

Ackema & Neeleman 2004: Distributed Selection

1 Introduction

- Separationist hypothesis: morphological properties of morphemes are strictly separated from their semantic and morphosyntactic properties → morphemes are not units of the lexicon
- the morphosyntactic properties are related to the semantic and morphological properties via mapping rules
- such models are called representationally modular (cf. also DM)
- the separation of the aspects of "morphemes" implies that selection is also separated into
 - morphosyntactic selection: category
 - morphological selection: bar-level (affix needs a host it can attach to)
- advantage of separating morphosyntactic and morphological selection:
 1. one can handle syntax-morphology mismatches, e.g. violations of the mirror principle: while in the default case, the syntactic order is mapped onto the morphology, there can be explicit deviations, sanctioned by specific mapping principles, e.g. Chimwi:ni always has causative > applicative, irrespective of the syntactic structure
 2. one can explain under which circumstances constituents larger than heads can be part of words:
 - if the affix has a morphological representation of an independent phonological word
 - if the affix is zero

2 Mapping

2.1 Idiosyncratic mapping rules

- idiosyncratic mapping rules are the counterpart in representationally modular models of traditional lexical items
- representation of the verb *read*:

$$(1) \quad \lambda y \lambda x [\text{read } (x,y)] \leftrightarrow \langle \langle +V, -N \rangle, (\theta_x \theta_y) \rangle \leftrightarrow /ri:d/$$

- representation of *-er*:

$$(2) \quad \lambda x [x] \text{ pred } (x) \leftrightarrow \langle \langle -V, +N \rangle, (R_x) \rangle \leftrightarrow /-ər/$$

$$+ \langle \langle +V, -N \rangle _ \rangle \quad + [\omega / y / _]$$

- mapping need not be 1:1:
 - phonologically conditioned allomorphy: a single AFFIX is associated with several alternative phonological realizations
 - such rules can also apply to combinations of morphosyntactic material:
- (3) a. If PLURAL selects (a category headed by) TOOTH, then $P(\text{TOOTH, PLURAL}) = /teeth/$
 b. If PLURAL selects (a category headed by) SHEEP, then $P(\text{SHEEP, PLURAL}) = P(\text{SHEEP})$

2.2 General mapping rules

- Linear correspondence basically derives the effects of the mirror principle:

(4) Linear correspondence
 If X is structurally external to Y,
 X is phonologically realized as /x/, and
 Y is phonologically realized as /y/
 then /x/ is linearly external to /y/.
- violation of mapping principles does not occur without a trigger, i.e. by conflicting demands = a special, idiosyncratic mapping principle
- the /affix/ usually combines with the phonological correspondent of (the head of) the category that the AFFIX combines with:

(5) Input correspondence
 If an AFFIX selects (a category headed by) X,
 the AFFIX is phonologically realized as /affix/, and
 X is phonologically realized as /x/,
 then /affix/ takes /x/ as its host.
- input correspondence becomes relevant once the affix selects a more complex structure:

(6) a. $[[x Y X] \text{AFFIX}] \leftrightarrow$
 b. $[/y/ [/x/ /affix/]]$
- sometimes, the two principles are in conflict with each other, e.g. when a complex left-headed structure is selected by an affix that is spelled out by a suffix:

(7) a. $[[x X Y] \text{affix}] \leftrightarrow$
 b. $[/x/ [/y/ /affix/]]$: linear correspondence
 c. $[[/x/ /affix/] /y/]$: input correspondence

- such representations often cannot be mapped successfully onto a morphological form, cf. e.g. the following left-headed compounds from Italian:

- (8) a. carta regalo
paper gift
'wrapping paper for presents'
- b. carta carbone
paper carbon
'carbon paper'

- these compounds resist further word formation with most, if not all, derivational suffixes (ven though the head *carta* can be derived):

- (9) a. cart-iere
'paper seller'
- b. cart-aio
'paper worker'

- (10) a. *carta regal-iere
b. *cart-iere regalo
c. *cart regal-aio
d. *cart-aio regalo
- (11) a. ??carta carbon-iere
b. *cart-iere carbone
c. ??carta carbon-aio
d. *cart-aio carbone

- in the case of $[[N\ N\ X]\ \text{PLURAL}]$, one mapping principle can be violated viz. linear correspondence:

- (12) a. cart-e regalo
paper-PL gift
'pieces of paper for wrapping presents'
- b. *carta regal-i
paper gift-PL
- (13) a. cart-e carbone
paper-PL carbon
'carobon papers'
- b. *carta carbon-i
paper carbon-PL

- but violation of a principle only occurs to satisfy another one, typologically, there are no compounds that violate both: head to the right, inflection to the left
- a possibility to satisfy both mapping principles: spell out the affix twice, on the head and linearly external to the phonological correspondent of the left-headed compound:

- (14) a. $[[X\ X\ Y]\ \text{AFFIX}] \leftrightarrow [[X\ X][X\ X]$
b. $[[\ /x/\ \text{affix}/] [\ /y/\ \text{affix}/]]$

- such double realizations are indeed attested:

- (15) a. mezza notte
middle night
'the middle of the night'
- b. mezz-e nott-i
middle-PL night-PL
- c. ?cart-e carbon-i
paper-PL carbon-PL

- however, since double-realization is not the only possibility, it must violate a mapping principle:

- (16) Quantitative correspondence
No element in the morphosyntax is spelled out more than once

2.3 Predictions

- Since the mapping principles refer to the phonological realization of elements in the morphosyntax, it matters whether these elements actually have a phonological realization
- if either the affix or the head of the category it selects does not, all mapping principles discussed so far are vacuously satisfied

- if the head of the selected category is not spelled out = is a zero morpheme → input correspondence is not violated:

- (17) a. $[[X Y X] \text{AFFIX}] \leftrightarrow$
 b. $[/y/ / \text{affix}/]$

- zero-derived words are themselves derivable:

- (18) a. $[[V [N \text{DEEL}] \text{AFFIX}_V] \text{BAAR}] \leftrightarrow$
 b. $[/deel/ / \text{baar}/]$

- the affix attached to the non-head → special mapping rules are blocked in this case (because they refer to the head, not to the non-head), e.g. exocentric compounds, which are derived by zero affixation:

- the compound is headed by the zero-affix:

- (19) a. $[[N \text{SABRE TOOTH}] \text{AFFIX}_N] \text{PLURAL}] \leftrightarrow$
 b. $[/sabre/ / \text{tooths}/]$
 c. $*[/sabre/ / \text{teeth}/]$

- endocentric compounds headed by TOOTH are different:

- (20) a. $[[\text{BUCK TOOTH}] \text{PLURAL}] \leftrightarrow$
 b. $*[/buck/ / \text{tooths}/]$
 c. $[/buck/ / \text{teeth}/]$

- the affix itself is not spelled out → linear corespondence and and input correspondence are vacuously satisfied
- prediction: the position of the head is irrelevant → zero affixes impose fewer restrictions on their host category than overt affixes:

- (21) a. $[[X Y X] \text{affix}] \leftrightarrow$
 b. $[/y/ /x/]$
 c. $[[X X Y] \text{affix}] \leftrightarrow$
 d. $[/x/ /y/]$

- similar: if the affix is overtly realized as a phonologically independent element, rather than an affix → input correspondence irrelevant, again, → both mappings are possible:

- (22) a. $[[X Y X] \text{affix}] \leftrightarrow$
 b. $[/y/ /x/ / \text{word}/]$
 c. $[[X X Y] \text{affix}] \leftrightarrow$
 d. $[/x/ /y/ / \text{word}/]$

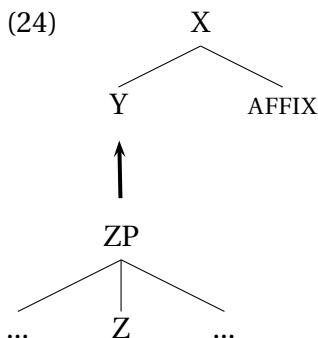
3 Affixes that aren't

3.1 Phrases embedded in words

- recall: phrases can appear as the nonhead of compounds:

(23) een [_N [_{NP} ijs met slgroom] fobie]
 an ice cream with whipped cream phobia
 'an abhorrence of ice cream with cream'

- the same is expected for derived words:



- when mapping principles apply to such structures, the morphosyntactic representation and the representation of the inserted material are considered at the same time → mapping of the affix can depend on properties of the internal structure of ZP, such as the position of its head; the notions of head and selection must therefore be understood in an extended sense:

(25) a. Extended selection (e-selection)
 α e-selects β iff (i) α selects β or (ii) α selects γ and β is inserted in γ .
 b. Extended head (e-head)
 α is the e-head of β iff (i) α is the head of β or (ii) α is the head of γ and γ is inserted in β

- expectation: mapping becomes problematic if the affix corresponds to a /suffix/ and if the phrase is not head-final (or if the phrase is not head-initial and the affix corresponds to a /prefix/):

(26) a. [_{XP} ... X YP] AFFIX
 b. /x/ /affix/ /yp/: satisfies input correspondence
 c. /x/ /yp/ /affix/: satisfies linear correspondence
 d. /x/ /affix/ /yp/ /affix/: satisfies both principles, violates quantitative correspondence

- in Dutch, overt suffixation normally cannot target a non-head-final phrase:

(27) a. [_N [_N BLOEM] IST]
 flower ist
 'florist'
 b. [/bloem/ /ist/]

- (28) a. [_N [_{NP} BLOEM UIT AALMEER] IST]
 flower from Aalsmeer ist
 b. */bloem//uit/ [/aalsmeer/ /ist/]
 c. */[bloem//ist/] /uit//aalsmeer/
 d. */[bloem//ist/] /uit/ [/aalsmeer//ist/]

- prediction: phrasal affixation should be possible if the phrase is head-final (see below)

3.2 Affixes corresponding to /Word/s

- an AFFIX has a phonological counterpart which happens not to have selectional properties: although it spells out an AFFIX, it is not an /affix/, but a word-like element: Dutch *-achtig* 'like' and *-loos* 'less'
- they seem to have selectional properties in syntax (?), since they cannot occur as free forms:

- (29) a. Vind jij dat groen? *Nou, hooguit achtig.
 Find you this green? Well, at best like
 'Do you think that is green? Well, somewhat like it at best.'
 b. Staat er een panfluit op deze CD? *nee, hij is godzijdank loos.
 are there pan pipes on this CD? No, it is mercifully less.
 'Are there pan pipes on this CD? No, thank God, there aren't any.'

- words derived by *-achtig* 'like' and *-loos* 'less' share characteristics with compounds rather than affixed structures:
 - they are not stress attracting
 - they do not trigger resyllabification like other adjectival suffixes do, they thus feed final devoicing
 - like the right-hand part of compounds, but unlike suffixes, they allow a preceding diminutive or a linking s:

(30) Stress shift with adjectival suffixes, but not with *-achtig* and *-loos*

- a. vijand vijánd-ig víand-achtig
 enemy enemy-y enemy-like
 'enemy' 'hostile' 'enemy-like'
 b. hártstocht hartstócht-elíjk hártstochts-loos
 passion passion-ate passion-less

(31) Diminutive forms possible before *-achtig* and *-loos*, but not before other adjectival suffixes:

- a. vogel-tje-s *vogel-tje-s-ig vogel-tje-s-achtig
 bird-DIM-PL bird-DIM-PL-y bird-DIM-PL-like
 b. koek-je-s *koek-je-s-elíjk koekjes-loos
 cookie-DIM-PL cookie-DIM-PL-y cookie-DIM-PL-less

- the suffixes are predicted to attach to non-head-final phrases without violating any of the mapping principles:

- (32) a. zo'n [_A [_{CP} waar gaat dat heen] achtig] gevoel
 such a where goes that to like feeling
 'a somewhat worried feeling'
- b. een [_A [_{NP} ijs met slagroom] loos] bestaan
 a ice cream with whipped cream less existence
 'a life without ice cream with cream'

3.3 AFFIXES that are not spelled out

- the same holds for AFFIXES that do not have a phonological correspondent:
- attaching zero affixes to phrases is unproblematic
- operation 'autoreference': operation through which an expression becomes a name for itself; this seems possible with just about any syntactic phrase:

- (33) a. Het 'wat is er nou weer aan de hand' dat altijd uit zijn kantoor
 the what is there now again on the hand that always from his office
 schalt werkt op m'n zeuwen.
 sounds works on my nerves
 'The "now what" that can always be heard coming from his office irritates me.'
- b. Men kon het 'drie bossen tulpen voor een tientje' al van verre horen.
 one could the three bunches tulips for a tenner already from afar hear
 'One could hear the "three bunches of tulips for a tenner" from afar.'

- although there is no overt /affix/, there are good reasons to assume that an AFFIX is involved, because it changes the semantic and syntactic properties of the input phrase in a systematic way:
 - whereas the embedded phrase may denote a question or a proposition, the derived expression is referential
 - in Dutch, autoreferential expressions uniformly take the neuter determiner *het* even if the embedded phrase would usually select the non-neuter determiner; this change can be attributed to the abstract affix, which is, apparently, neuter:

- (34) a. De/*het publicist is zeer populair.
 the.NON-NTR/the.NTR publicist is very popular
- b. het/*de 'publicist' op pagina 3 zou ik liever vervangen
 the.NTR/the.NON-NTR publicist on page 3 would I rather replace
 door 'auteur'.
 by author
 'I would rather replace the "publicist" on page 3 by "author".'

- idiosyncratic spell-out rules (e.g. for the plural of TOOTH) cannot apply to words that are used auto-referentially, instead, the regular spell-out rule for plural must be used:
- the AFFIX destroys the context for application of the special rule, PLURAL does not attach to a category headed by TOOTH, but rather one headed by this AFFIX (cf. the analysis of *sabre teeth*)

- (35) a. Your teeth/*teeth look fine to me.
 b. There are too many 'tooth's/*'teeth' in this chapter.

- the operation involves a change in syntactic status, both with respect to category and level of projection: the output shows the distribution of a nominal head:

- (36) [_{DP} Dat [_{NP} eeuwige [_{N'} [_N [_{CP} wat is er nou weer aan de hand] \emptyset] van
 that eternal what is there now again on the hand of
 Jan]]] werkt op m'n zenuwen.
 John works on my nerves
 'John's eternal "now what?" irritates me.'

4 The acquisition of synthetic compounds

- acquisition of AFFIX and /affix/ is independent:
- it is conceivable, that the AFFIX has already been acquired but not the /affix/ (= zero)
- prediction: children can form subject names, i.e. based on -ER with non-head-final syntactic phrases
- indeed: at that stage, children form synthetic compounds based on a VO order:

- (37) Stage I (around 3): VO order, no overt affix
- a kick ball (someone who kicks a ball)
 - a build-wall (someone who builds a wall)
 - a bounce-ball (someone who bounces a ball)

- children thus essentially nominalize verb phrases → no principle violated
- intermediate stage: overt correspondent of ER has already been acquired, but the process of synthetic compounding is not yet available (they don't produce forms like *a ball-kick*) → a minimal violation of the mapping principles ensues
- only the morphosyntactic structure in a is available, b is still missing:

- (38) a. [N [VP kick_V [NP ball]] er]
 b. [N [V ball_N kick_V] er]

- ER can be mapped onto the following structures:

- (39) a. [[_ω kick er] [_ω ball]]: *linear correspondence
 b. [[_ω kick] [_ω ball er]]: *input correspondence
 c. [[_ω kick er] [_ω ball er]] *quantitative correspondence

- each form violates a mapping principle, one therefore expects optionality:

- (40) Stage II: VO order, overt affix
- a giver-present (someone who gives a present)
 - a dry-hairer (someone who dries hair)
 - a mover-boxer (someone who moves boxes)

- once synthetic compounding is available, no mapping principle is violated since the structure is head-final:

- (41) a. [N[V truck drive] er]
 b. [[_ω ball] [_ω kick er]]

- Lexical exceptions in the formation of ER, licensed by specific mapping rules:

- (42) a. [TYPE ER] ↔ /type/+/ist/
 b. [COOK ER] ↔ /cook/
 c. [STEAL ER] ↔ /thief/

(43) If ER selects (a category headed by) COOK, then $P(\text{COOK}, \text{ER}) = P(\text{COOK})$

- prediction: if ER is not spelled out, the affix can attach to a left-headed phrase as this will not lead to violations of any mapping principles:

(44) a. scare crow (Vogelscheuche) [_N [_{VP} V + NP] ER]
 b. pick pocket (Dieb)
 c. Springinsfeld (here: CP+N)

5 Subject names in the adult language

- Adult stage: what happens if a type of compounding is not available and the only possible base is left-headed, i.e. VX – is ER-affixation possible?
- English has no particle-V compounds, only particle verbs (which are phrasal):

(45) a. to throw away vs. *to away-through
 b. to stand in vs. *to in-stand
 c. to let down vs. *to down-let

- we expect the same problems as during the acquisitional stage II (where synthetic compounding and thus a right-headed base is missing) → optionality, all forms violate a mapping principle:

(46) [[CUT UP] ER]
 a. [[_ω cut er] [_ω up]]: *linear correspondence
 b. [[_ω cut] [_ω up er]]: *input correspondence
 c. [[_ω cut er] [_ω up er]]: *quantitative correspondence

- such forms indeed occur:

(47) a. passer by
 b. come outer
 c. cleaner upper

- a fourth possibility: when ER is not spelled out, it can attach to a phrase (must be licensed by a specific mapping rule that suppresses /-er/)

(48) a. [[STAND IN] ER]
 b. [[_ω stand] [_ω in]]

6 Phonological phrasal affixation

- phrasal affixation is normally ruled out if the base is complex and non-head-final:

(49) a. $[_Y [_{XP} X WP] \text{AFFIX}] \leftrightarrow$
 b. */x/-/wp/-/affix/

- however, such forms can surface if prior to the attachment of the affix, a process of zero derivation takes place:

(50) a. $[_Z [_Y [_{XP} WP] \text{affix-1}] \text{affix-2}] \leftrightarrow$
 b. /x/-/wp/-/affix-2/

- input correspondence for affix 2 is satisfied – vacuously, because there is no exponent of affix 1, consequently, affix 2 may attach to any adjacent word
- prediction: AFFIXES with an overt counterpart, which cannot freely attach to phrases because of mapping problems, can productively take zero-derived phrases as their input:

(51) a. $[[[\text{STAND IN}] \text{ER}] \text{PL}] \leftrightarrow$
 b. $[[[_\omega \text{ stand}] [_\omega \text{ in s}]]]$

(52) a. $[[[\text{SCARE CROW}] \text{ER}] \text{PL}] \leftrightarrow$
 b. $[[[_\omega \text{ scare}] [_\omega \text{ crow s}]]]$

(53) a. $[[[\text{SPRING IN HET VELD}] \text{ER}] \text{DIM}] \leftrightarrow$
 b. $[[[_\omega \text{ spring}] [_\omega \text{ in 't}] [_\omega \text{ veld je}]]]$
 jump in the field DIM
 ‘little madcap’

7 Syntactic phrasal affixation

- Genuine phrasal derivation is possible if the derived phrase is head-final:

(54) a. $[_Y [_{XP} WP X] \text{AFFIX}] \leftrightarrow$
 b. /wp/-/x/-/affix/

- this is the analysis proposed for certain bracketing paradoxes:

(55) a. $[[[\text{ATOMIC SCIENCE}] \text{IST}] \leftrightarrow$
 b. $[[[_\omega \text{ atomic}] [_\omega \text{ scient ist}]]]$
 c. $[[[\text{GENERATIVE SYNTAX}] \text{IST}] \leftrightarrow$
 d. $[[[_\omega \text{ generative}] [_\omega \text{ syntac tician}]]]$

- what about the alternative analysis $[[[\text{ATOMIC}] [\text{SCIENTIST}]]]$?

- this would treat the A-part like a regular adjective as in *crazy syntactician*, but Dutch, for instance, treats these two cases differently with respect to adjectival inflection:

(56) a. de klassiek(*-e) gitaarist
 b. de transformationeel(*-e) generativist
 c. de financieel(*-e) adviseur

(57) a. de beroemd*(-e) gitarist
 b. de productief*(-e) generativist
 c. de onbetrouwbaar*(-e) adviseur

- why not treat the Dutch cases as A+N compounds?
 - they have phrasal rather than compound stress
 - A in A+N compounds are normally simplex and Germanic, which is not the case of the As in bracketing paradoxes
- the absence of the schwa remains to be explained, though ...
- further cases of overt suffixation to head-final phrases:

(58) van muggen olifanten maak-er

- analysis rules out bracketing paradoxes of the relevant type if the phrase is not head-final:

(59) a. [[HISTORY OF SCIENCE] IST] ↔
 b. *[[_ω history] [_ω of] [_ω scient ist]]

- summary: AFFIXES spelled out as /suffixes/ cannot attach to phrases unless the phrase is head-final. No such constraints hold if phrasal derivation is zero

8 Mixed categories

- AFFIXES that do not impose thematic requirements may attach to projections of various levels; this results in so-called mixed categories:

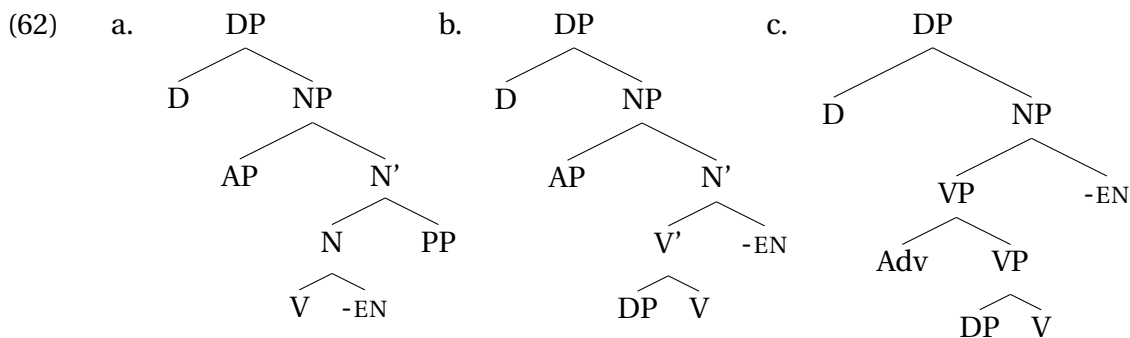
(60) a. Dieser Sänger wird verfolgt wegen dem heimlichen Stehlen von erfolgreichen Liedern.
 b. Dieser Sänger wird verfolgt wegen dem heimlichen erfolgreiche Lieder Stehlen
 c. Dieser Sänger wird verfolgt wegen dem heimlich erfolgreiche Lieder stehlen.

- a: nominalization at the lowest level: V is nominalized
- b: nominalization after merger of the object, i.e. V'
- c: nominalization of the entire VP

- once the projection has become nominal, no verbal elements are possible anymore:

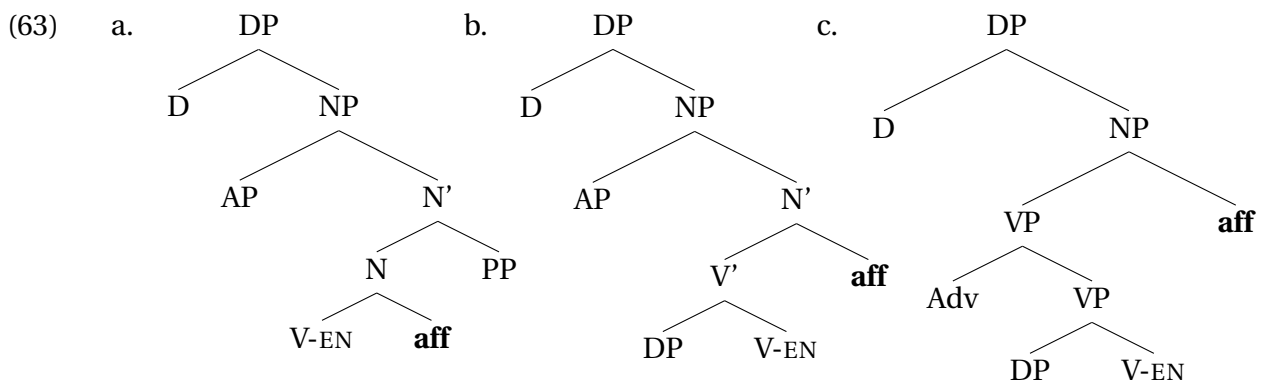
- (61)
- Dieser Sänger wird verfolgt wegen dem konstanten heimlichen Lieder stehlen. Adj+Adj
 - Dieser Sänger wird verfolgt wegen dem konstanten heimlich Lieder stehlen. Adj+Adv
 - *Dieser Sänger wird verfolgt wegen dem konstant heimliche Lieder stehlen. Adv+Adj
 - Dieser Sänger wird verfolgt wegen dem konstant heimlich Lieder stehlen. Adv+Adv

- frequent assumption: AFFIX is identified with the overt /affix/ that shows up on V, i.g. *-en* is seen as the spell-out of the nominalizing affix:



- arguments against this analysis: /en/ never spells out a category changing AFFIX in any other case than this; elsewhere, it is just the phonological realization of a non-category-changing infinitival marker, thus /en/ would have to be associated with two different AFFIXES ...

- alternative nominalization is via a zero affix:



- prediction: mixed categories can involve overt suffixation of head-final phrases while they must involve zero affixes in case the syntax is head-initial and the morphology characterized by the right-hand head rule (i.e. where the AFFIX must be realized as a /suffix/)

- mixed categories in English involve zero affixation, e.g. *gerunds*:

- (64)
- John's constant singing of the Marseillaise.
 - John's constantly singing the Marseillaise.

- against analyzing *-ing* as the nominalizing affix:
 - *-ing* seems to be related to a nominal affix only in this case, elsewhere it just corresponds to the AFFIX that derives the present participle
 - in the b-example above, *-ing* would appear internal to the phrase that the nominalizing AFFIX attaches to (i.e. the VP, but the affix is on V), this would be a violation of linear correspondence
- in head-final languages like Korean, Turkish, Basque, the nominalizing affix is often spelled out; importantly, according to A&N, the suffix never corresponds to a verbal affix in the language:

(65) On-dan [[dogru-yu söyle]-**me**-sin-i] bekle-r-di-m.
 he-ABL truth-ACC tell-NOM-POSS.3-ACC expect-AOR-PST-1SG
 'I (would have) expected him to tell the truth.'

- what about the German present participle, e.g. *sing-end-e*?
 - it is not so clear whether the participle has a purely verbal use (unlike the English present participle), the only cases seem to be certain adverbial uses:

(66) Ein Lied pfeifend, ging Peter durch die Strasse.

- what is the structure in prenominal position?

(67) Der seit Langem seinen Teddybär innig **lieb-end-e** Junge

References