When Circumfixes have Allomorphs
A Case Study of the Dutch Past Participle

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Outline

Introduction

Allomorphy in the circumfix of the Dutch participle

Circumfixes exist

Infixes

Circumfixes in DM

Circumfixes in NS

Conclusion

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Main claim

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- Circumfixes exist:
  - they are one morpheme at syntax (DM)
  - they are a contiguous part of the functional sequence at syntax (Nanosyntax)
- Circumfixes can have allomorphs.
- The prefixal exponent and the suffixal exponent can act independently qua allomorphy at vocabulary insertion.

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Allomorphy in the circumfix of the Dutch participle

- The past participle (e.g. *ge-kook-t* ‘cooked’) is circumfixal
  - prefixal exponent *ge-*
  - suffixal exponent *-t/-d/-en*
- the prefixal exponent and the suffixal exponent show
  - different allomorphs
  - different insertion criteria

The suffixal exponent

- the suffix (-T) shows phonological voice assimilation with the final C (or V) of the root
- the *-t/-d* contrast is neutralised under final devoicing
- when followed by an inflectional [ə] (in attributive use), the t/d alternation appears

INFINITIVE	PARTICIPLE	ATTRIBUTIVE	
kook-en	ge-kook[t]	ge-kook[t]e	‘cook’
klop-pen	ge-klop[t]	ge-klop[t]e	’knock’
dood-en	ge-doo[t]	ge-do[d]e	‘kill’
haal-en	ge-haal[t]	ge-haal[d]e	‘get’
leer-en	ge-leer[t]	ge-leer[d]e	‘learn’

The suffixal exponent

- shows root-controlled allomorphy (*-T/-en*)

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klop-pen	ge-klop-t	’knock’
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haal-en	ge-haal-d	‘get’
leer-en	ge-leer-d	‘learn’
breek-en	ge-brok-en	‘break’
slaag-en	ge-slag-en	‘hit’
snijd-en	ge-sned-en	‘cut’
lach-en	ge-lach-en	‘laugh’
weet-en	ge-weet-en	‘weten’

The prefixal exponent in verbs with *ge-, ver-, be-, ont-*

INFINITIVE	PARTICIPLE	
gebeuren	gebeur-d	‘happen’
gebruiken	gebruik-t	‘use’
geloven	geloof-d	‘believe’
vergelijken	vergelek-en	‘compare’
verslagen	verslag-en	‘beat’
vervloeken	vervloek-t	‘damn’
beginnen	begonn-en	‘begin’
bezoeken	bezoch-t	‘visit’
begeleiden	begeleid-d	‘accompany’
onthouden	onthoud-en	‘remember’
ontwikkelen	ontwikkel-d	‘develop’
ontbossen	ontbos-t	‘deforest’

The prefixal exponent in particle verbs

INFINITIVE	PARTICIPLE	
over-tuigen	over-tuig-d	‘convince’
achter-volgen	achter-volg-d	‘pursue’
onder-breken	onder-brok-en	‘interrupt’
aan-bidden	aan-bed-en	‘worship’
weer-leggen	weer-leg-d	‘refute’
op-lossen	op-ge-los-t	‘solve’
uit-voeren	uit-ge-voer-d	‘export’
aan-komen	aan-ge-kom-en	‘arrive’
in-dienen	in-ge-dien-d	‘submit’
af-lopen	af-ge-lop-en	‘terminate’

Phonological factors: German

- *ge-* only appears if the stem starts with a stressed syllable.

INFINITIVE	PARTICIPLE	
prob-íer-en	probíer-t	‘try’
stud-íer-en	studíer-t	‘study’
introduz-íer-en	introduzíer-t	‘introduce’
trompét-en	trompét-et	‘trumpet’
paláver-n	paláver-t	‘palaver’
krakéel-en	krakeel-t	‘quarrel’
schmarótz-en	schmarótz-t	‘freeload’

Phonological factors: Dutch

- if *ge-* is absent, the first syllable of the verb never carries the main stress
- if the verb starts with an unstressed syllable, *ge-* can still appear

Phonological factors: Dutch

INFINITIVE	PARTICIPLE	
prob-éer-en	ge-probéer-d	‘try’
stud-éer-en	ge-stud-éer-d	‘study’
introduc-éer-en	ge-ïntroduc-éer-d	‘introduce’
tuin-íer-en	ge-tuin-íer-d	‘do gardening’
bank-íer-en	ge-bank-íer-d	‘do banking’
financ-íer-en	ge-financ-íer-d	‘finance’
plezíer-en	ge-plezíer-d	‘please’
tierelíer-en	ge-tierelíer-d	‘make merry sounds’
revíer-en	ge-revíer-d	‘search a terrain’
trompétt-en	ge-trompet-t	‘trumpet’
paláver-en	ge-paláver-d	‘palaver’
krakéel-en	ge-krakéel-d	‘quarrel’
paníek-en	ge-paníek-t	‘panic’
ravótten	ge-ravót-t	frolic

The allomorphs of the prefixal exponent

- The allomorph *ge-* of the past participle's prefixal exponent differs from the prefix *ge-* which is part of the verbal stem
- In Genemuiden Dutch the participial prefixal exponent is a *e-*, whereas the prefix is *ge-*:

(1)

a.	kook-en	>	e-kookt-t
	'to cook'		'cooked'
b.	ge-beur-en	>	ge-beur-d
	'to happen'		'happened'

The allomorphs of the circumfix

- The allomorphs of the prefixal exponent
  - *Ø* / _____ {*ge-, ver-, be-, ont-, ptcl1*}
  - *ge–* / elsewhere
- The allomorphs of the suffixal exponent
  - *–en* / List1 ___
  - *–T* / elsewhere

Interim summary

- the past participle contains a circumfix
- the prefixal exponent and the suffixal exponent show
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- Are the prefixal and the suffixal exponent a circumfix?
- Do circumfixes exist at all?

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  '[C]ircumfixes should either not exist or they remain an unexplained mystery.' (Tebay 2025: 2)

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Circumfixes exist

Circumfixes do not exist

‘[T]he evidence for clear cases of circumfixation proper is surprisingly weak’ (Wiese 2008: 269)

‘Both parts of the circumfixes [...] exist as either an independent prefix or an independent suffix.’ (Marušič 2023: 5)

Circumfixes exist

Marušič's (2023) first argument:

(2) German

mach-en	>	ge-mach-t
'to do'		'done'

'Neither the prefix *ge-* nor the suffix *-t* are obligatory to form past participles, [...] again suggesting the circumfix *ge- ... -t* is not one morphological unit but a composition of two independent affixes.' (Marušič 2023: 6)

(3)

a.	invertier-en	>	invertier-t
	'invert'		'inverted'
b.	schlaf-en	>	ge-schlaf-en
	'to sleep'		'slept'

Circumfixes exist

If one assumes allomorphy the argument disappears:

(4) German

mach-en	>	ge-mach-t
‘to do’		‘done’

(5)

a.	invertier-en	>	Ø-invertier-t
	‘invert’		‘inverted’
b.	schlaf-en	>	ge-schlaf-en
	‘to sleep’		‘slept’

Circumfixes exist

Marušič's (2023) second argument:

(6) Dutch

berg	>	ge-berg-te
'mountain'		'mountain range'

(7)

a.	bakken	>	ge-bak
	'to bake'		'cake'
b.	breed	>	breed-te
	'wide'		'width'

However

- The categorial selection properties of these affixes are different.
- It is unclear how their semantics could enter into that of the collective noun.
- If these affixes can combine in the collective noun, why not more generally? (**ge-bak-te* and **ge-breed-te*)

Circumfixes exist

- The stress pattern in Indonesian circumfixed words differs clearly from that of simultaneously prefixed and suffixed words (Conners 2003; Tebay 2025).
- The Indonesian nominalizing circumfix *ke–an* (: 2) is like Dutch *ge–te* in *gebergte* 'mountain range'.

Circumfix

'A circumfix is a combination of a prefixal exponent P and a suffixal exponent S, such that the semantic or syntactic features of the circumfix cannot be composed of the semantic or syntactic features of independent occurrences of P and independent occurrences of S.' (Tebay 2025: 2)

Circumfixes exist

The exponents of the participle do occur in isolation, but not in such a way that

- they show the same allomorphy (*Ø-/ge-* and *-T/-en*) (De Belder 2011: section 4.2.2)
- they show the same selectional criteria as the components of the circumfix
- their semantic composition would make sense

Circumfixes exist

AFX	IN	OUT	MEANING	PROD	EX	
ge-T	V	V	participle	+	*ge-kook-t*	'cooked'
ge-en	V	V	participle	—	*ge-slaap-en*	'slept'
-t	$\sqrt{}$	N	thing	—	*produc-t*	'product'
-t	V	N	event noun	—	*jach-t (cf. gejaagd)*	'hunt'
-en	V	V	infinitive	+	*kook-en*	'cook'
-en	Num	N	associative	—	*(met zijn) twee-en*	'together'
ge-	V	V	lexical	—	*ge-denken*	'commemorate'
ge-	V	N	iterative	+	*ge-fluit*	'whistling'
ge-	A	A	bleached	—	*ge-heel*	'whole'
ge-	N	Adv	with	—	*ge-twee-en*	'together'

(see De Haas & Trommelen 1993 for an overview of all Dutch affixes)

Circumfixes exist

- Typically, the two exponents of a circumfix exist independently in the language.
- In the Dutch past participle, the semantic and syntactic features of the circumfix cannot be composed from those of the independently existing prefixes/suffixes.

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Infixes

Infixes are the mirror image of circumfixes

- CFX-root-CFX
- root-IFX-root

Infixes

Kalin (2022)

'Infixes really are (underlyingly) prefixes/suffixes'

- Allomorphs of a morpheme may differ in being infixal or not
- In such cases, the allomorphs always share an edge-orientation (L or R)
  - IFX ∼ PFX (∼ PFX) ATTESTED
  - IFX ∼ SFX (∼ SFX) ATTESTED
  - IFX ∼ SFX ∼ PFX UNATTESTED
- the placement of the infix is also edge-sensitive (e.g. 'after the first/last C of the stem')

Infixes

Nominalizer in Bahnar (Austro-Asiatic, South Vietnam) has three allomorphs (Kalin 2022: 655):

11 a. *a-* / {TIE.UP}
e.g. *a-chô* 'a bundle' (root: *chô*)
b. *bơ-* / *m*-initial stems
e.g. *bơ-muih* 'a field in the woods' (root: *muih*)
c. *-ơn-* / elsewhere
pivot/placement: after first consonant
e.g. *t<ơn>ăr* 'woven bamboo' (root: *tăr*)

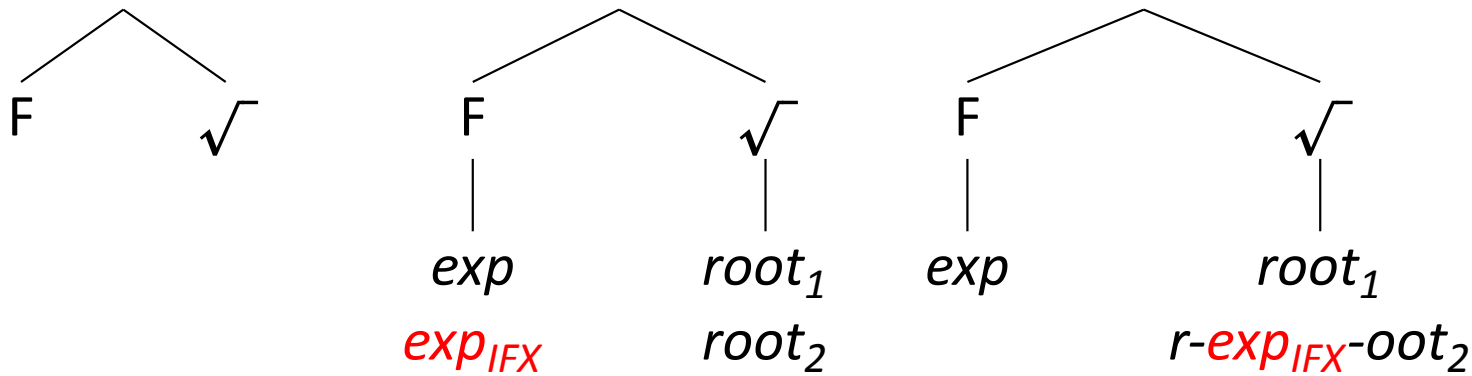
Infixes

Kalin's analysis:

- infixes are underlyingly prefixes or suffixes
- linear concatenation < exponent choice < infixation < (morpho)phonology (Kalin 2022: 672)
- 'the ordering could formally be a part of syntax, or a part of morphology. But crucially, however linear order is determined, this linearization must be established prior to both exponent choice and infixation.' (Kalin 2022: 668)

Infixes

linear concatenation > exponent choice > infixation



Infixes

Can we make Kalin's approach to infixes work for circumfixes?

- Tebay (2025) argues for such an analysis for the Indonesian nominalising circumfix *ke–an*: it is underlyingly a prefix, and one part of it gets repositioned to the right in an operation like Kalin's infixation.

Infixes

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- Tebay (2025) argues for such an analysis for the Indonesian nominalising circumfix *ke–an*: it is underlyingly a prefix, and one part of it gets repositioned to the right in an operation like Kalin's infixation.

However, for the Dutch past participle circumfix, such an analysis is unlikely:

- with infixes the allomorphy of the exponent is sensitive to the left/right edge of the root, and this is due to their linearization to the left/right of the root
- the Dutch circumfix is both leftward and rightward sensitive:
  - the prefixal exponent is sensitive to the left edge
  - the suffixal exponent is sensitive to the root

(8)

INFINITIVE	PARTICIPLE	
loop-en	ge-loop-en	‘run’
ver-loop-en	ver-loop-en	‘expire’
be-loop-en	be-loop-en	‘walk (on)’
speel-en	ge-speel-d	‘play’
ver-speel-en	ver-speel-d	‘gamble away’
be-speel-en	be-speel-d	‘manipulate’

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- Proposal
- Multiple exponence: fission?

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Proposal

- a circumfix is a single node in the syntactic tree
- vocabulary contains circumfixes,
  - which are linearly concatened as circumfixes
  - which consist of two exponents (see also Tebay 2025),
  - whereby the insertion contexts of the allomorphs of the prefixal exponent and the suffixal exponent are stipulated separately.

Proposal

Ordering of PF operations

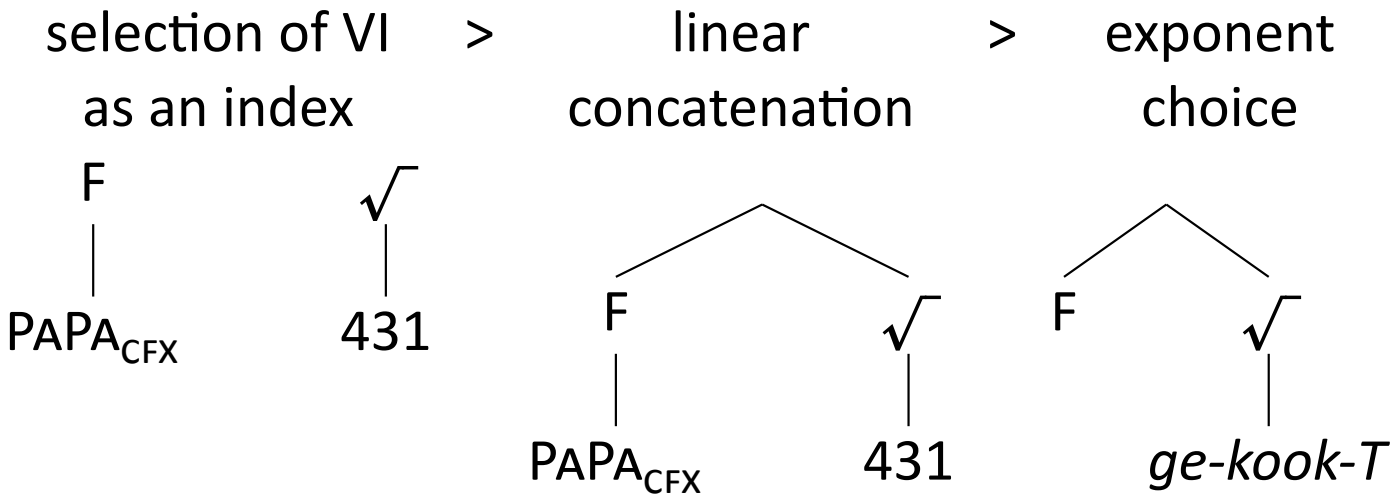
- linear concatenation < exponent choice < infixation < (morpho)phonology (Kalin 2022: 672)
- selection of vocabulary item as an index < linear concatenation < exponent choice (< infixation) < (morpho)phonology

Proposal

Building on Kalin (2022)

- selection of vocabulary item as an index < linear concatenation < exponent choice (< infixation) < (morpho)phonology
- selection of vocabulary item as an index: elsewhere principle selects the appropriate vocabulary item
  - -HEID$_{\text{SUFFIX}}$ $\longleftrightarrow$ {N, abstract}
  - KAT $\longleftrightarrow$ {$\sqrt{\ }$}
  - 431 $\longleftrightarrow$ {$\sqrt{\ }$}
  - PAST PARTICIPLE$_{\text{CIRCUMFIX}}$ $\longleftrightarrow$ {F}
- linear concatenation: the vocabulary item is marked as a root, a prefix, a suffix or a circumfix
- exponent choice: the most appropriate allomorph is selected
- (< infixation)
- (morpho)phonology: assimilation, final devoicing, ...

Proposal


selection of VI as an index
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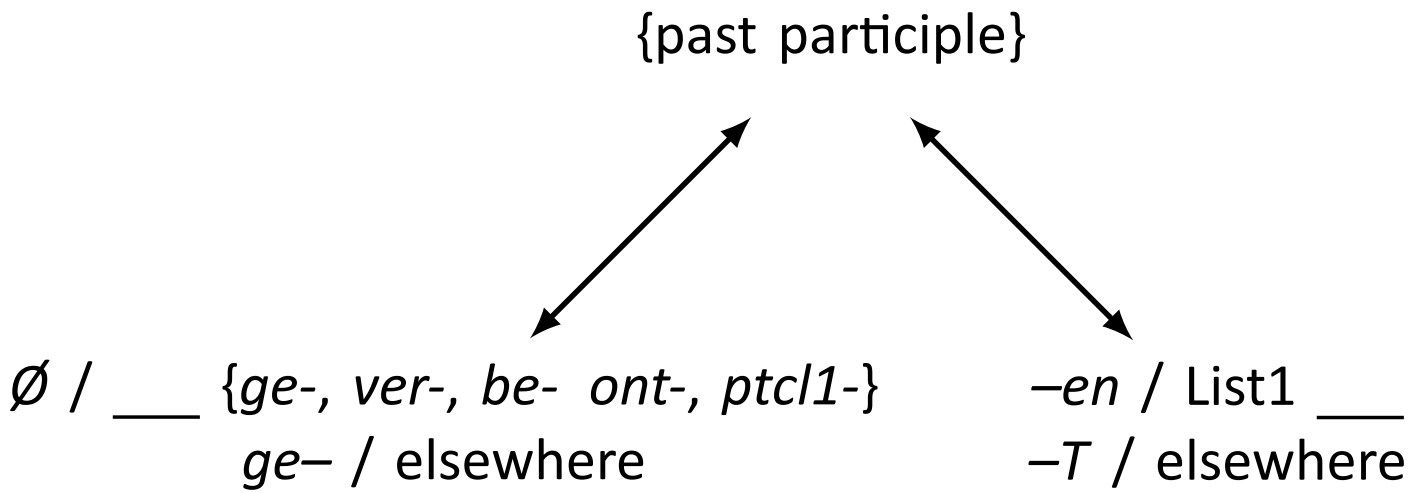
Proposal


{past participle}
Ø / ___ {ge-, ver-, be- ont-, ptcl1-}
ge– / elsewhere
–en / List1 ___
–T / elsewhere

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Multiple exponence: fission?

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Multiple exponence: fission?

- A circumfix can be understood as an instance of multiple exponence.
- Multiple exponence has been analyzed by means of fission in Distributed Morphology.

Question

Can the Dutch past participle then not be analysed as an instance of fission (see Erschler 2025 on nominal suffixes in Svan)?

Multiple exponence: fission?

Fission always involves some kind of feature splitting

Post-syntactic fission (Halle 1997; Noyer 1997): features on a node are cyclically matched with separate vocabulary entries.

{f1, f2, f3, f4, f5} → cycle 1 matches {f1, f3, f5} with *ba-*
→ cycle 2 matches {f2} with *-n*

/ba-/ ⟷ {f1, f3, f5}
/-n/ ⟷ {f2}

Multiple exponence: fission?

- Syntactic fission (Calabrese 2003; Arregi & Nevins 2012; Hewett 2022): Fission copies features onto two output nodes prior to VI

{f1, f2, f3, f4, f5} → {f1, f2, f3, f4, f5}
→ {f1, f2, f3, f4, f5}

/ba-/ ⟷ {f1, f3, f4, f5}
/-n/ ⟷ {f2, f3, f4, f5}

Multiple exponence: fission?

If the Dutch past participle involved fission, it would involve feature splitting.

The language acquiring child finds no clues in the Dutch morphology to split features in a meaningful way.

There is thus no evidence for fission.

Circumfixes in DM

Conclusion DM:

- The circumfix is a single node at syntax
- the vocabulary item is linearized as a circumfix
- the prefixal and suffixal exponents are inserted according to their own insertion criteria
- and can have their own allomorphs

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- Root-controlled allomorphy = root size
- Ø-allomorph = lexicalisation

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Background

- One Feature, One Head
- Phrasal lexicalisation
- Match syntactic trees to lexical items
- Lexicalisation Algorithm

(9) *Condition on Matching*
A syntactic phrase S matches a lexically stored constituent L iff S is identical to L.

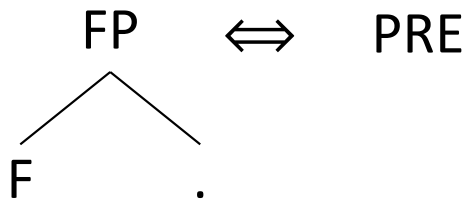
(10) *Lexicalisation Algorithm* (simplified from Starke 2018)

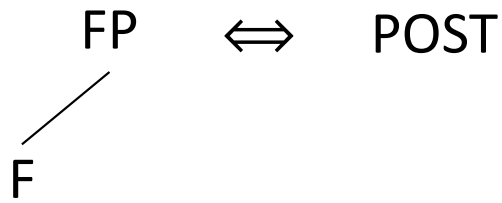
a. Merge F and lexicalize FP. PHRASAL
b. If (a) fails, apply evacuation movement. POST
c. If (b) fails, open a new workspace. to create a Complex Left Branch (CLB) PRE

Background

Starke (2018)

- PRE = binary bottom
- POST = unary bottom

(11) 

(12) 

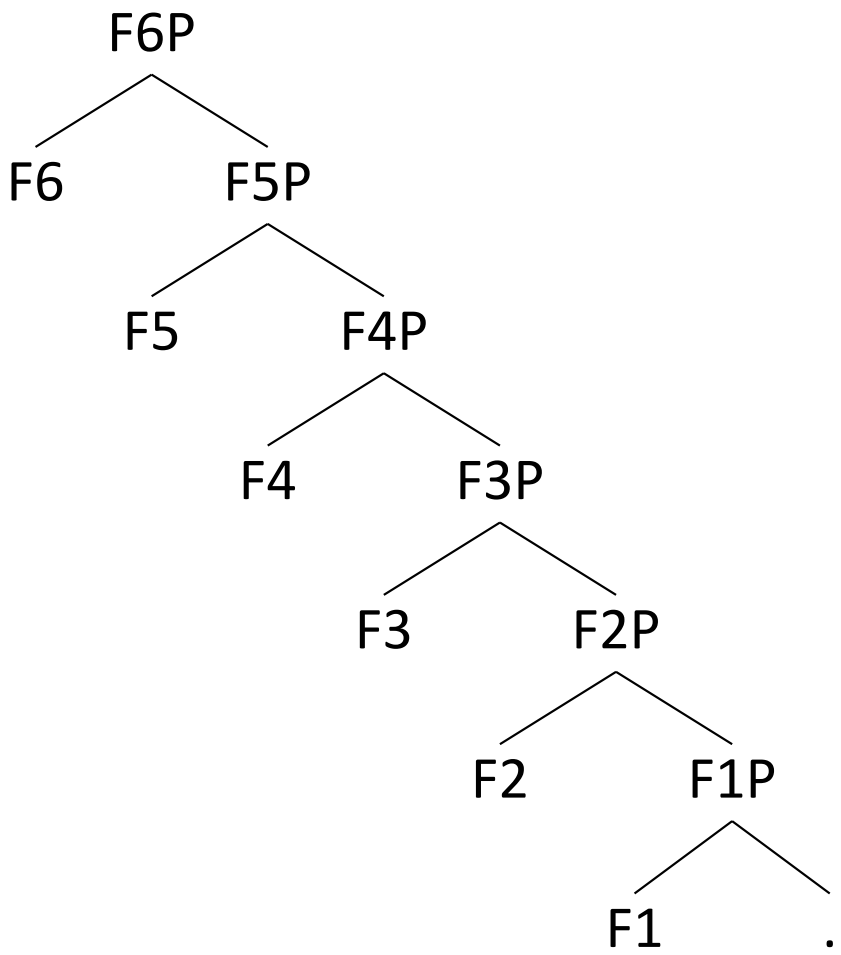
Background

What is a circumfix in NS?

Two contiguous subparts of the functional sequence that are realised by different morphemes.

Circumfixes in NS

(13)



Circumfixes in NS

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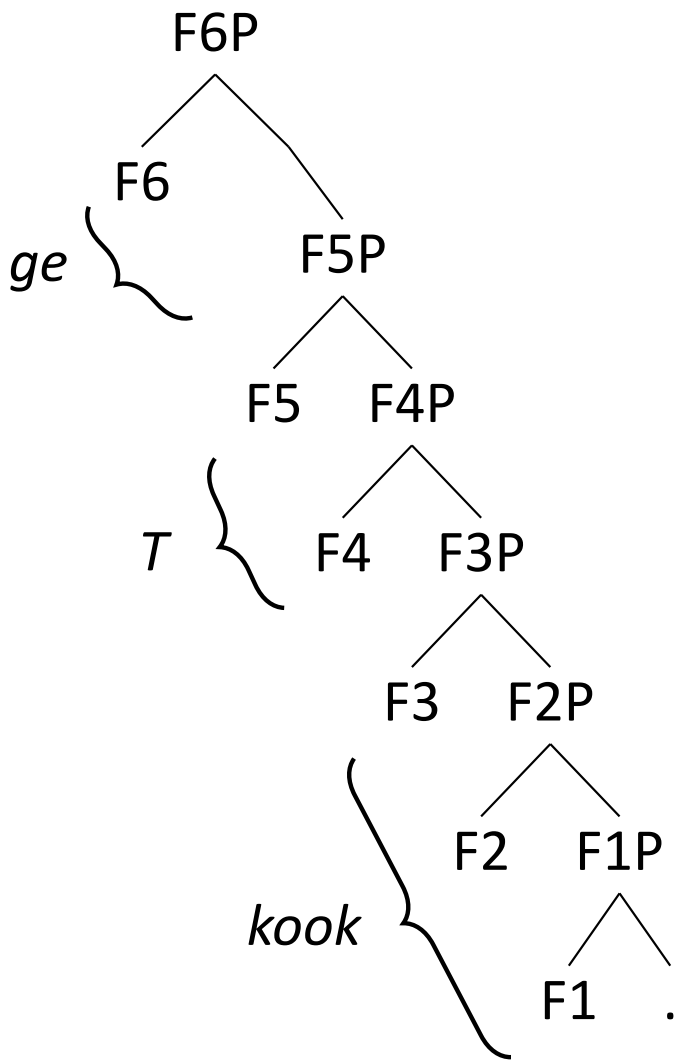

Circumfixes in NS

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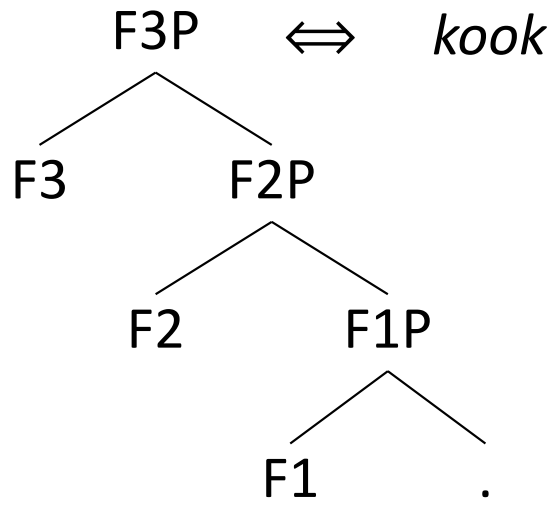

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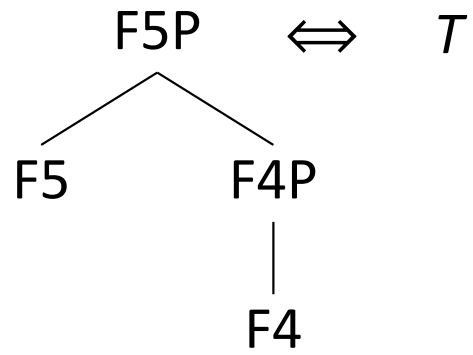

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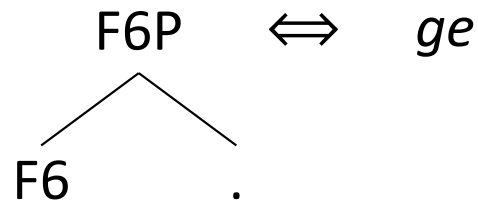

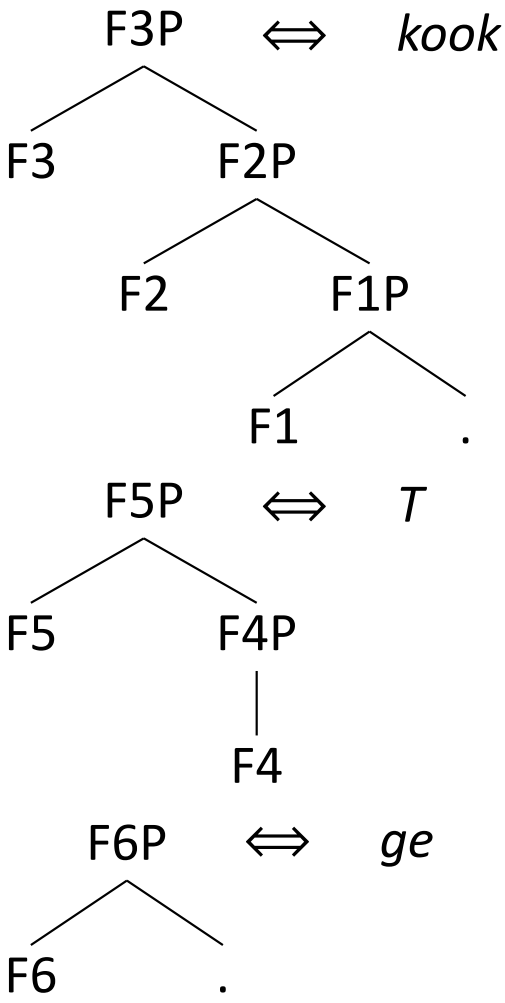

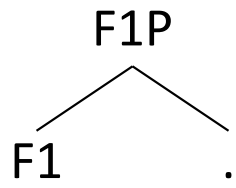

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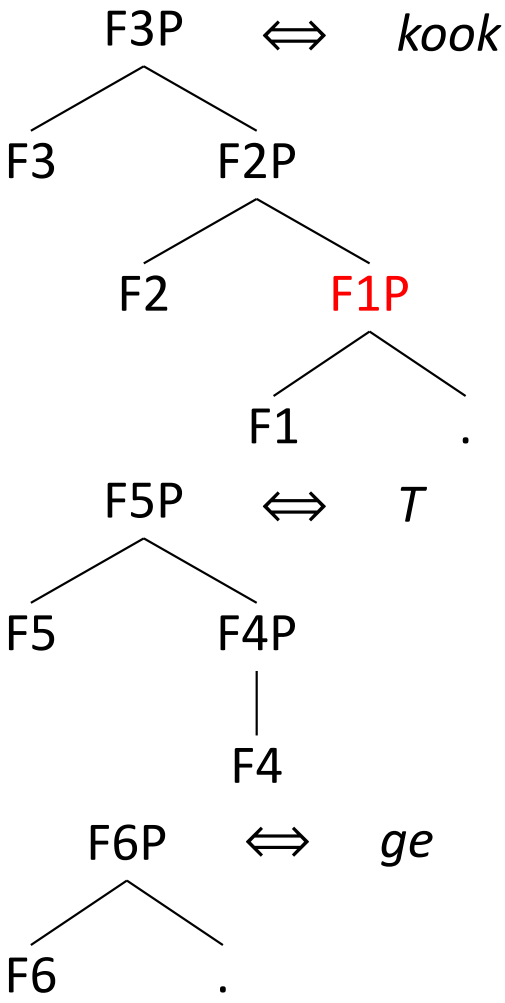

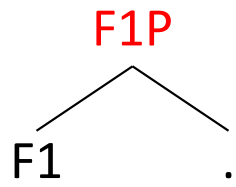

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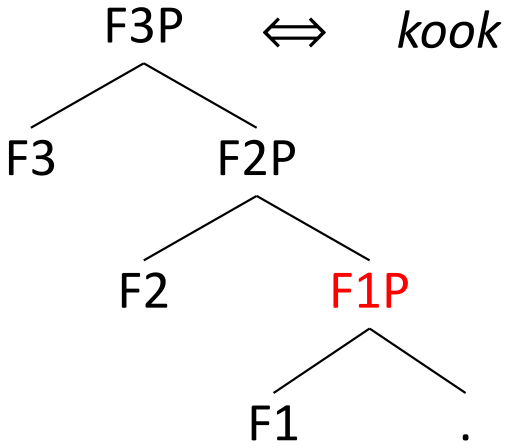

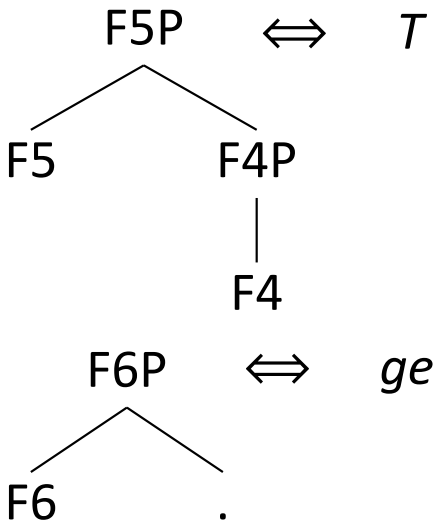

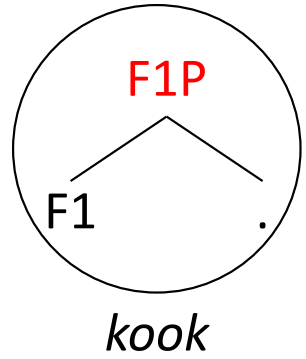

(10) *Lexicalisation Algorithm*

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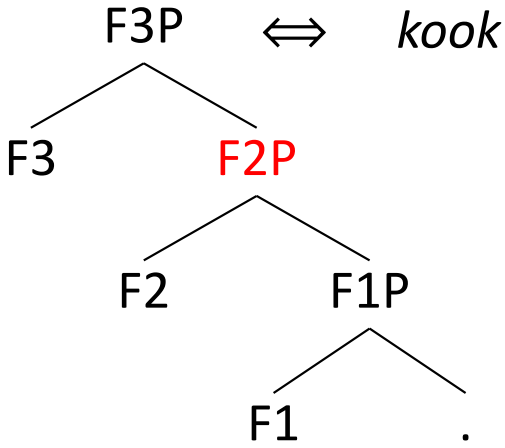

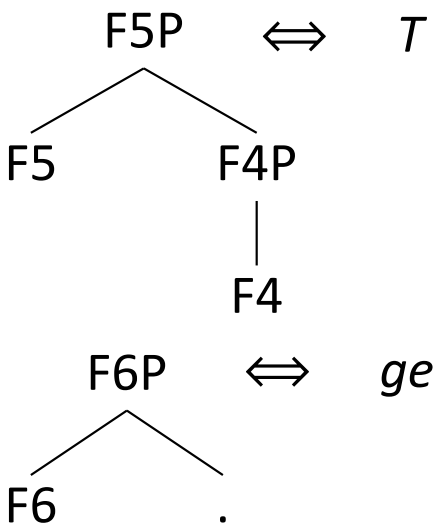

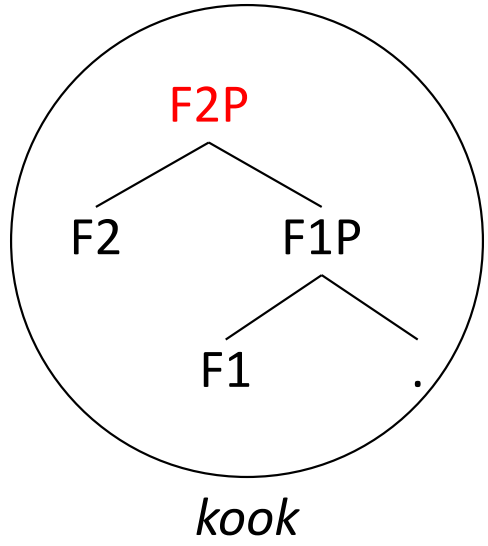

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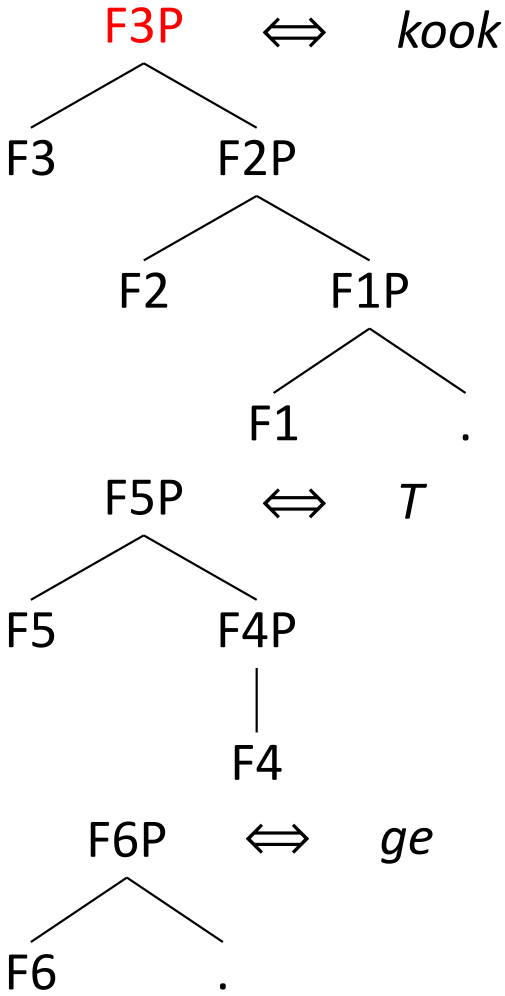

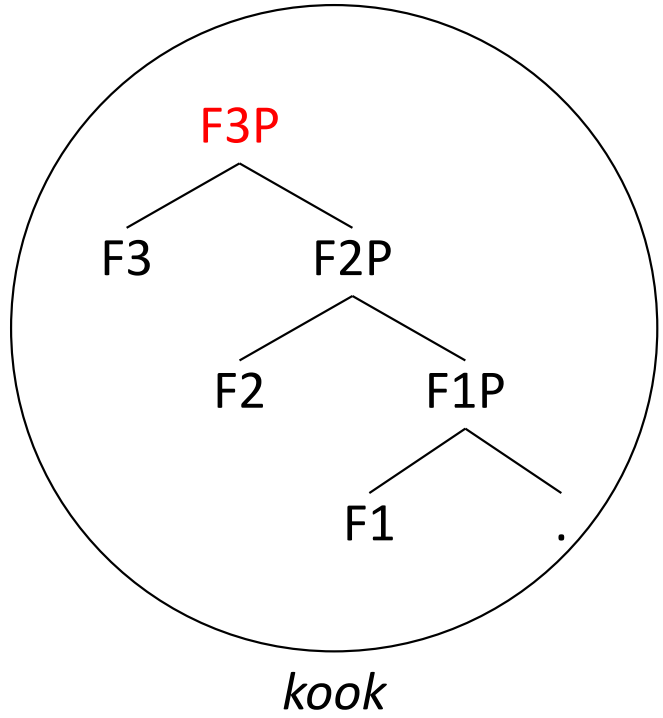

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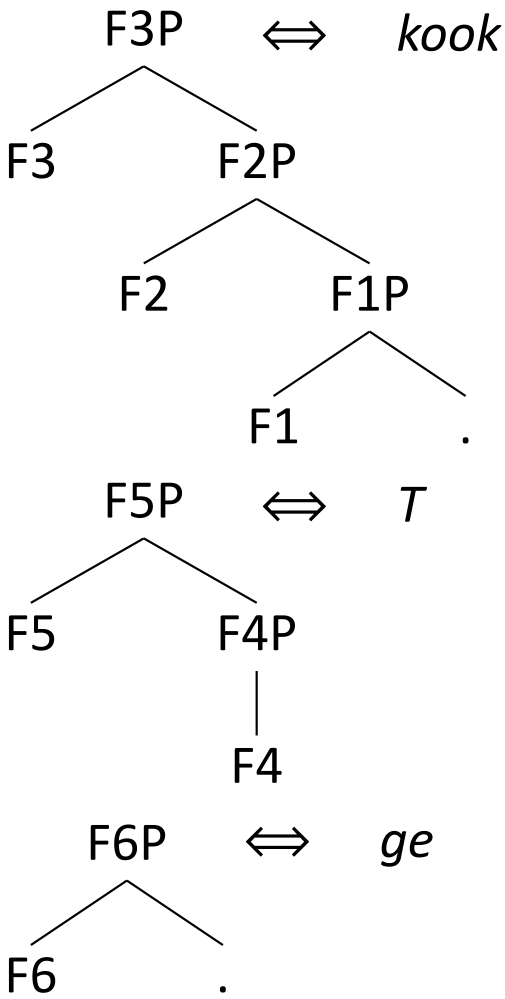

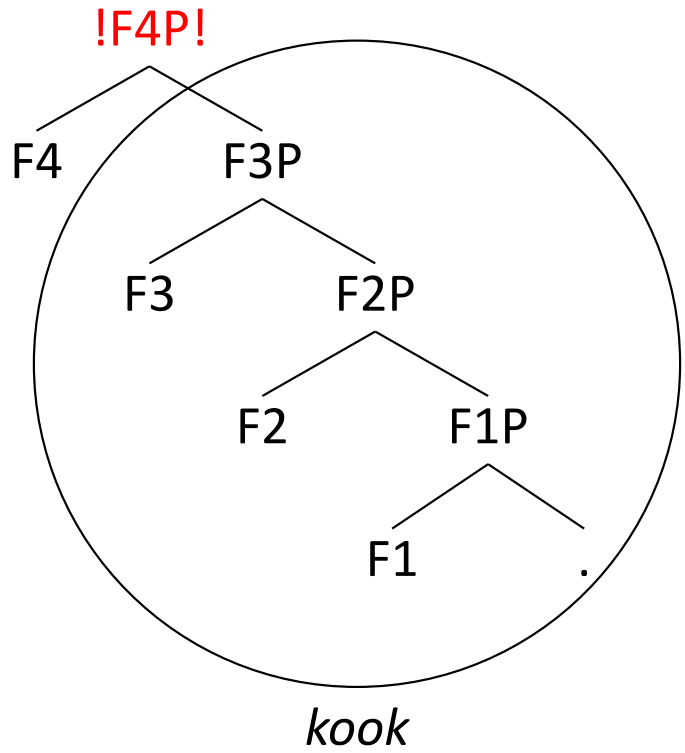

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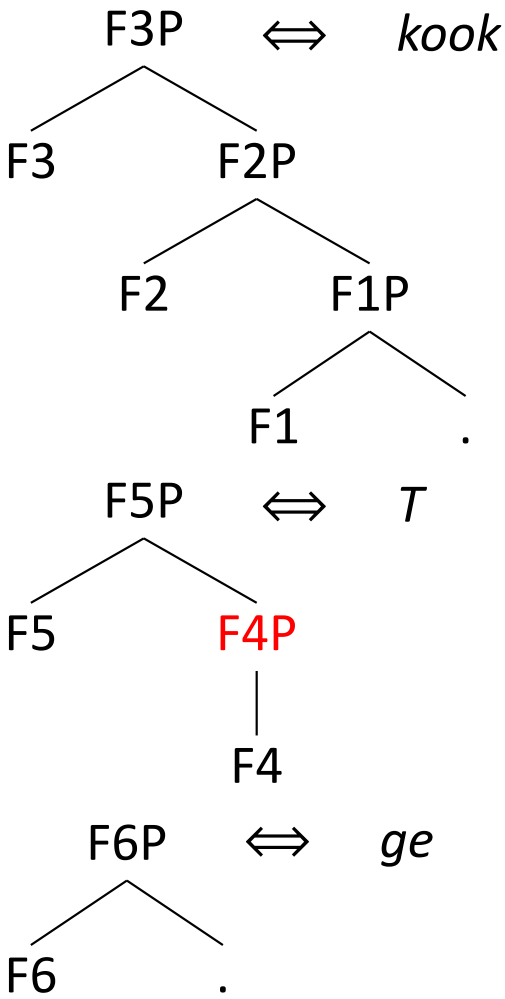

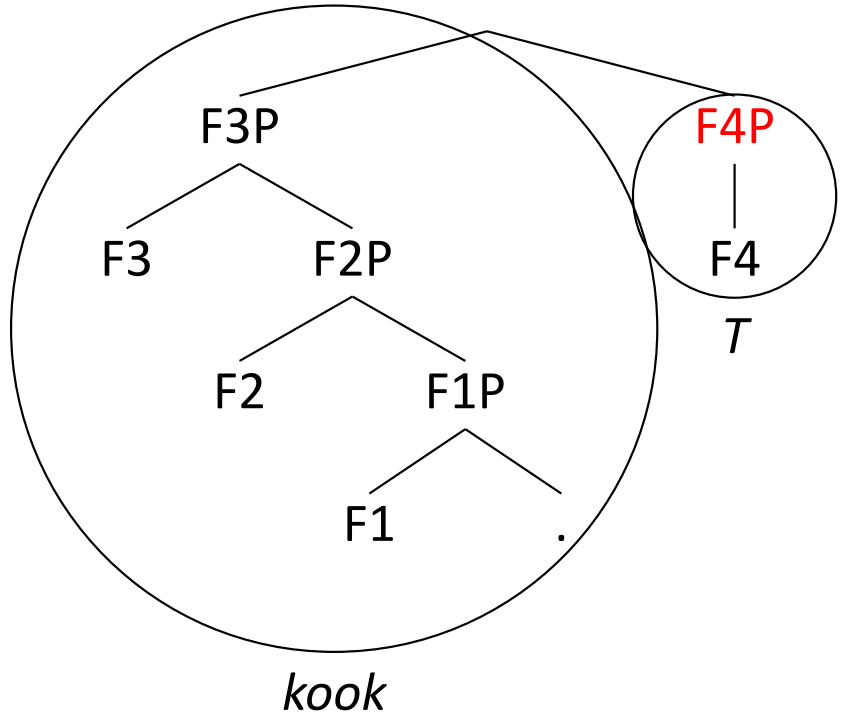

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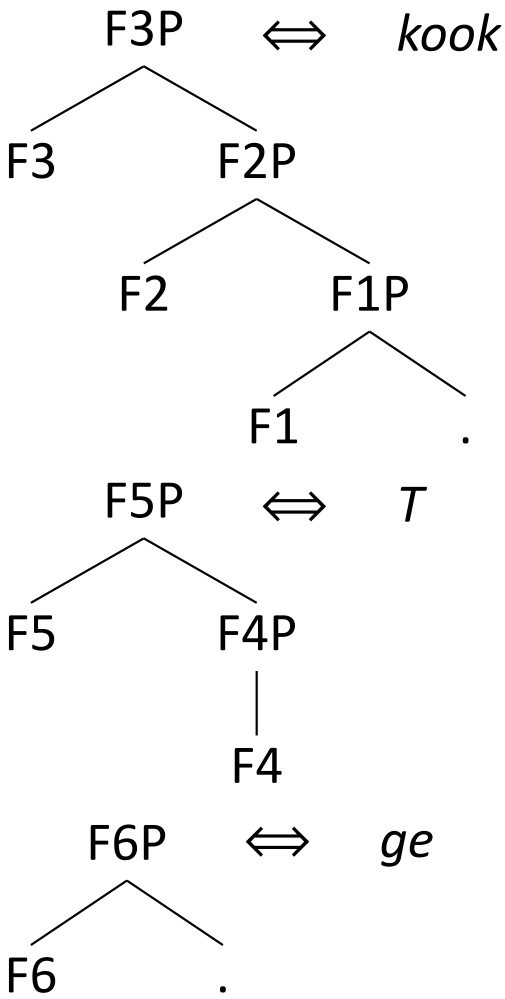

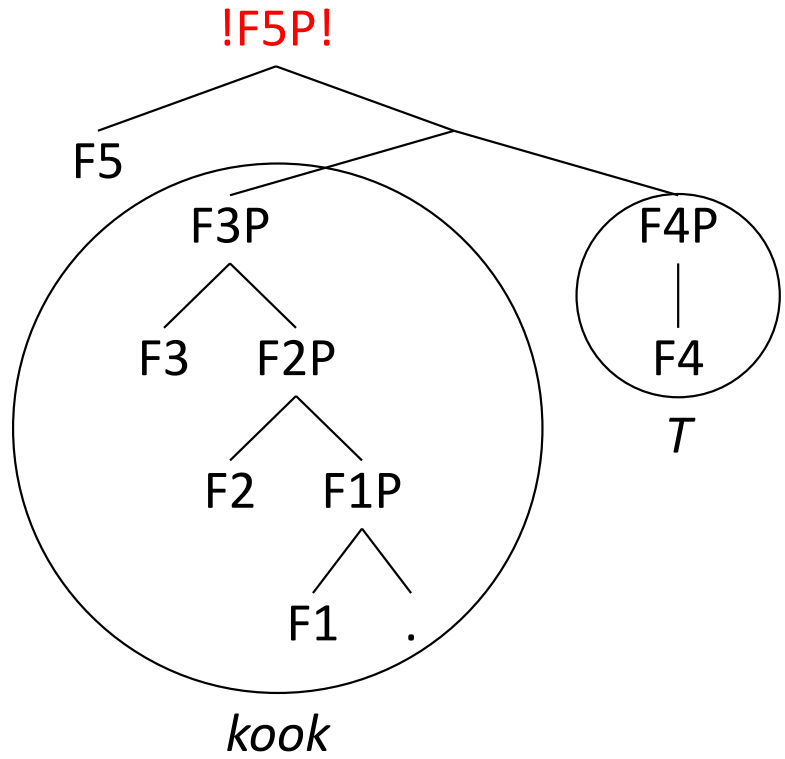

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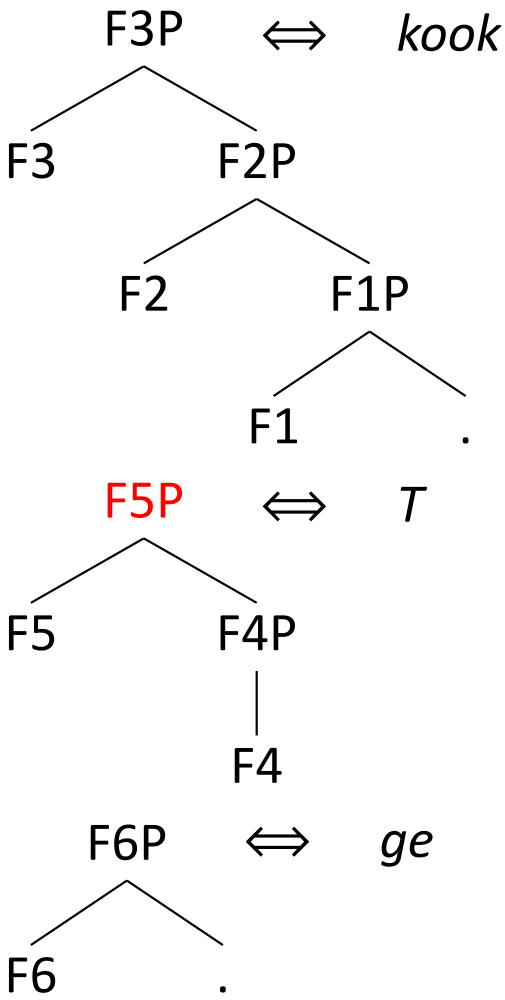

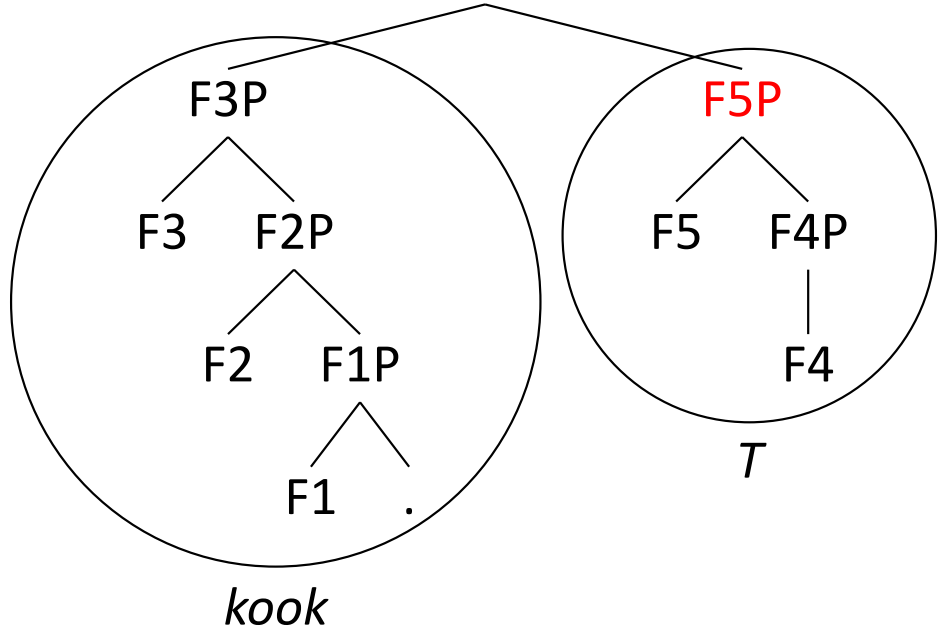

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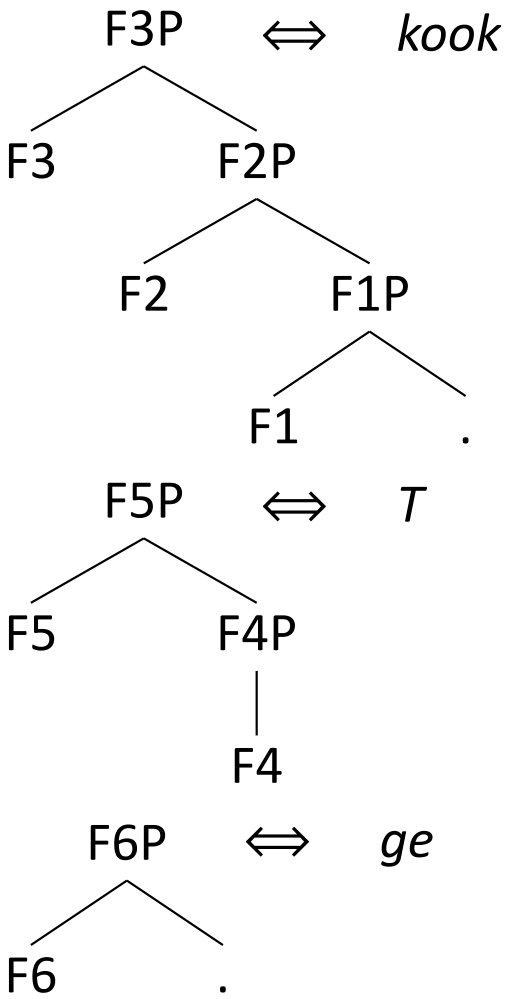

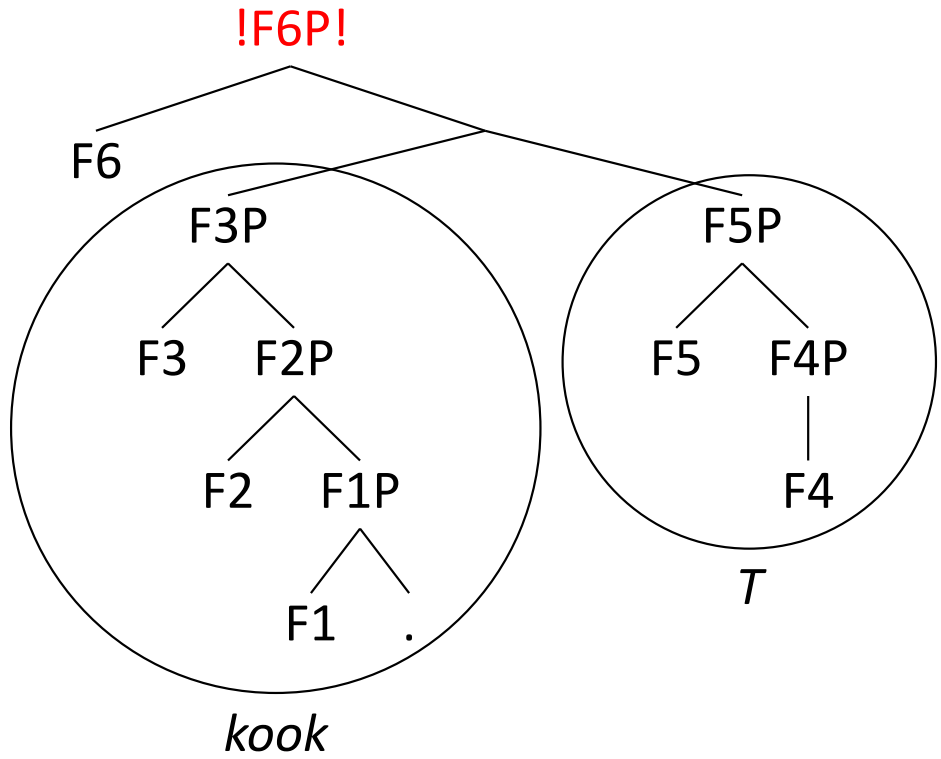

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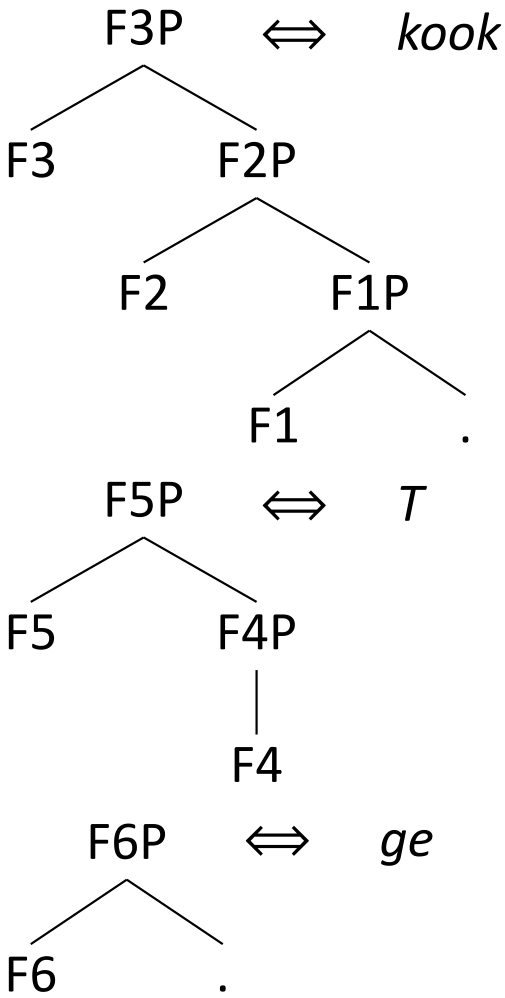

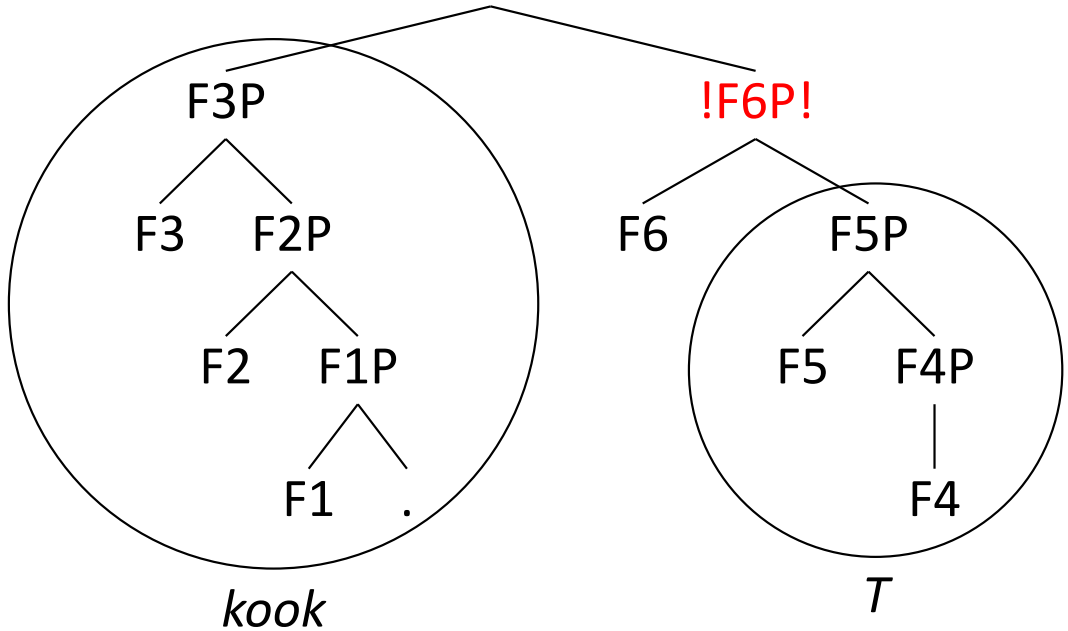

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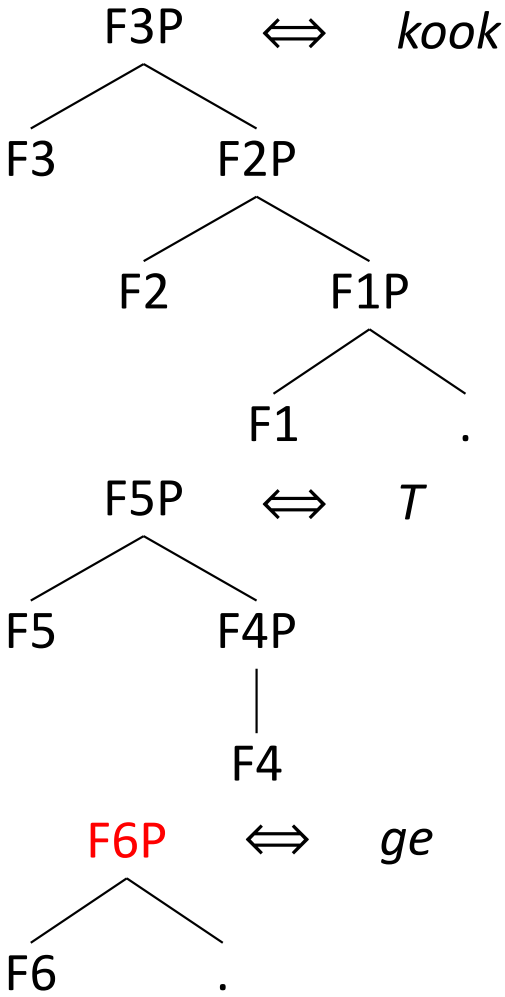

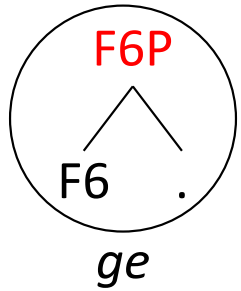

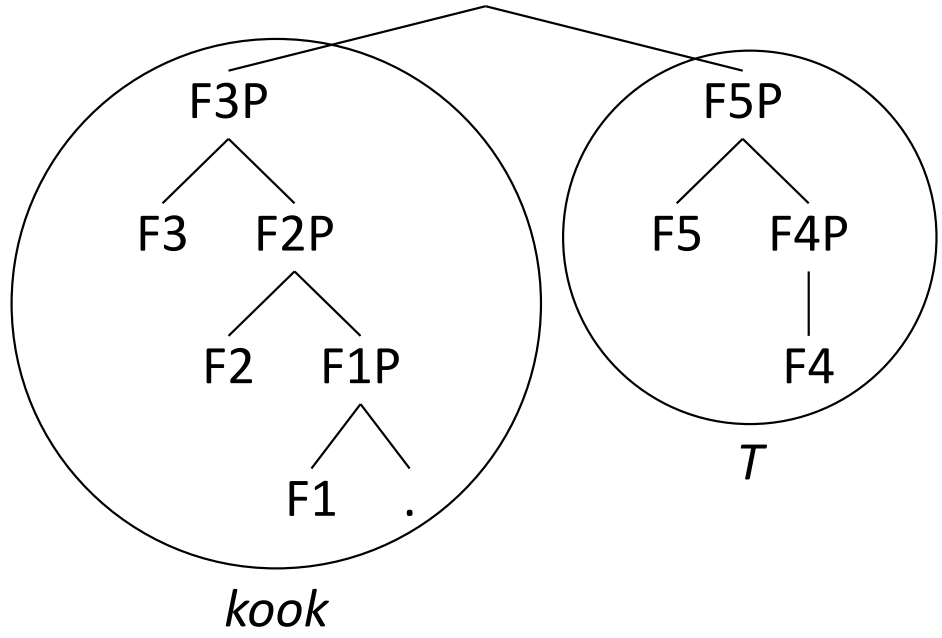

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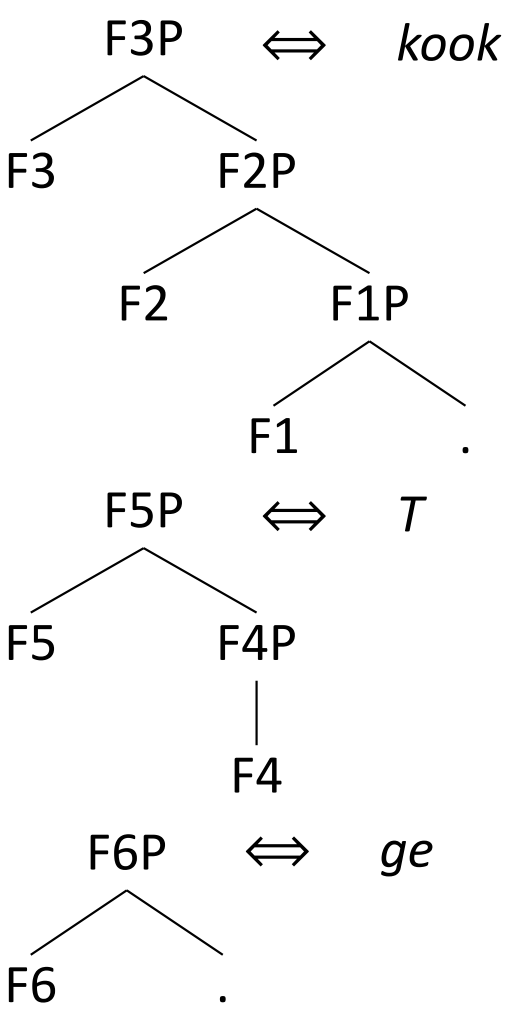

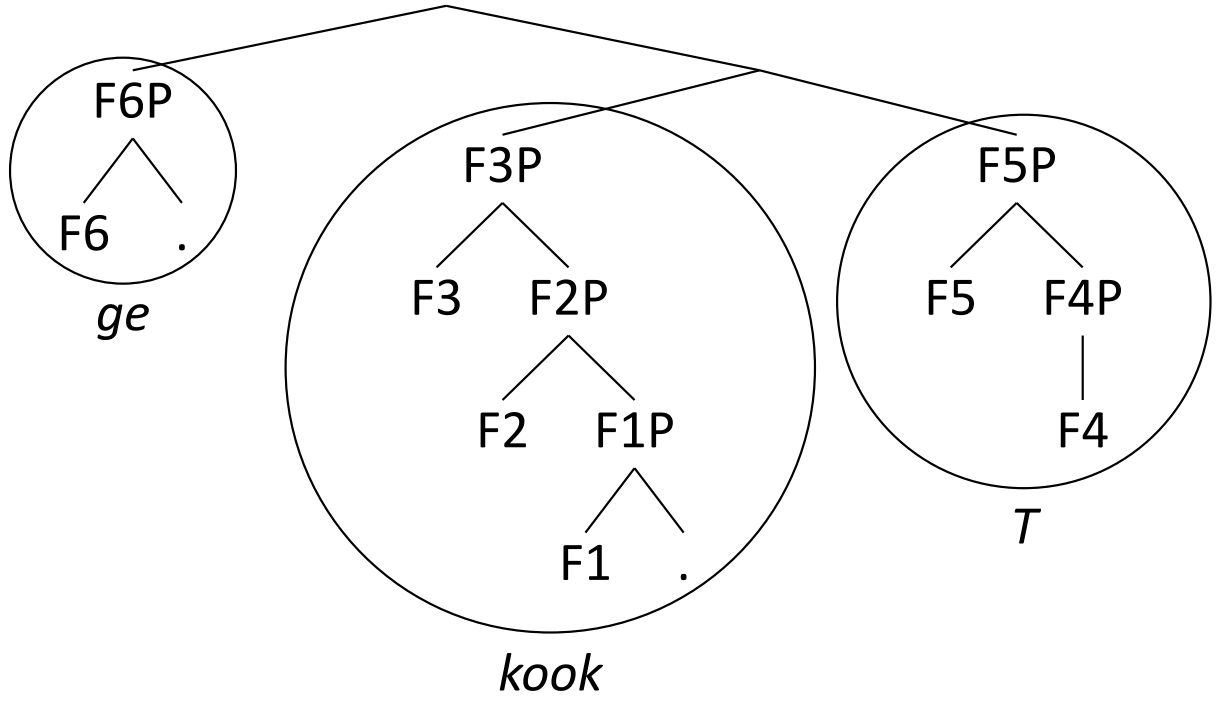

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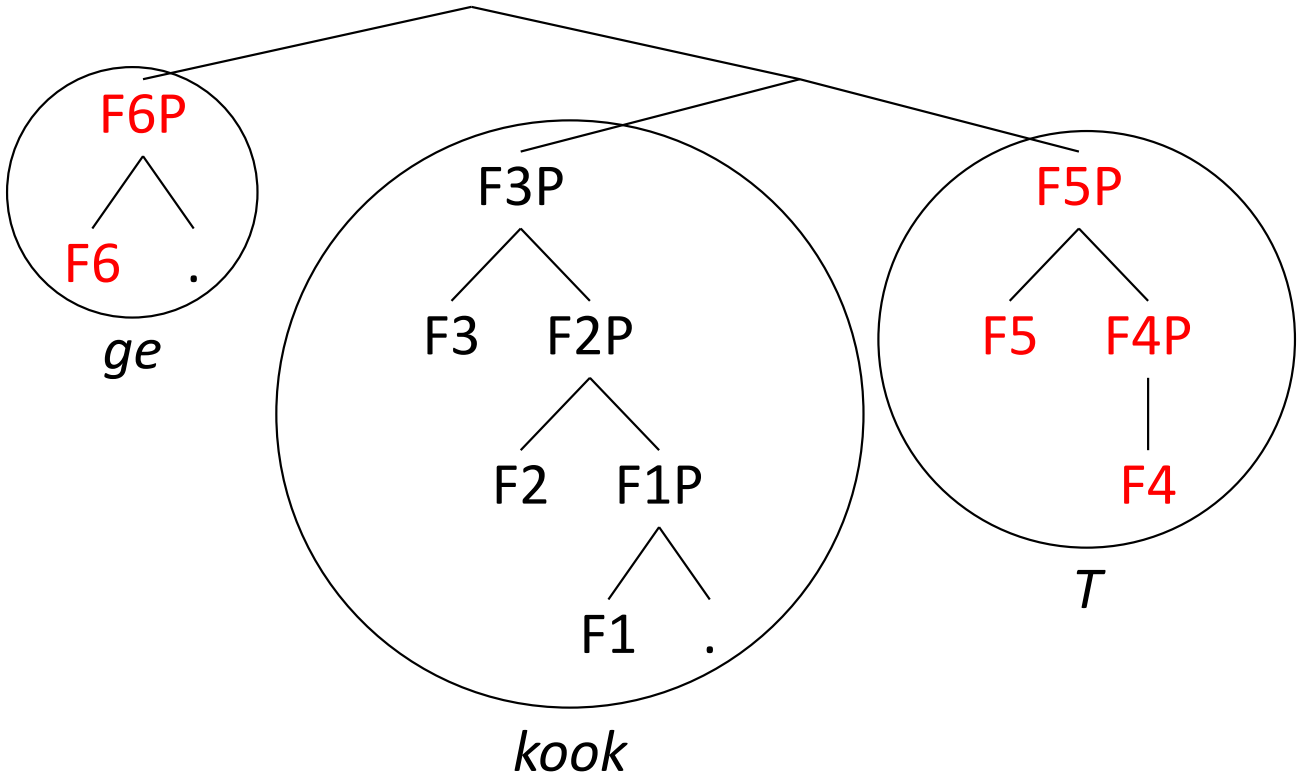
What is a circumfix in NS?

Two contiguous subparts of the functional sequence that are realised by different morphemes.



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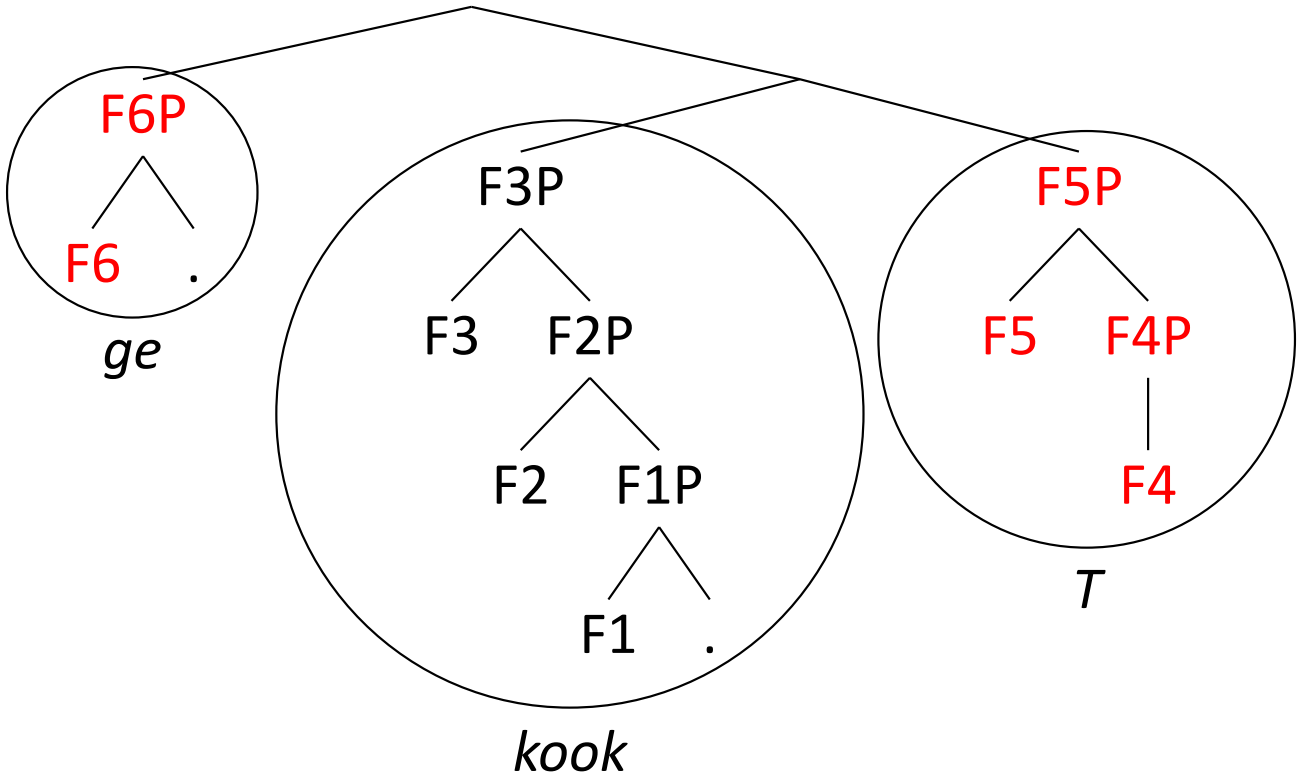


- this explains why the two exponents of the circumfix seemingly form a unit.

Outline

Introduction

Allomorphy in the circumfix of the Dutch participle

Circumfixes exist

Infixes

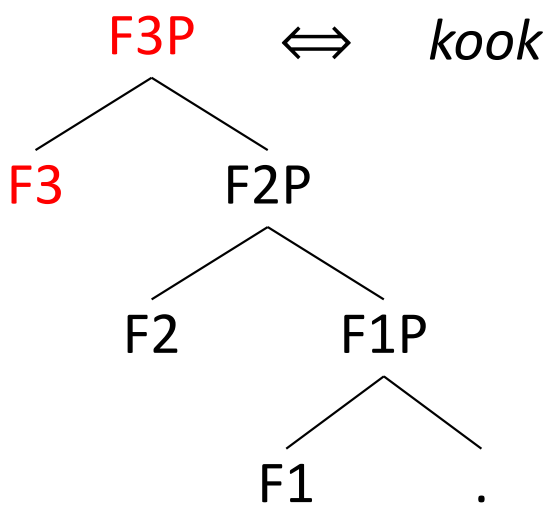
Circumfixes in DM

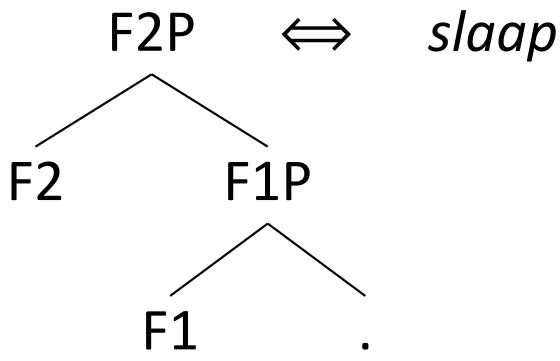
Circumfixes in NS

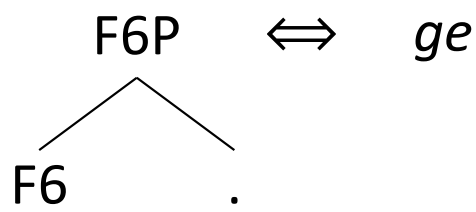
- Background
- Root-controlled allomorphy = root size
- Ø-allomorph = lexicalisation

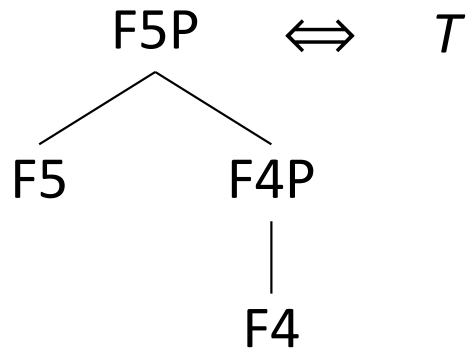
Conclusion

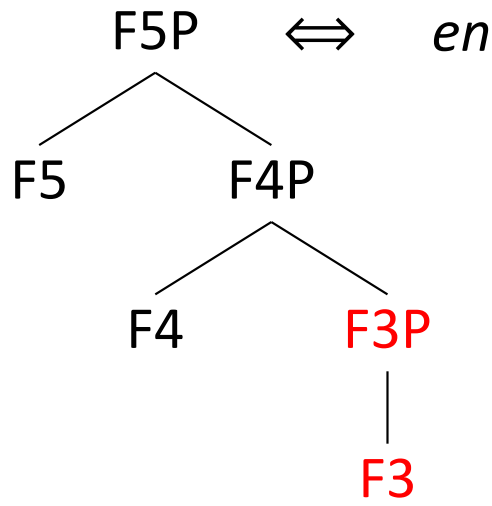
Root-controlled allomorphy = root size

(18) 

(19) 

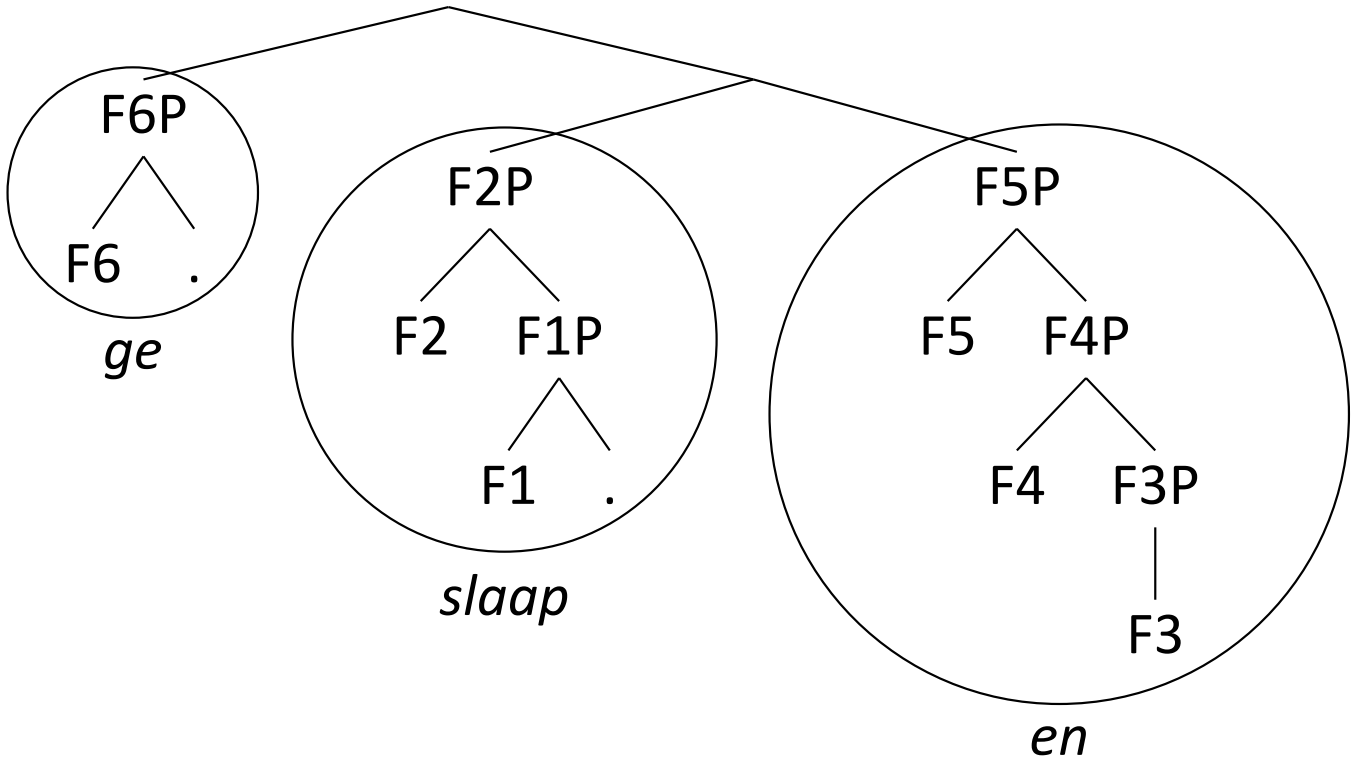
(20) 

(21) 

(22) 

Root-controlled allomorphy = root size

(23)



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Circumfixes in DM

Circumfixes in NS

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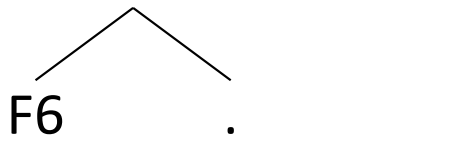
Ø-allomorph = lexicalisation

(24)



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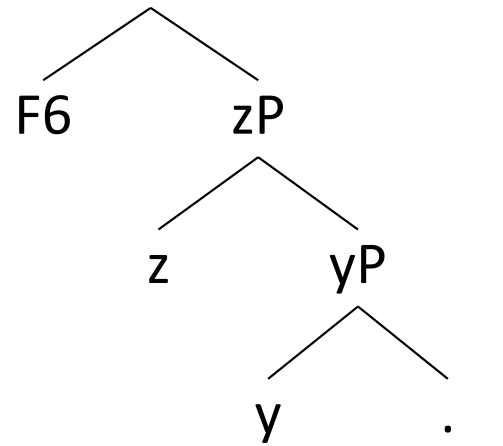
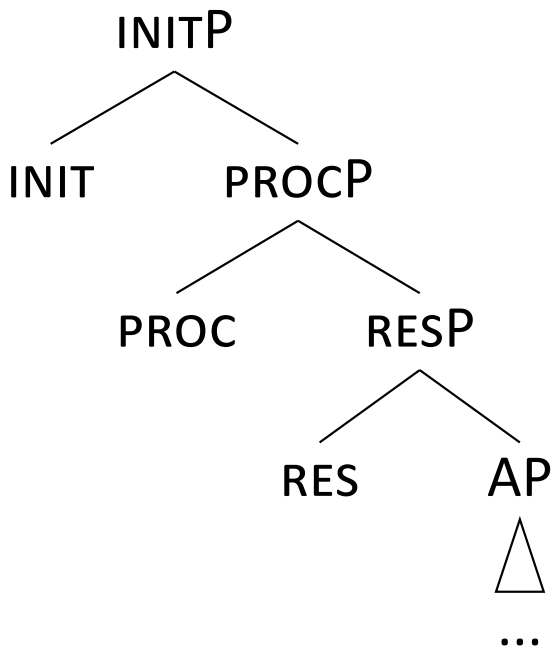


Ø-allomorph = lexicalisation

- Vanden Wyngaerd, De Clercq & Caha (2022) on Dutch deadjectival verbs with the prefix *ver* (e.g. *strak* ‘tight’ > *ver-strakk-en* ‘tighten’)

(26)



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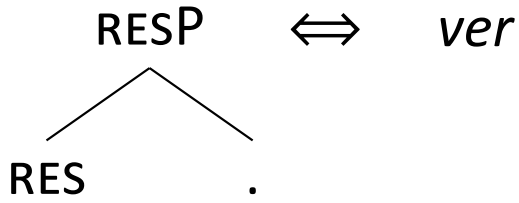
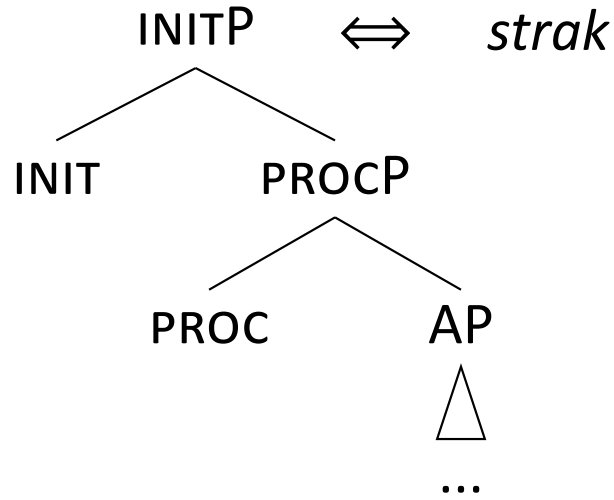
(27) 

(28) 

Ø-allomorph = lexicalisation

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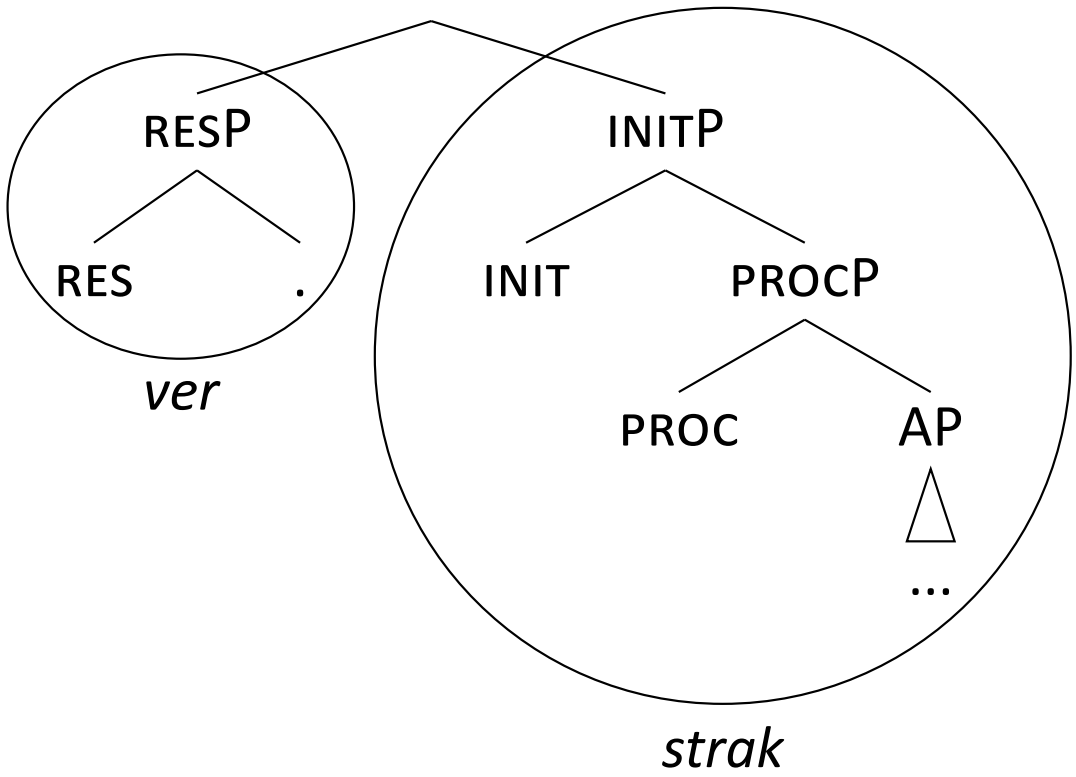

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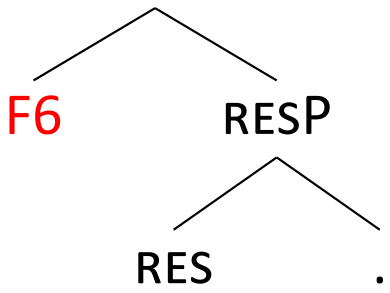

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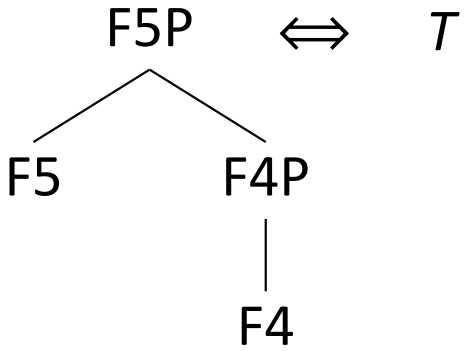

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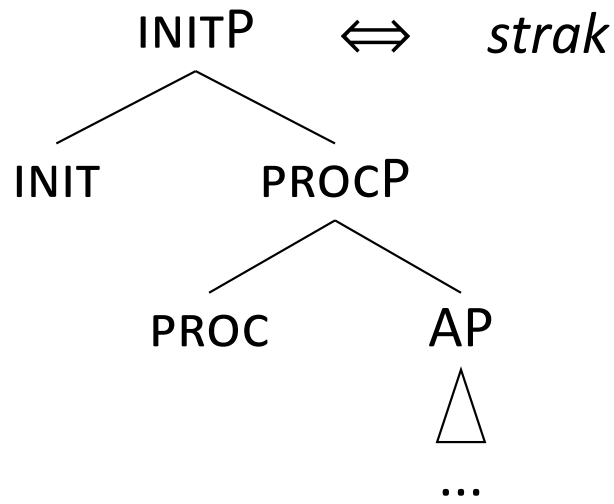

Ø-allomorph = lexicalisation

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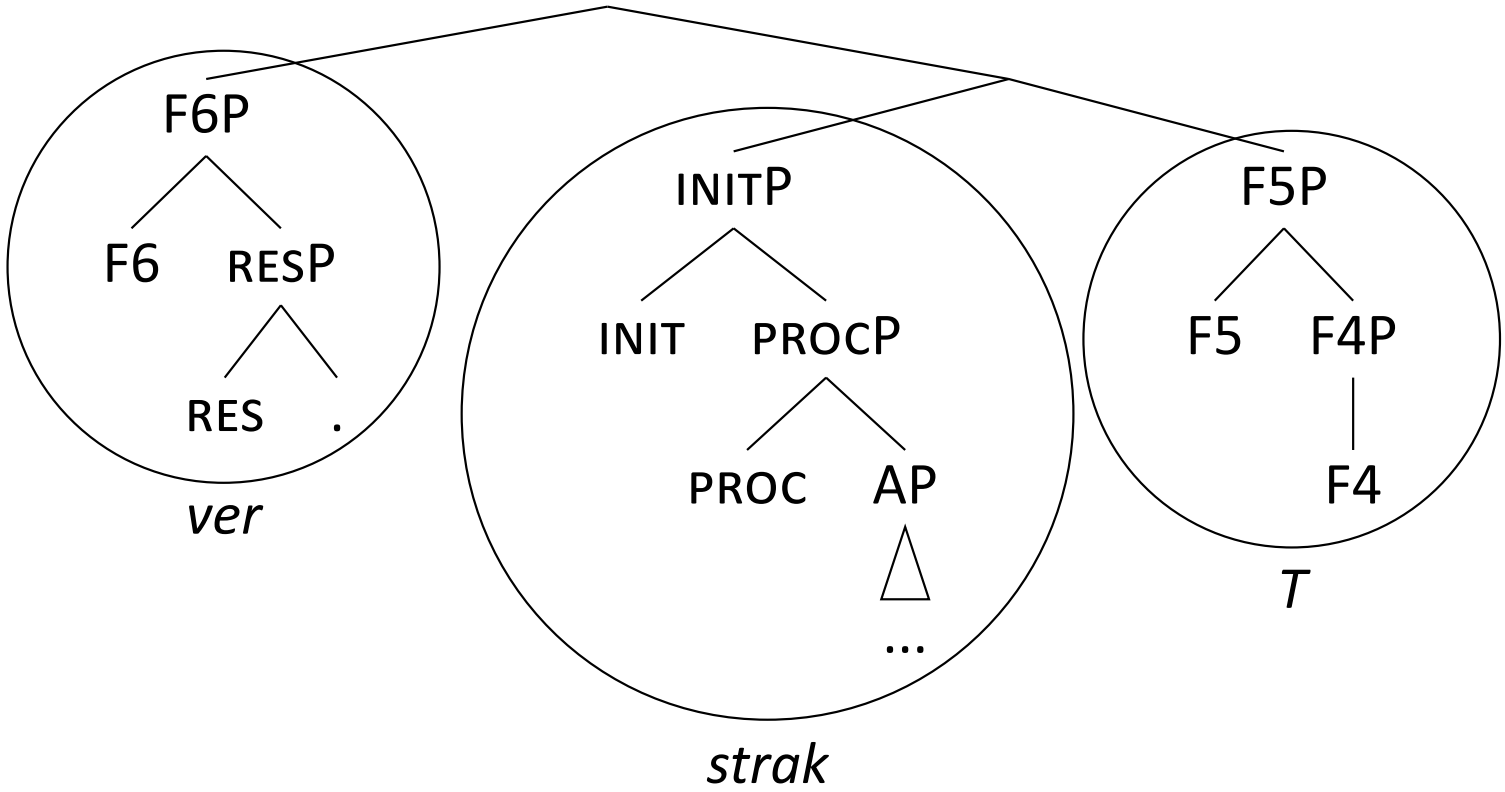

Circumfixes in NS

- Circumfixes consist of two morphemes which lexicalise contiguous subparts of the functional sequence.
- The allomorphy of the suffixal exponent can be accounted for in terms of root size
- the zero-allomorph of the prefixal component involves a feature that is lexicalised by another morpheme, like *ver-*.
- The same logic can be applied to the other prefixes (*ge-*, *be-*, *ont-*, *particles*).
- *Ver-* has only been considered in the context of deadjectival change-of-state verbs here, but it has many other meanings/uses.

Outline

Introduction

Allomorphy in the circumfix of the Dutch participle

Circumfixes exist

Infixes

Circumfixes in DM

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Conclusion

Conclusion

- Circumfixes exist.
- The Dutch past participle suffix shows mixed edge sensitivity.
- In DM, this can be accounted for by VIs that separately specify insertion environments for the prefixal and the suffixal exponents.
- In NS, the circumfix consists of two morphemes which appear *in tandem* because they lexicalise contiguous parts of the fseq.

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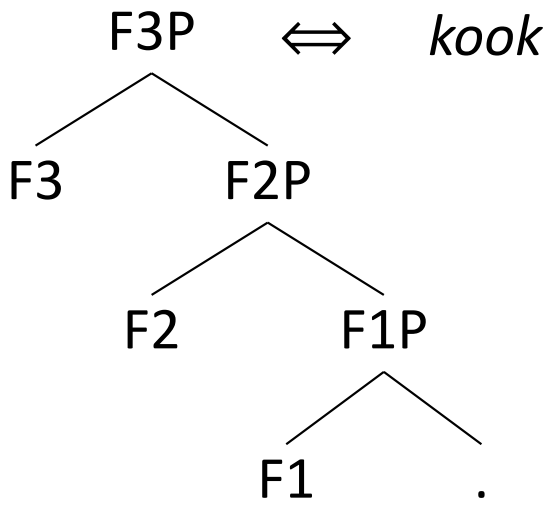
Outline

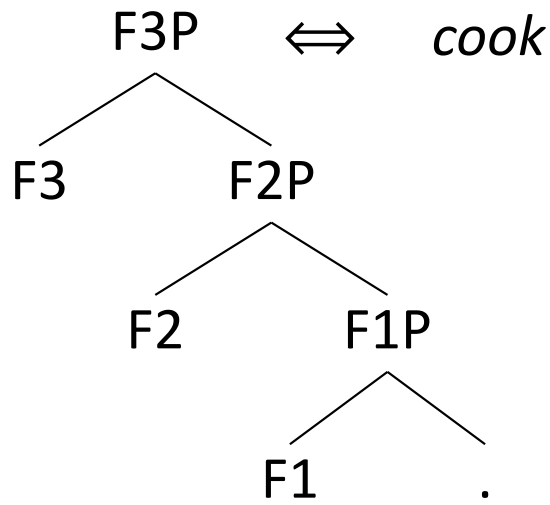
Microvariation

Microvariation

(34)

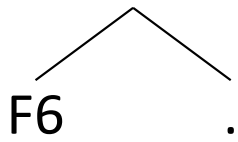


(35)

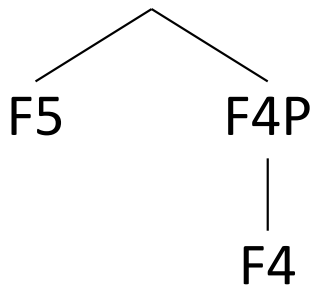


Microvariation

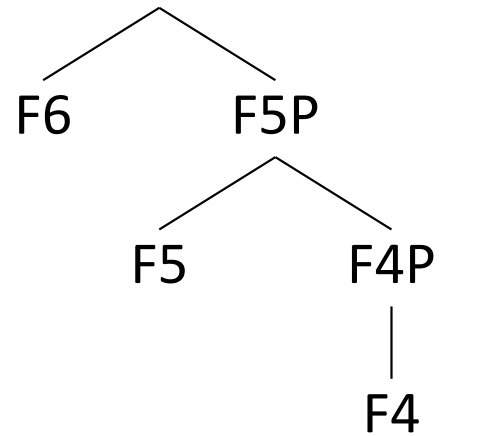
(36) F6P ⟺ *ge*



(37) F5P ⟺ *T*

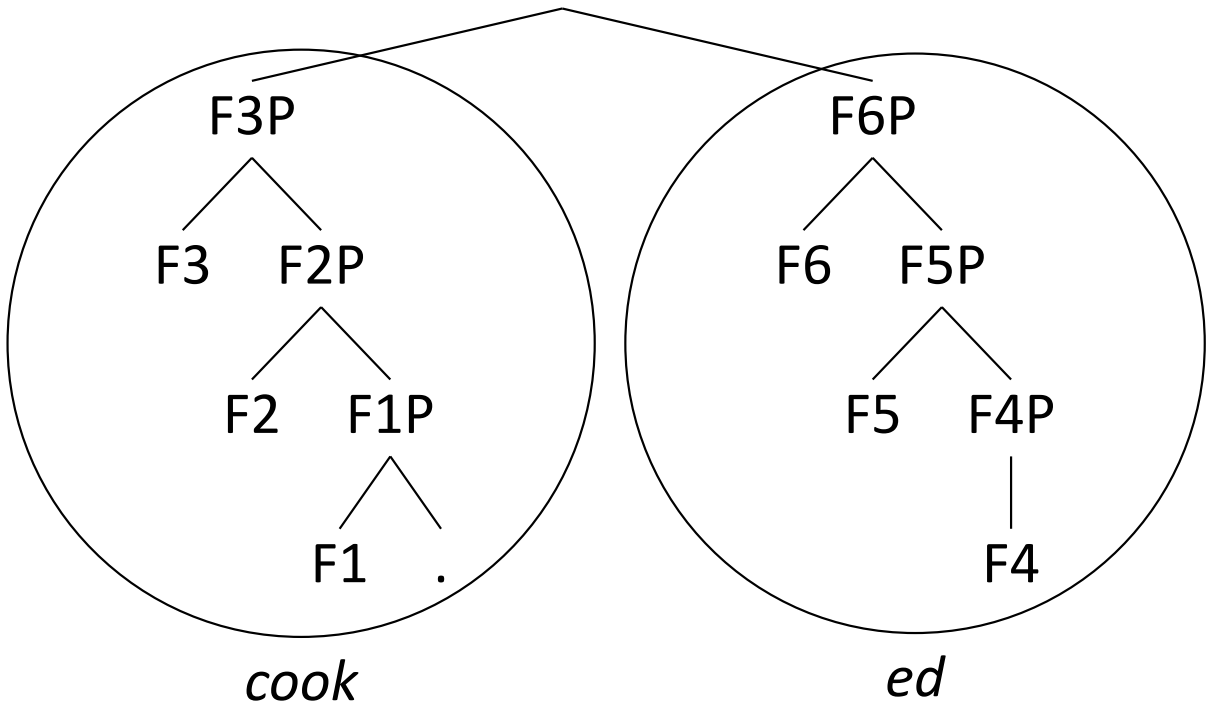


(38) F6P ⟺ *ed*



Microvariation

(39)

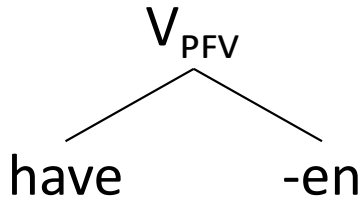


Circumfixes in English

(40) Shannon has eat-en PRS PFV

- Carnie (2006: 266ff)

(41)



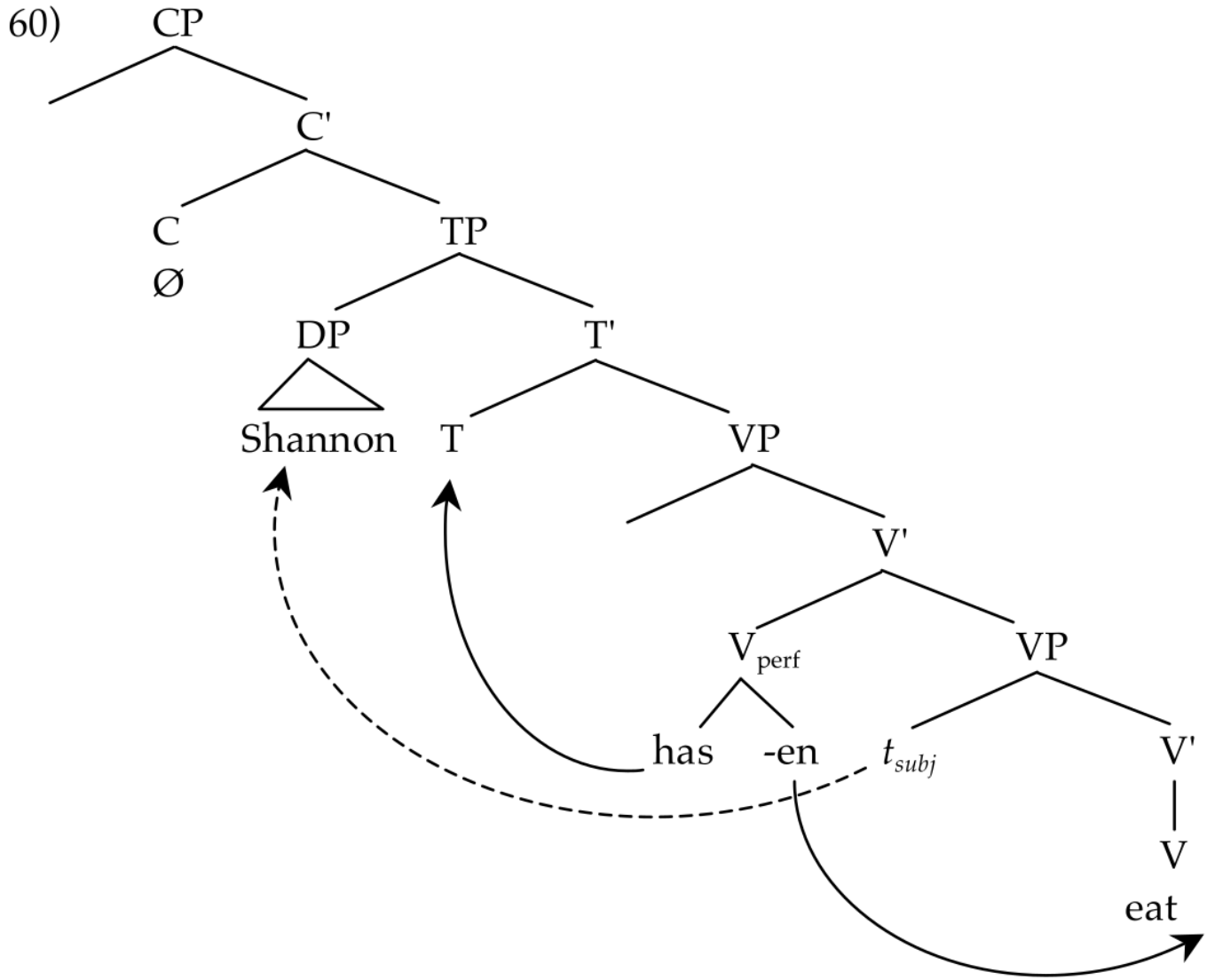
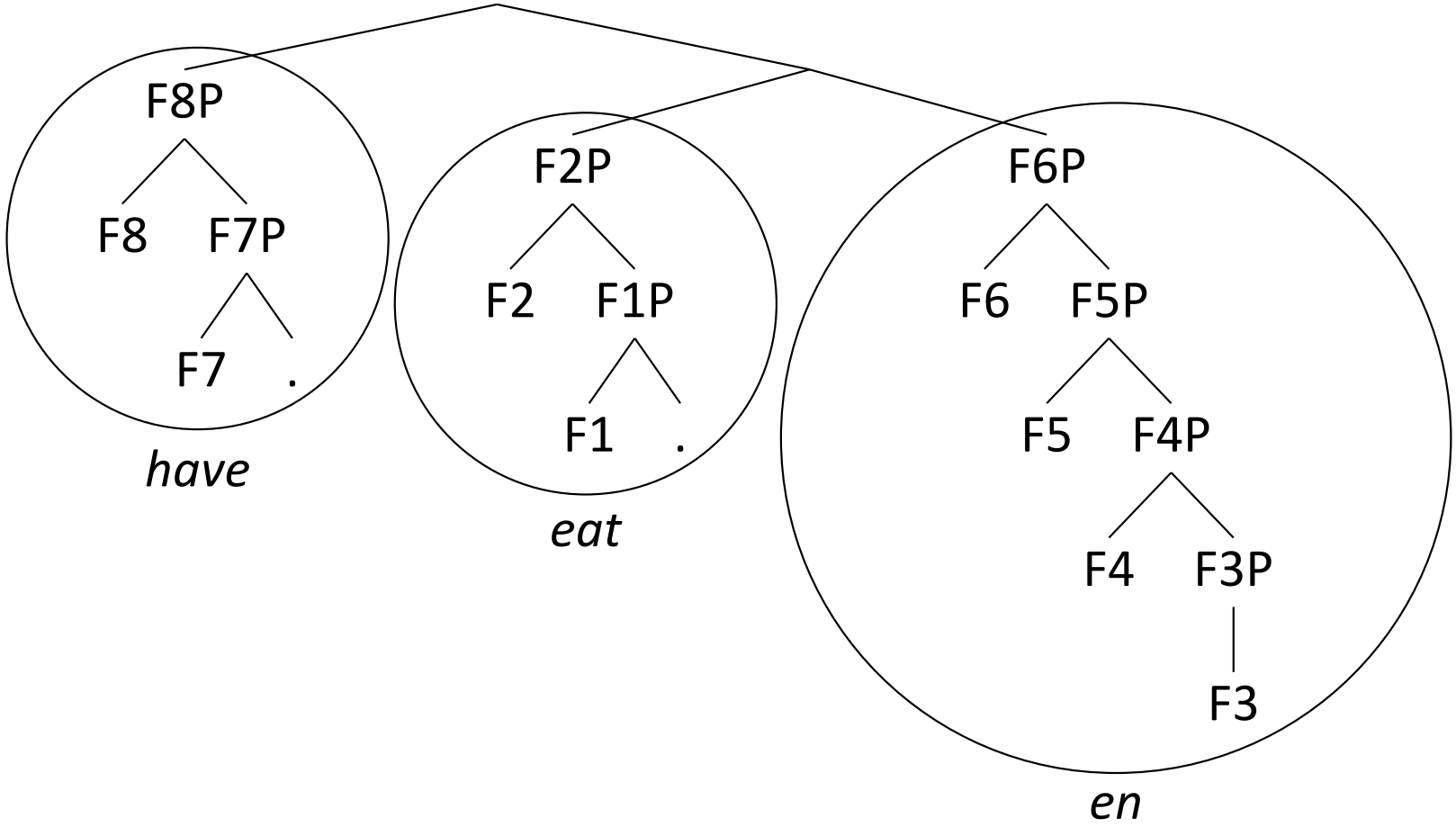


Figure 1: Shannon has eaten (Carnie 2006: 268)

Microvariation

(42)



Vanden Wyngaerd (2026) De Belder & Vanden Wyngaerd (2026)