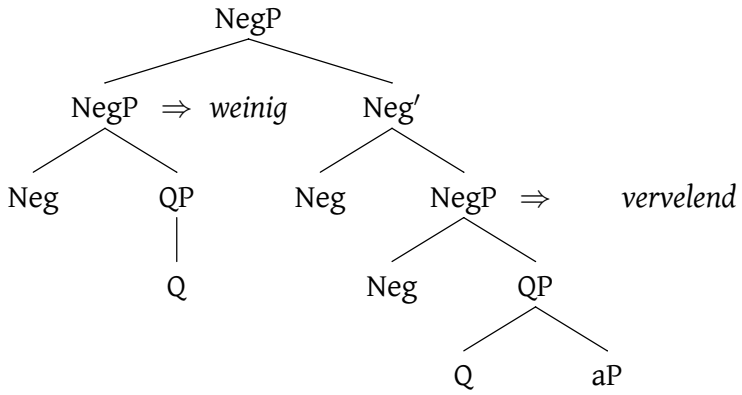
▷ Consider the tree for *weinig* + positive adjective …:

(37)



▷ …and the tree for *weinig* + negative adjective, which features the familiar violation of the *fseq*:

(38)



▷ the same violation will occur with derived negative adjectives:
- **weinig* + *on* + *A*
- **weinig* + *A* + *loos*

▷ Summary:
- the Dutch data show the same restriction as English against *un*-prefixing negative adjectives
- the negative Q-adjective *weinig* 'little' also shows this restriction, despite not involving morphological negation
- this provides a further argument against (2), and in favour of our account

7 Some apparent exceptions

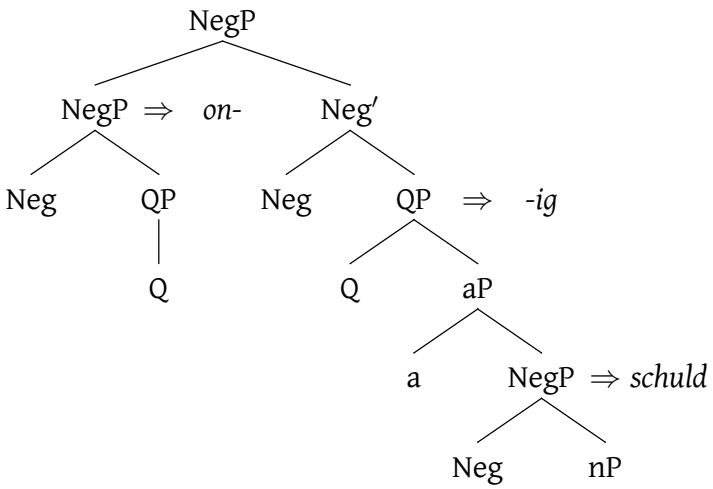
▷ there exist some apparent exceptions to the generalisation that negative adjectives cannot be prefixed with *on-* 'un':

(39)

ongecompliceerd	'uncomplicated'	(compliceren)
onschadelijk	'harmless'	(schade)
onschuldig	'innocent'	(schuld)
ondogmatisch	'undogmatic'	(dogma)

▷ these adjectives are derived from (negative) verbs or nouns
▷ *un*-prefixation yields the positive pole of the opposition
▷ if there is a negative head (cf. class 4 Fodor et al. 1975), it attaches to the noun or verb
▷ this does not conflict with the higher negative head spelled out by *on-*

(40)



▷ this tree respects the *fseq*
▷ the analysis also extends to a class of English examples noted in Zimmer (1964) and Horn (1985), where the *un*-prefix apparently attaches to a negative base:

(41)

unharmed	(harm)
unscathed	(scathe)
undefeated	(defeat)
unblamable	(blame)
unobjectionable	(object)

▷ the negativity of these adjectives derives from a *Neg*-feature that is embedded more deeply in the structure (or there is no negative feature in the nouns)
▷ *un*-prefixation does not lead to an illegitimate *fseq*

8 Positive adjectives resisting *un*-prefixation

▷ Quite a few positive adjectives resist *un*-prefixation as well:

(42)

*unlong	short
*unwide	narrow
*unwarm	cold
*unhigh	low
*unfast	slow
*unheavy	light
*ungood	bad
*unlight	dark

▷ these adjectives (for the most part) represent objectively measurable dimensions (such as length, width, height, temperature, speed)
▷ there is a (predictable) 1:1 relation between these adjectives and their polar opposites
▷ the negative adjectives block their *un*-prefixed positive counterparts
▷ they contrast with adjectives that represent more subjective dimensions:

(43)

unwise	foolish
unkind	rude
unfriendly	rude
uneasy	hard, difficult
unhappy	sad
unhealthy	sick, ill

▷ there is not always a 1:1 relation between these adjectives and their polar opposites
▷ there are (subtle) meaning differences between the *un*-prefixed positive adjectives and their negative counterparts

9 Conclusion

Summary:

▷ we discussed the following puzzle in gradable adjectives:
  ○ *un-* does not combine with negative adjectives

- Dutch *weinig* does not combine with negative adjectives (wether lexically negative, or negative through affixation)

▷ we developed an account of these restrictions in a nanosyntactic framework, that relies on the following assumptions:

- the difference between positive and negative gradable adjectives is a difference in size
- the way *un-* and *weinig* take scope leads to an illegitimate functional sequence if they combine with a negative adjective

▷ the polarity restrictions disappear in a number of cases:

- with the sentential negative marker *not*
- with negative adjectives that derive from negative nouns or verbs

▷ these cases do not lead to a violation of the *fseq*, because the multiple *Neg* features are separated by intervening levels of structure

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