What is Nanosyntax?

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Outline

1. What is Nanosyntax? (Tuesday 19th Nov)
2. The nanosyntax of negation (Thursday 21 Nov)
3. Suppletion and nanosyntax (Friday 22 Nov)

What is Nanosyntax?

A formal ‘late-insertion’ model for capturing language universals and language variation

Origins

- Cartography
- Principles and Parameters
- detailed empirical research, mapping linguistic data

- Pollock (1989): decomposition of IP
- Abney (1987): decomposition of NP
- Rizzi (1997): decomposition of CP
- Cinque (1999): adverb positions in IP domain

- one feature-one head
- syntacticization of grammatical meaning

Uniformity Principle

'In the absence of compelling evidence to the contrary, assume languages to be uniform with variety restricted to easily detectable properties of utterances.'

(Chomsky 2001)

- comparative crosslinguistic research to get access to those features that together constitute the functional sequence (fseq).

Cinque (2005)

- cartographic reinterpretation of Greenberg's Universal 20
- 24 mathematically possible orders of Dem, Num, A and N
- 14 attested, 10 unattested

- the 14 attested orders can be derived from one underlying order if the following restrictions are adhered to:
  - The universal merge order is Dem> Num > A > N
  - Only leftward movement is allowed (Kayne 1994)
  - Only phrasal movement is allowed
  - Only phrases containing N may be moved (no remnant movement)

Cinque's restrictions to derive the attested orders
and—importantly—not to derive the unattested orders are all relevant for Nanosyntax (as we will see!)

Table of Contents

- beautiful empirical results, but the syntax should be updated accordingly (Starke 2009)

Phrasal Spellout (1)

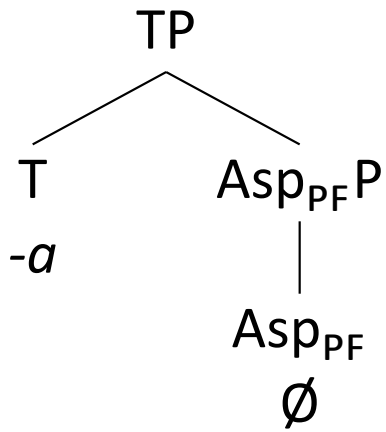
(1) a. Il chant-a → PST, PF
b. Il chant-ait → PST, IMPF

(Starke 2011b)

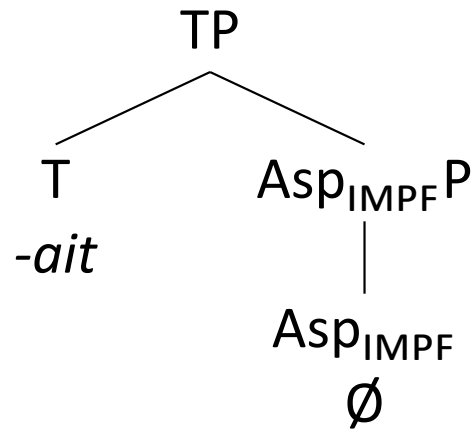
- one morpheme, but (at least) 2 values (Tense, Aspect)
- traditionally: one morpheme per terminal

- different implementations:
  - feature bundles
  - terminals with zero morphemes

(2)

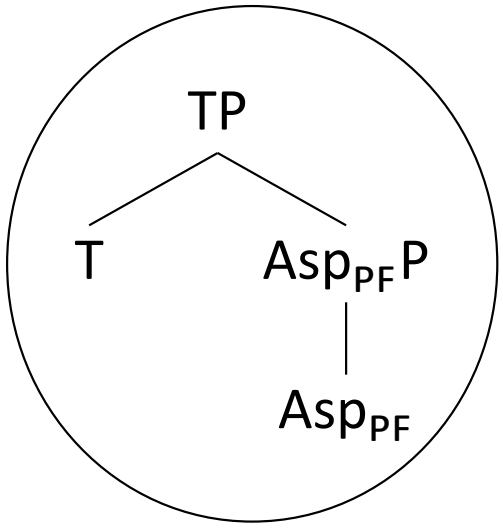


(3)



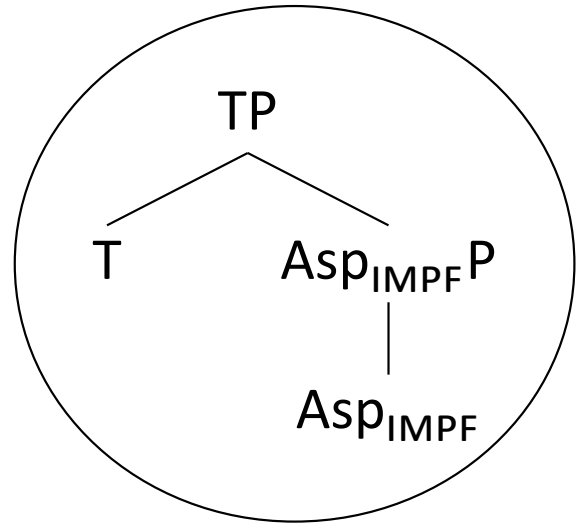
How to assure that -*ait* combines with the null perfective aspect and not with the null imperfective aspect?

(4)



-a

(5)

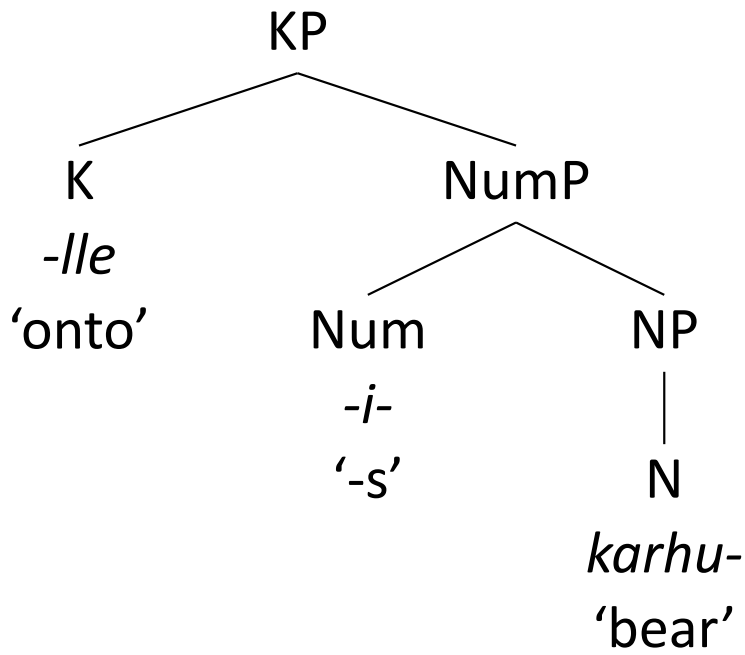


-ait

Phrasal Spellout (2)

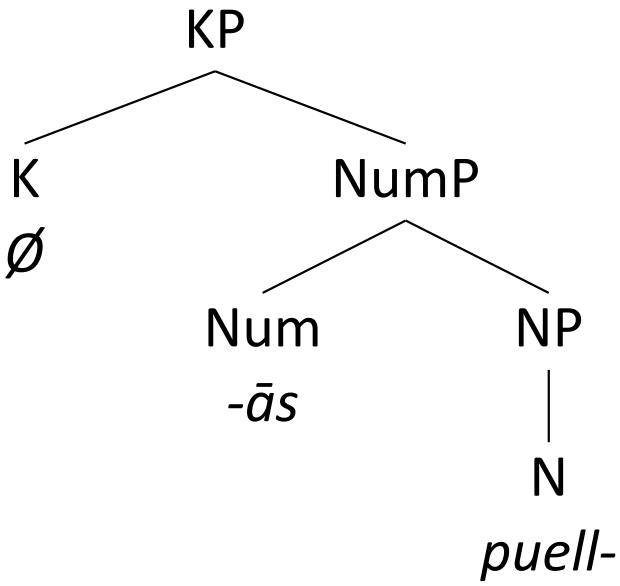
(6) a. karhu-lle [Finnish] (Caha 2009: 73)
bear-ALL
'onto the bear'

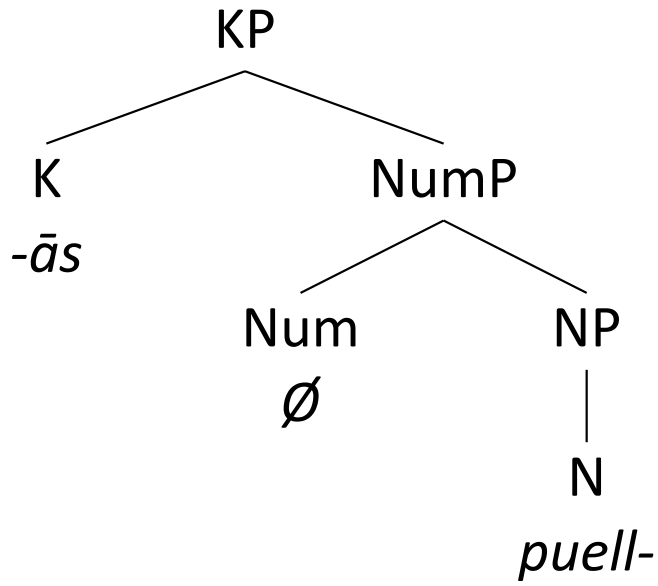
b. karhu-i-lle
bear-PL-ALL
'onto the bears'

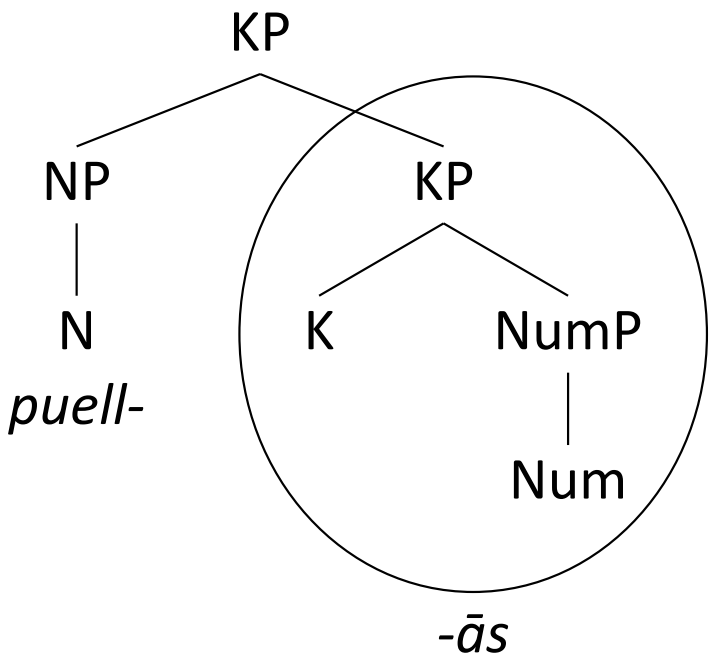

KP
K
-lle
‘onto’
NumP
Num
-i-
‘-s’
NP
N
karhu-
‘bear’

(7) puell-ās [Latin] (Rocquet 2013: 8)
girl-ACC.FEM.PL
'girls.ACC'

- Latin *-ās* is a portmanteau suffix
- Num, Gender and Case are ‘submorphemic’ in Latin


KP
K
Ø
NumP
Num
-ās
NP
N
puell-


KP
K
-ās
NumP
Num
Ø
NP
N
puell-


KP
NP
KP
N
K
NumP
puell-
Num
-ās

Language variation

Borer-Chomsky Conjecture:

> *All parameters of variation are attributable to differences in the features of particular items (e.g. the functional heads) in the lexicon.*

Starke (2011)

Variation reduces to the size of lexically stored trees.

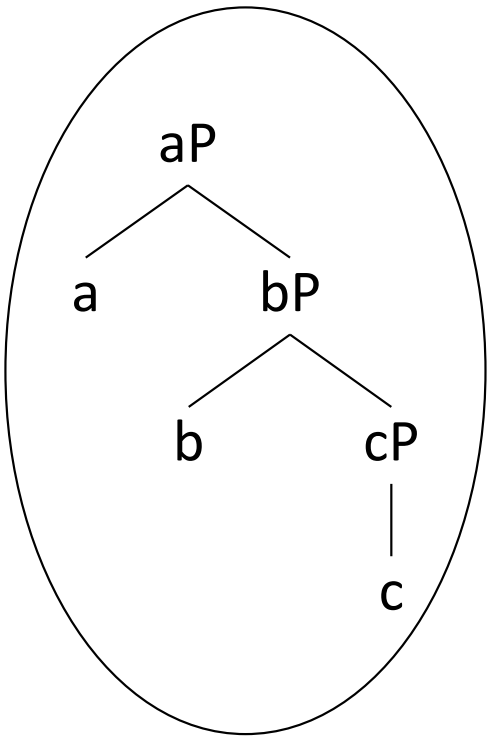
(8)
a. someone
b. something
c. somewhere

(9)
a. quelqu’un
b. quelque chose
c. quelque part

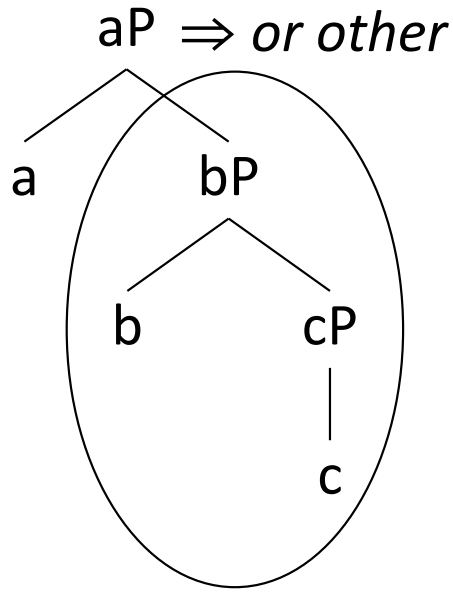
(10) someone/something or other fell down

(11) *quelqu'un/quelque chose ou un autre est tombé

Size matters



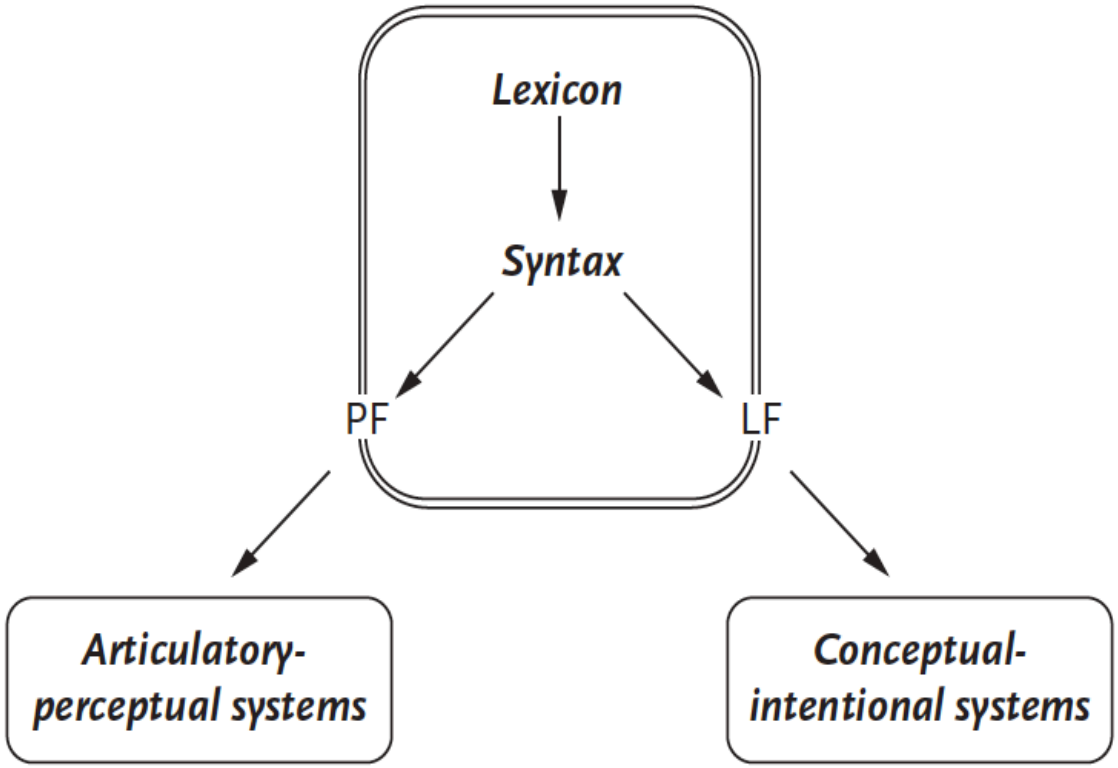
quelque chose



something

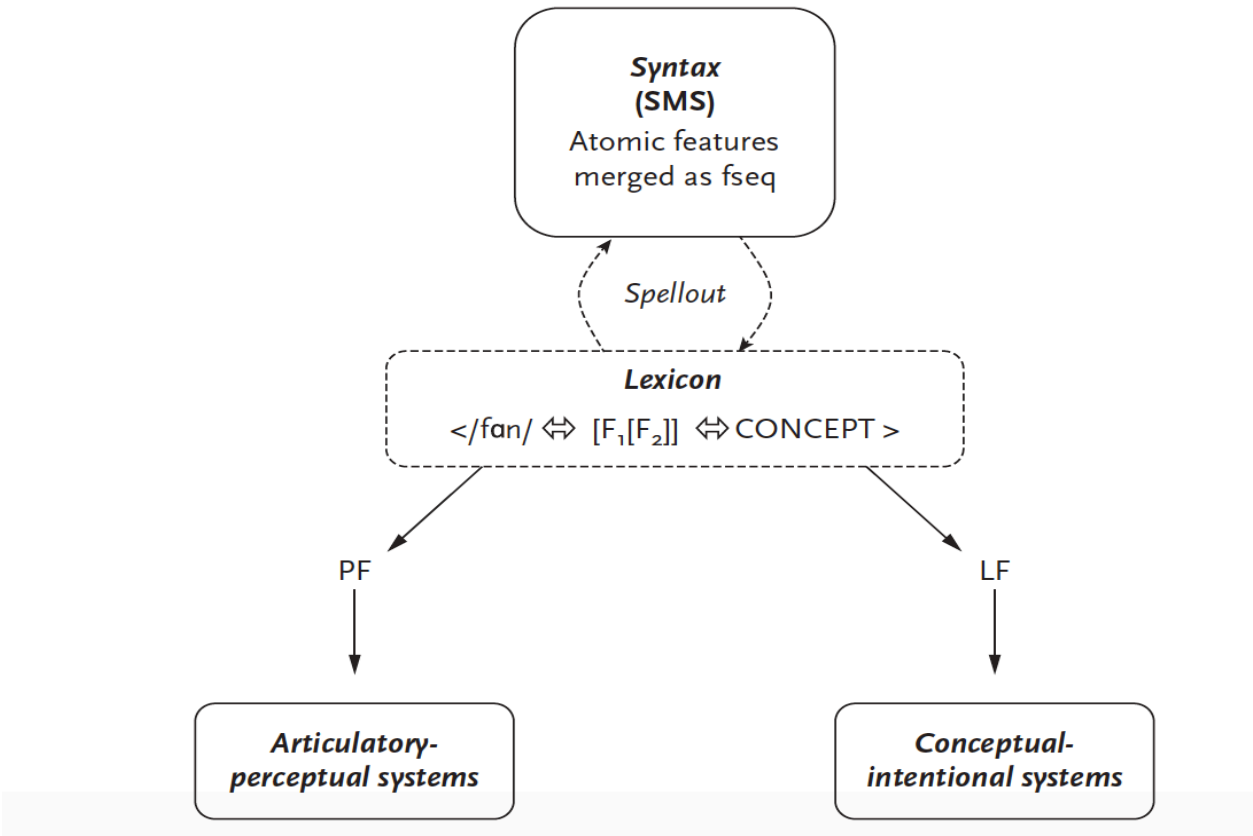
Table of Contents

GG



(Baunaz and Lander 2018: 11)

Nanosyntax



(Baunaz and Lander 2018: 11)

Table of Contents

Nanosyntactic toolbox

- Three main tools:
  - syncretisms
  - containment
  - semantic compositionality

Syncretism

(12)
a. o maxiti-s
the.NOM fighter-NOM
'the fighter'

b. t-on maxiti-Ø
the-ACC fighter-ACC
'the fighter'

c. t-u maxiti-Ø
the-GEN fighter-GEN
'the fighter'

Syncretisms

Greek

(13) a. o anthrop-os
the.NOM human-NOM
'the man'

b. t-on anthrop-on
the-ACC human-ACC
'the man'

c. t-u anthrop-u
the-GEN human-GEN
'the man'

Case (Caha 2009)

Case syncretisms in Modern Greek

	maxit fighter PL	**maxit** fighter SG	**anthrop-os** human	**álpha** álpha sg
NOM	maxit-es	maxit-i-s	anthropos	álpha
ACC	maxit-es	maxit-i-Ø	anthrop-o	álpha
GEN	maxit-on	maxit-i-Ø	anthrop-u	álpha

Case syncretisms in Modern Greek

	maxit fighter PL	**maxit** fighter SG	**anthrop-os** human	**álpha** álpha sg	*
NOM	maxit-es	maxit-i-s	anthrop-os	álpha	A
ACC	maxit-es	maxit-i-Ø	anthrop-o	álpha	B
GEN	maxit-on	maxit-i-Ø	anthrop-u	álpha	A

Case syncretisms in Russian

	'window'(SG)	**teacher (PL)**	**one hundred**
NOM	okn-o	učitel-ja	st-o
ACC	okn-o	učitel-ej	st-o
GEN	okn-a	učitel-ej	st-a
DAT	okn-u	učitel-am	st-a
INS	okn-om	učitel-ami	st-a

(Caha 2009: 12)

Case syncretisms in Russian

	‘window’(SG)	teacher (PL)	one hundred	*
NOM	okn-o	učitel-ja	st-o	A
ACC	okn-o	učitel-ej	st-o	
GEN	okn-a	učitel-ej	st-a	
DAT	okn-u	učitel-am	st-a	A
INS	okn-om	učitel-ami	st-a	

Universal Case Contiguity

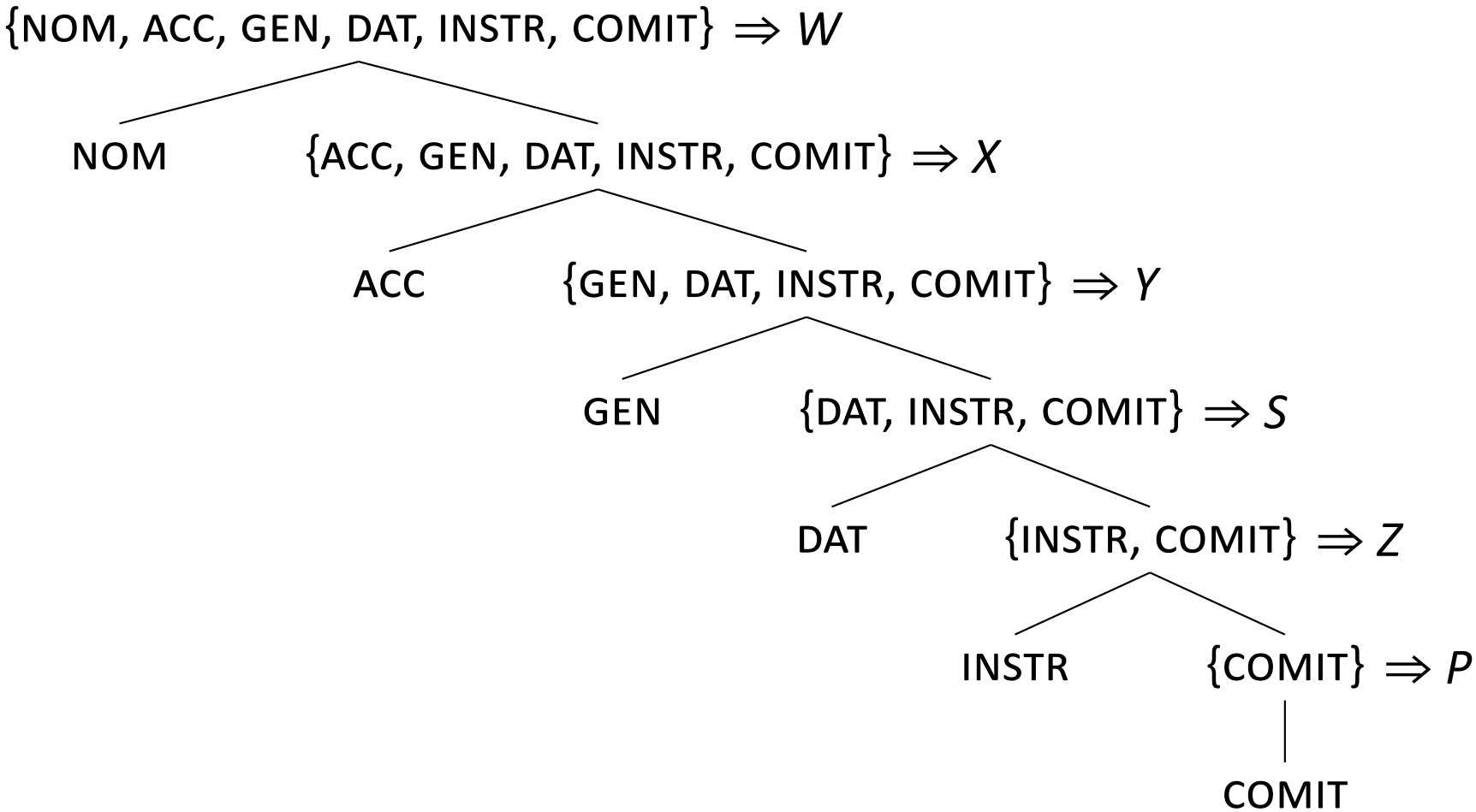
(14) Case syncretism targets contiguous regions in a sequence invariant across languages.

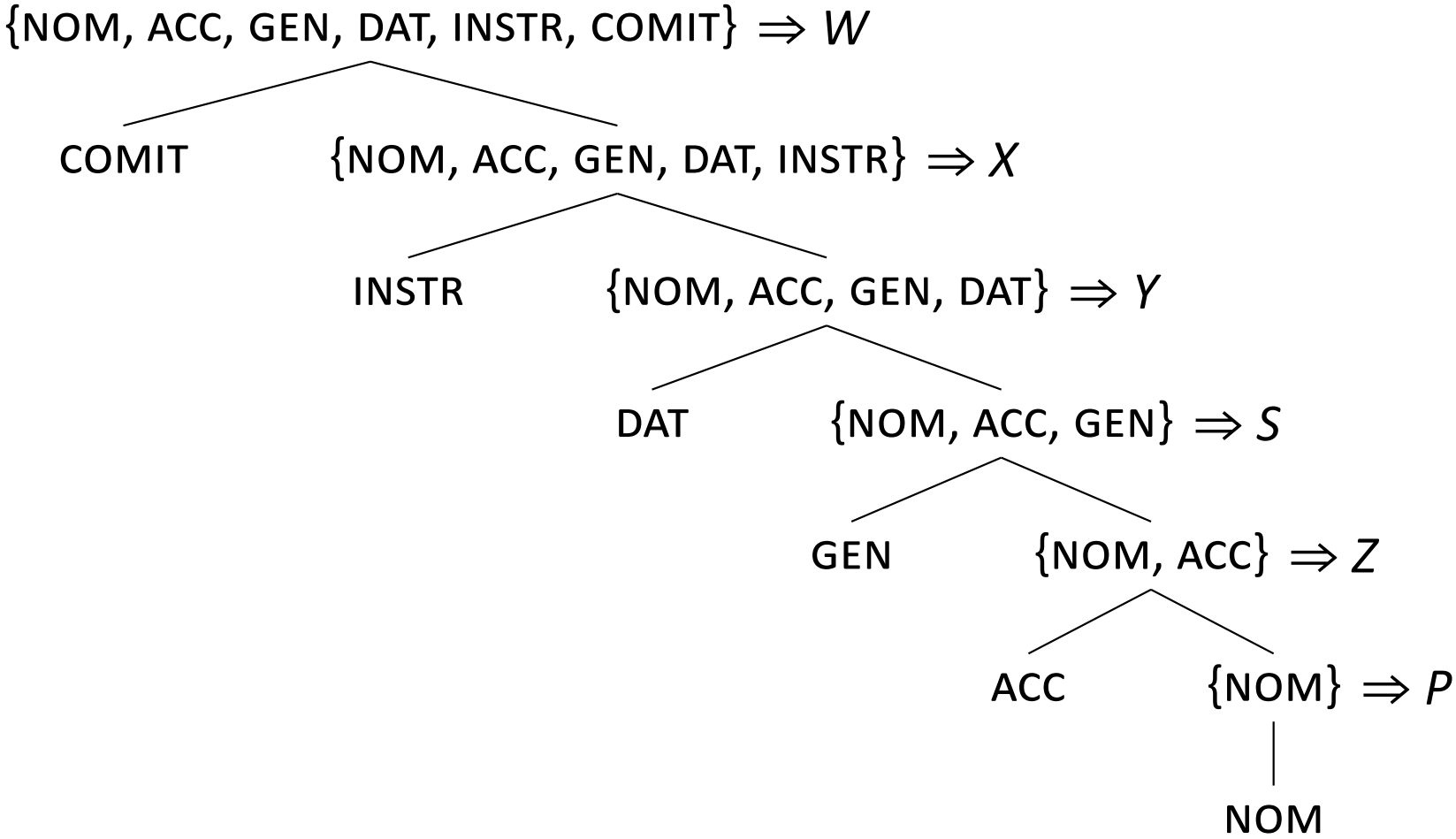
(15) The Case sequence (Caha 2009: 10):
NOMINATIVE - ACCUSATIVE - GENITIVE - DATIVE - INSTRUMENTAL - COMITATIVE

Jakobson (1962), one of the classics of the syncretism literature, draws the conclusion (correct, to my mind) that syncretism points to the existence of a hidden level of linguistic organization inside an apparently indivisible unit: the morpheme. (Caha 2009: 17)

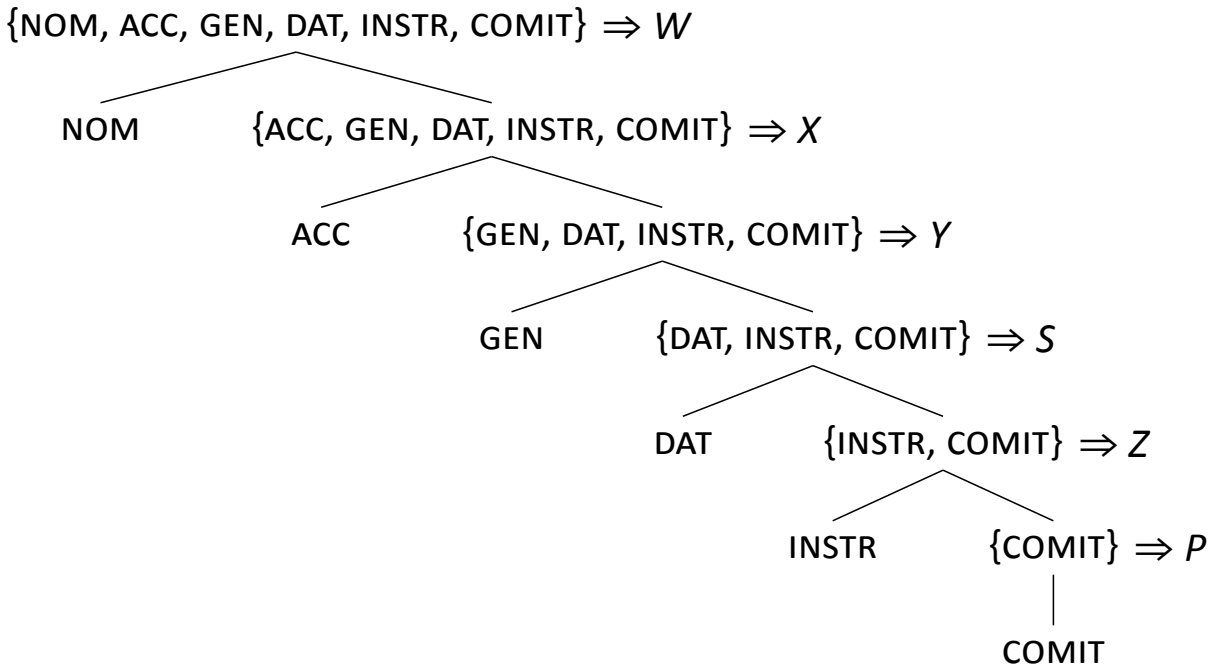
- syncretisms provides insight into linear order of primitive features

Subclassification



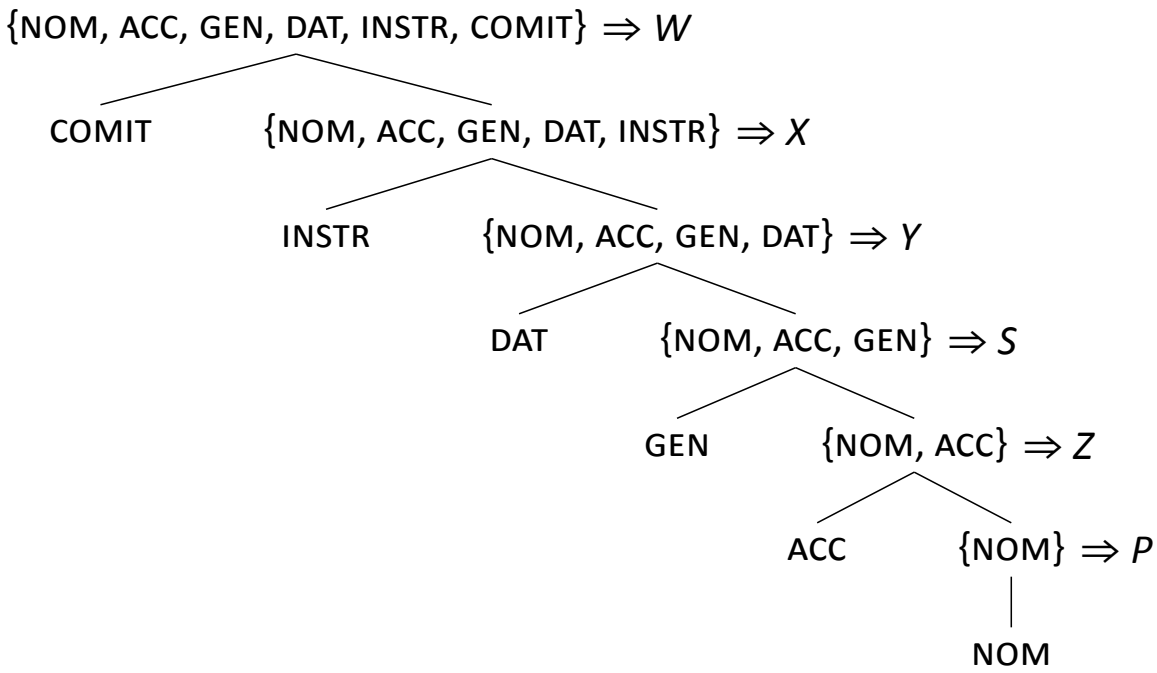

{NOM, ACC, GEN, DAT, INSTR, COMIT} ⇒ W
COMIT
{NOM, ACC, GEN, DAT, INSTR} ⇒ X
INSTR
{NOM, ACC, GEN, DAT} ⇒ Y
DAT
{NOM, ACC, GEN} ⇒ S
GEN
{NOM, ACC} ⇒ Z
ACC
{NOM} ⇒ P
NOM

Cumulative subclassification



(16)
a. W = NOM
b. W, X = ACC
c. W, X, Y = GEN
d. W, X, Y, S = DAT
e. W, X, Y, S, Z = INSTR
f. W, X, Y, S, Z, P = COMIT

Cumulative subclassification



(17)
a. W = COMIT
b. W, X = INSTR
c. W, X, Y = DAT
d. W, X, Y, S = GEN
e. W, X, Y, S, Z = ACC
f. W, X, Y, S, Z, P = NOM

Decomposition

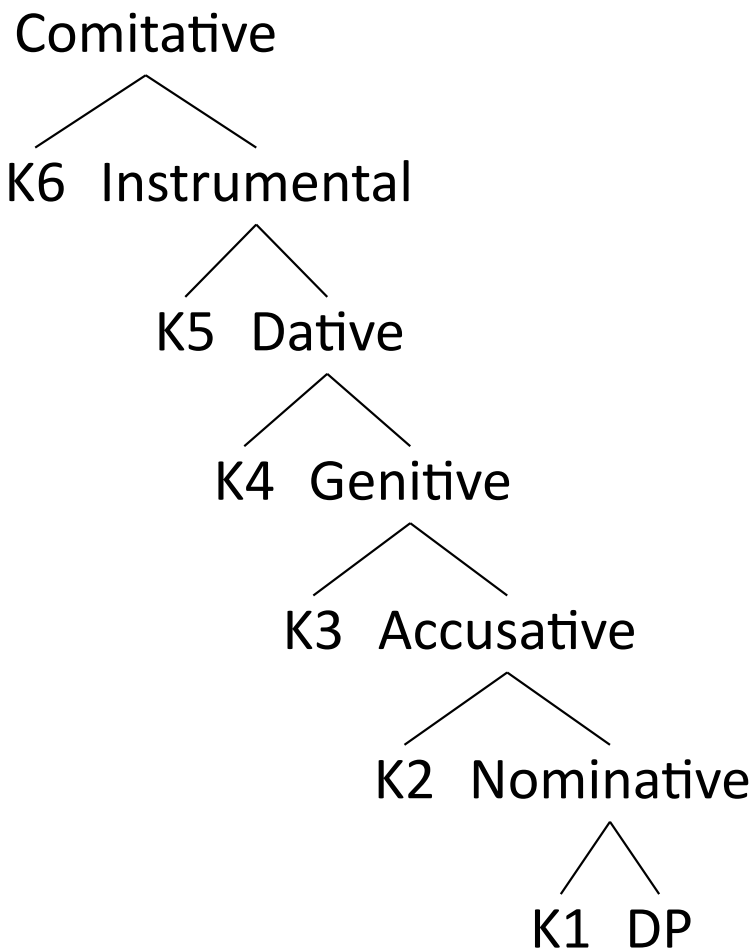
(18)
a. W = NOM
b. W, X = ACC
c. W, X, Y = GEN
d. W, X, Y, S = DAT
e. W, X, Y, S, Z = INSTR
f. W, X, Y, S, Z, P = COMIT

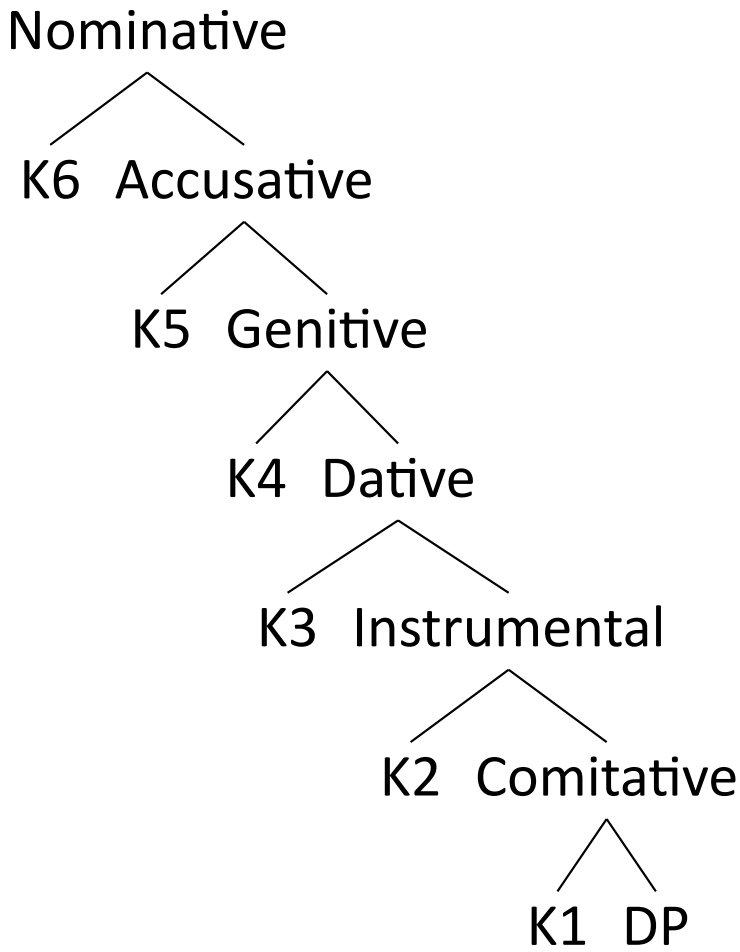
(19)
a. K1 = NOM
b. K1 + K2 = ACC
c. K1 + K2 + K3 = GEN
d. K1 + K2 + K3 + K4 = DAT
e. K1 + K2 + K3 + K4 + K5 = INSTR
f. K1 + K2 + K3 + K4 + K5 + K6 = COMIT

(20)
a. W = COMIT
b. W, X = INSTR
c. W, X, Y = DAT
d. W, X, Y, S = GEN
e. W, X, Y, S, Z = ACC
f. W, X, Y, S, Z, P = NOM

(21)
a. K1 = COMIT
b. K1 + K2 = INSTR
c. K1 + K2 + K3 = DAT
d. K1 + K2 + K3 + K4 = GEN
e. K1 + K2 + K3 + K4 + K5 = ACC
f. K1 + K2 + K3 + K4 + K5 + K6 = NOM

Hierarchical order?





- syncretisms do not provide insight into hierarchical order of primitive features

Containment (I)

West-Tocharian case compounding

	horse.PL	**man.PL**
NOM	yakw-i	enkw-i
ACC	yakw-em	enkw-em
GEN	yakw-em-ts	enkw-em-ts

- ACC is contained in GEN
- GEN is ‘bigger’

Containment (II)

- Prepositions are case morphemes that precede the nominal
- Prepositions select for nominals with a specific case and hence provide information on containment

(22) of him [English] GEN>ACC

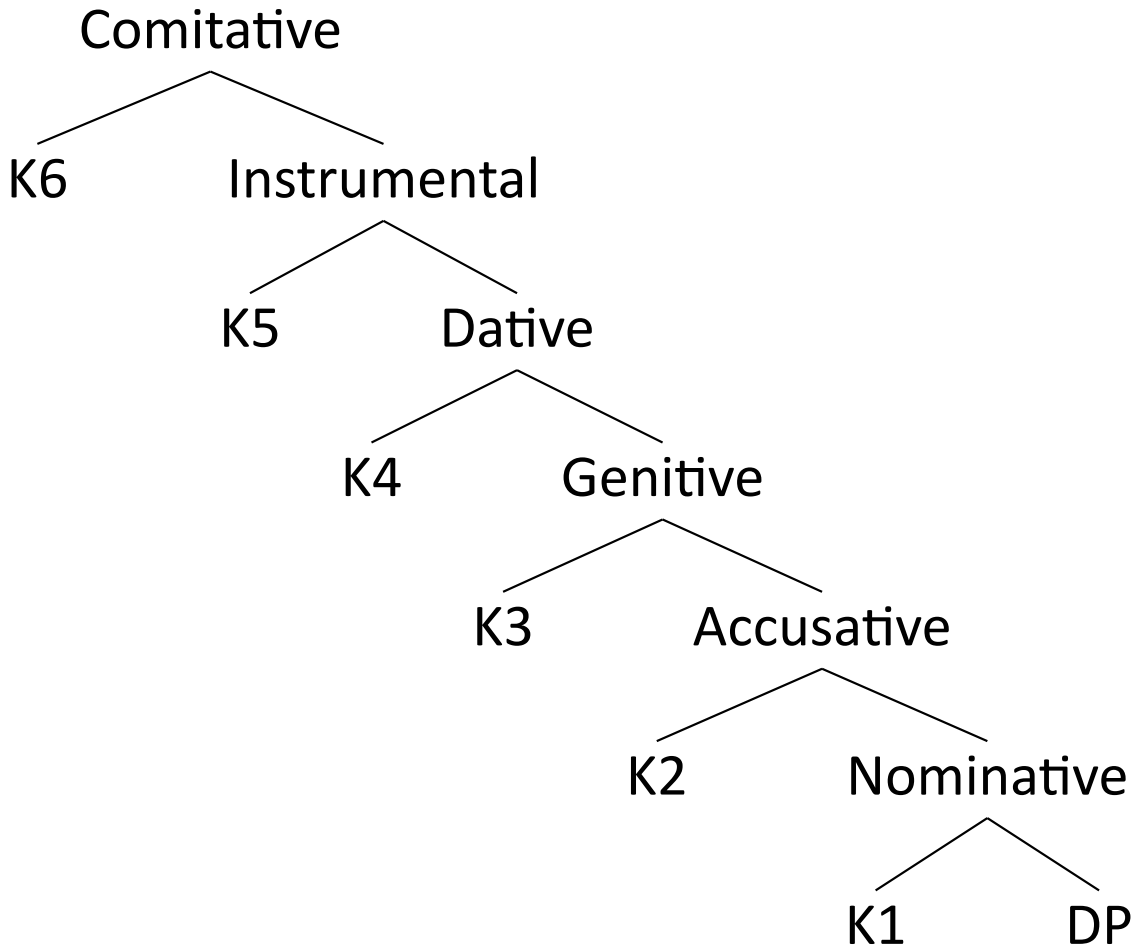
(23) li- l- binti
to.DAT- the- girl.GEN [Arabic]

DAT>GEN

(24) mit einem Hammer
with a.DAT hammer [German]

INS>DAT

(25)


Comitative
K6
Instrumental
K5
Dative
K4
Genitive
K3
Accusative
K2
Nominative
K1
DP

Path (Pantcheva 2011)

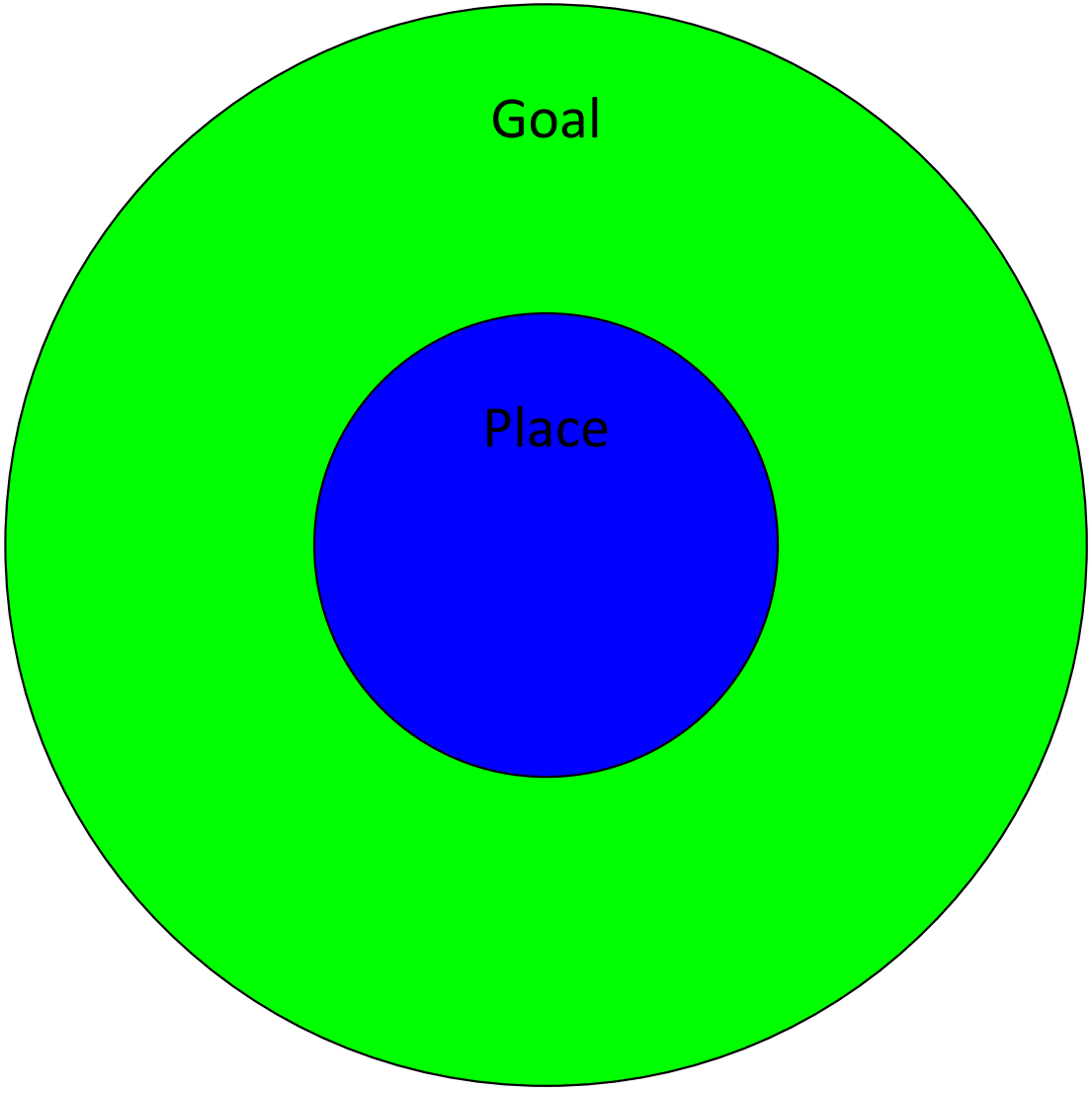
(26)
a. He came **via** Marseille. (Route)
b. He came **to** me. (Goal)
c. She came **from** her parents' house. (Source)
d. She is **at** school. (Place)

Goal-Place containmment

(27)

a. besuro-**xo** [Tzez]
fish-at
'at the fish'

b. besuro-**xo**-**r**
fish-at-to
'to the fish'


Goal
Place

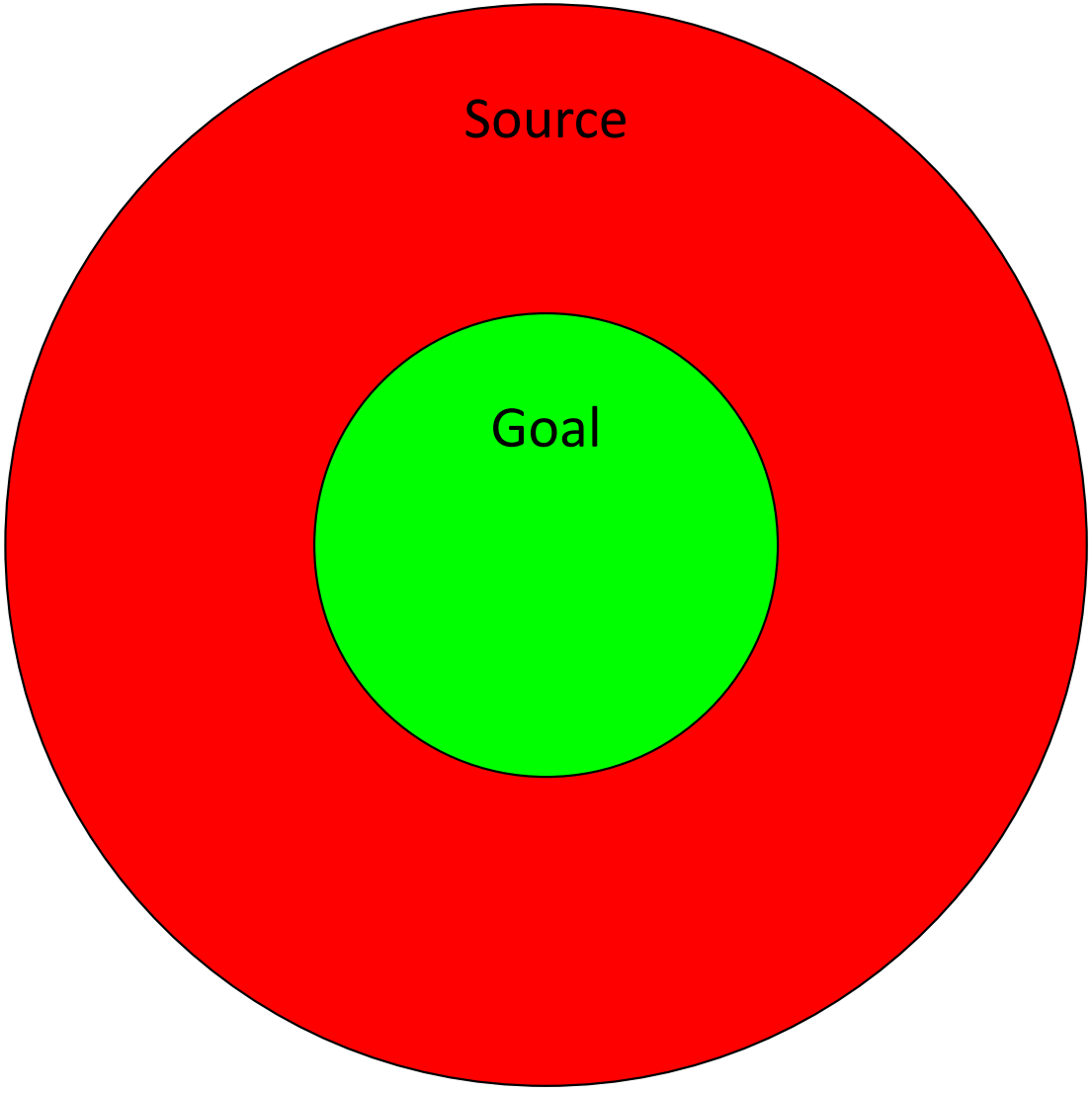
Source-Goal Containment

(28) a. Utavalu-**pi** kawsa-ni. [Imbabura Quechua]
Otavalo-LOC live-1
'I live in Otavalo.' (Location)

b. Utavalu-**man** ri-ni.
Otavalo-ALL go-1
'I go to Otavalo.' (Goal)

c. Utavalu-**manda** shamu-ni.
Otavalo-ABL come-1
'I come from Otavalo.' (Source)

Language	Location	Goal	Source	Reference
Bulgarian	*pri*	*kəm*	*ot-kəm*	Pashov (1999)
Dime	*-se*	*-bow*	*-bow-de*	Mulugeta (2008)
Chamalal	*-i*	*-u*	*-u-r*	Magomedbekova (1967b)
Ingush	*-ğ*	*-ga*	*-ga-ra*	Nichols (1994)
Jingulu	*-mpili*	*-ŋka*	*-ŋka-mi*	Blake (1977)
Mansi	*-t*	*-n*	*-n-əl*	Keresztes (1998)
Quechua	*-pi*	*-man*	*-man-da*	Jake (1985), Cole (1985)
Uchumataqu	*-tá*	*-ki*	*-ki-stani*	Vellard (1967)


Source
Goal

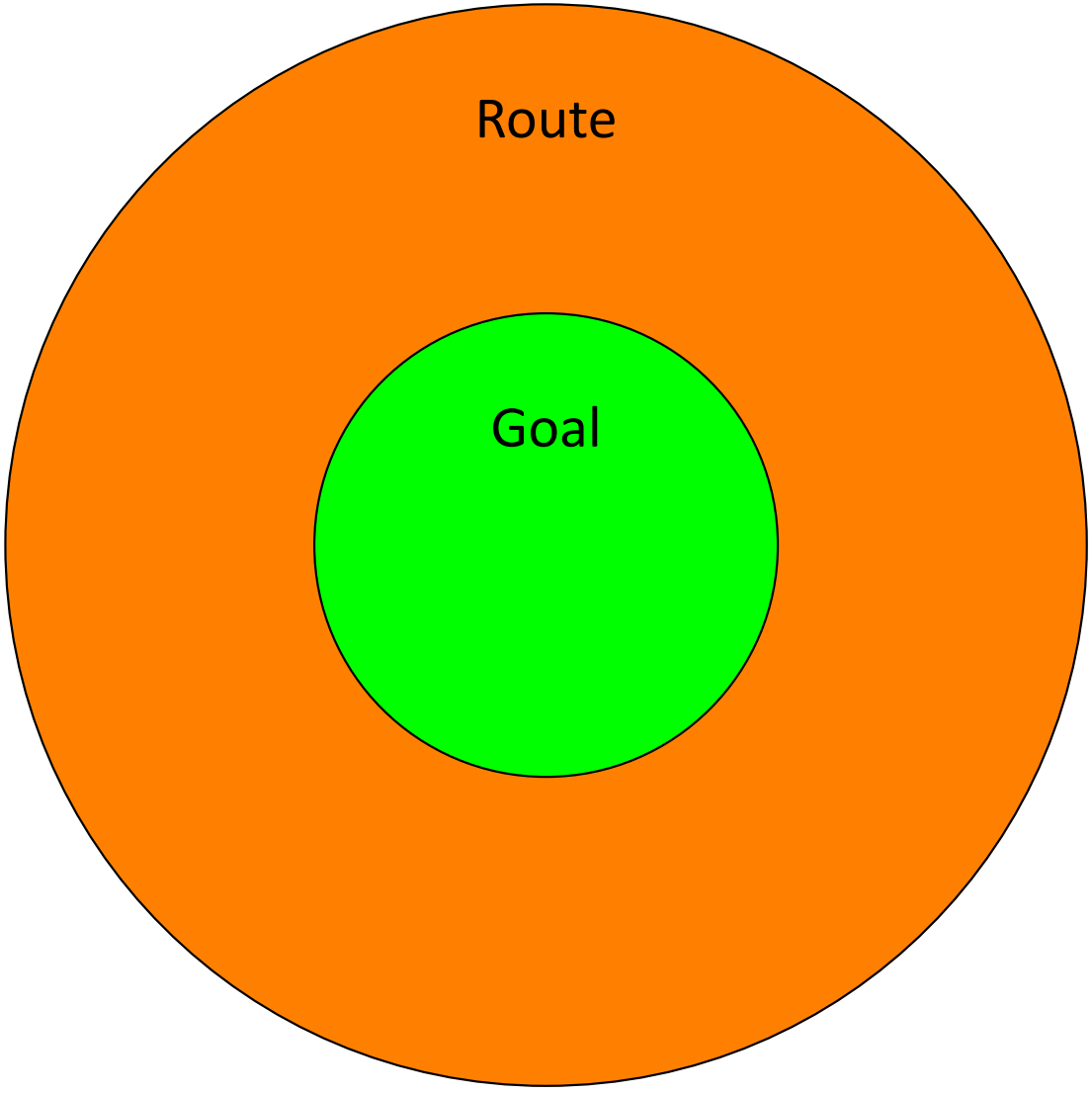
Route-Goal containment

- Route

(29) Na Forum Romanum vstupujeme **po**-pod oblúk-ø
On Forum Romanum.ACC enter.1PL po-under arch-ACC
Tita. [Slovak]
of.Tito
'We entered the Forum Romanum by going under Tito's arch.' (lit.: via under)

- Goal

(30) Slamu dal pod stôl-Ø
hay put.3SG under table-ACC
'He put the hay under the table.'


Route
Goal

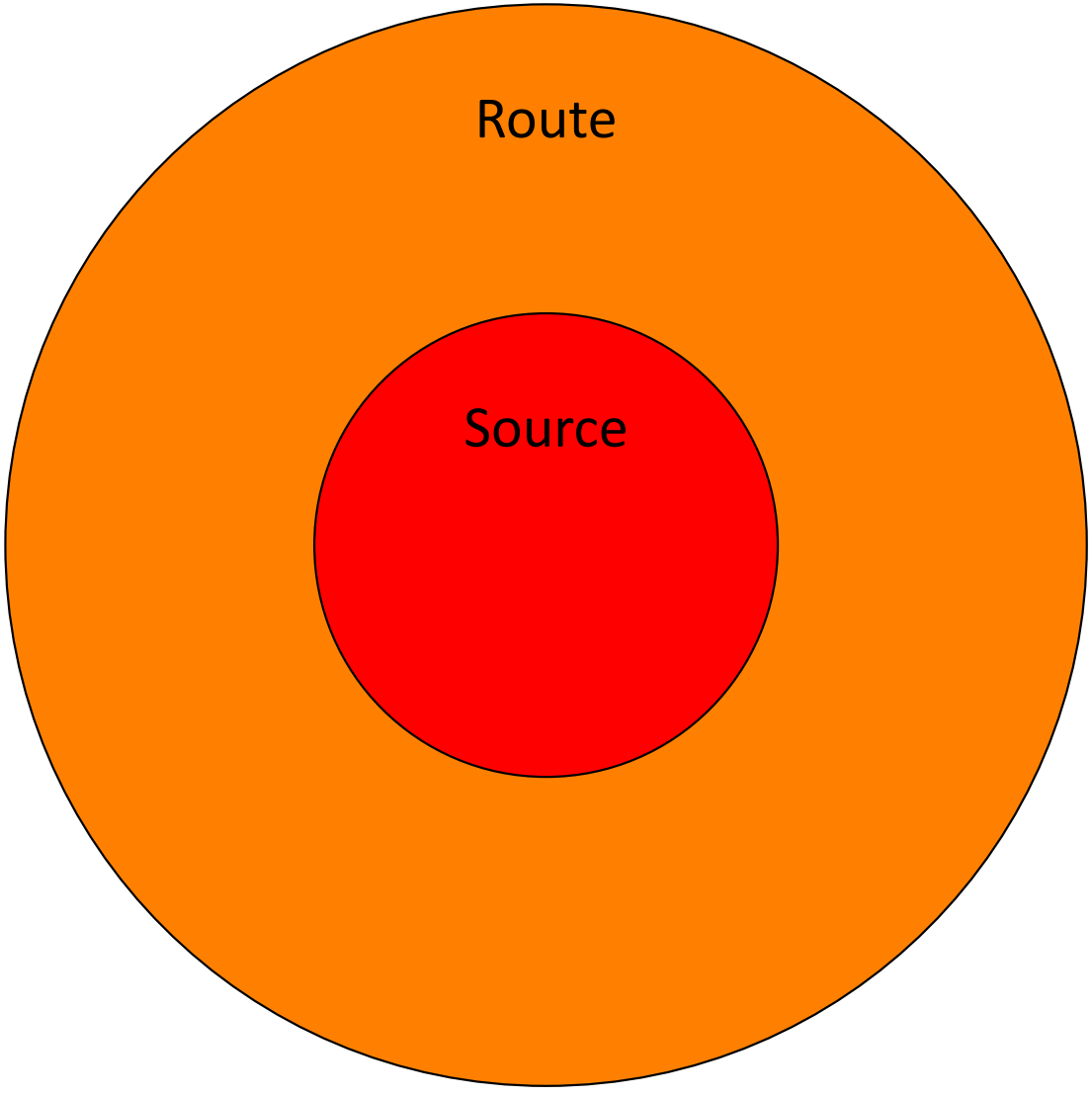
Route-Source containment

	Series	Location	Goal	Source	Route
on	*-g*	*-g-e*	*-g-a*	*-g-u*	*-g-u-ne*
at, near	*-x*	*-xar-i*	*-lir-a*	*-xar-u*	*-xar-u-ne*
at	*-q*	*-q-e*	*-q-a*	*-q-u*	*-q-u-ne*
in	*-l'*	*-l'-i*	*-l'-a*	*-l'-u*	*-l'-u-ne*
under	*-tˤ*	*-tˤ-i*	*-tˤ-a*	*-tˤ-u*	*-tˤ-u-ne*

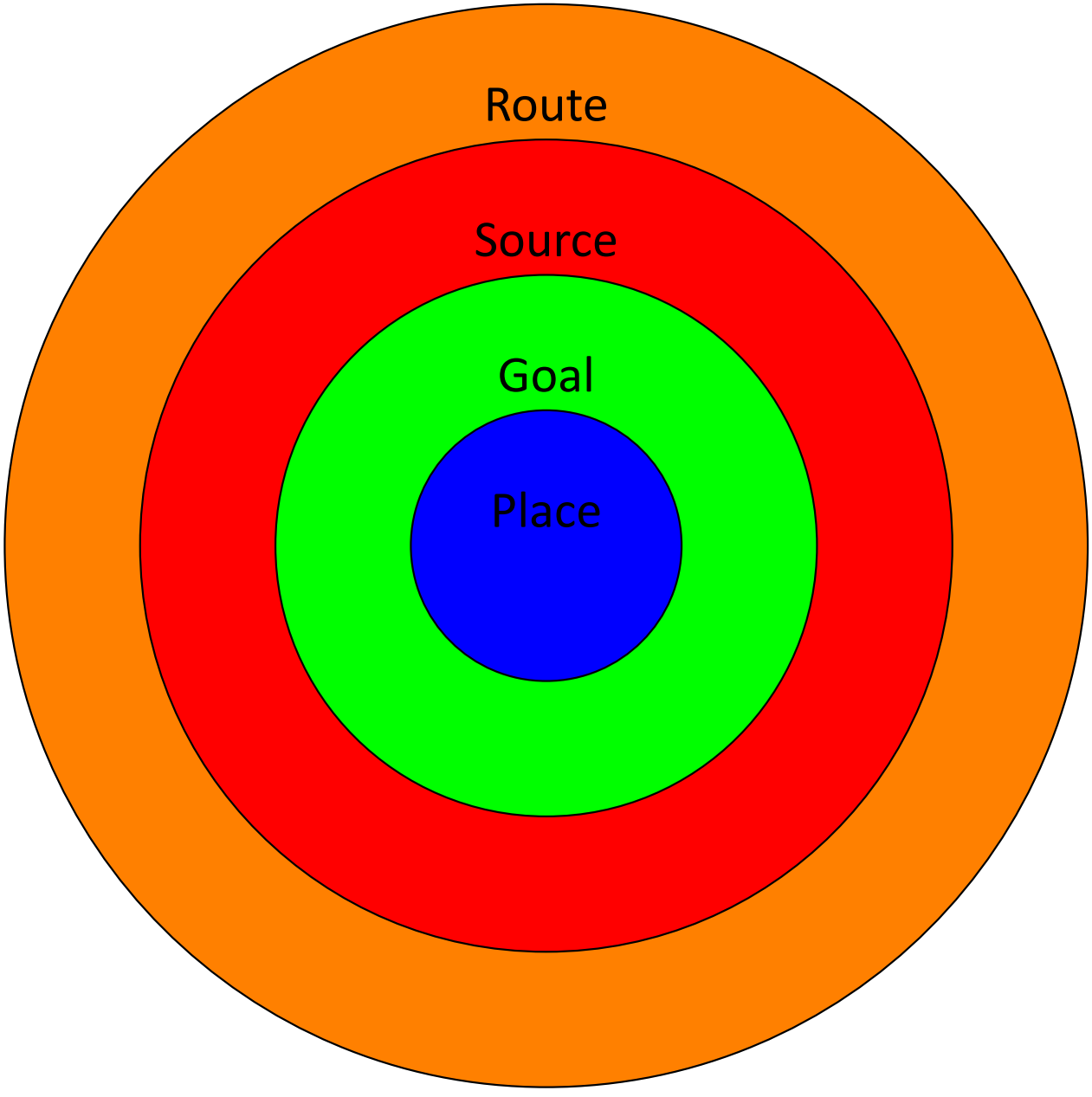
Table 4.3: Spatial case system in Akhvakh (Magomedbekova 1967a)

	Series	Location	Goal	Source	Route
on (top of)	*-da*	*-da*	*-d-e*	*-da-ssa*	*-da-ssa-n*
at	*-q*	*-q*	*-q-e*	*-q-a*	*-q-a-n*
under	*-ƛ'*	*-ƛ'*	*-ƛ'-e*	*-ƛ'-a*	*-ƛ'-a-n*
in, among	*-ƛ*	*-ƛ*	*-ƛ-e*	*-ƛ-a*	*-ƛ-a-n*
in a hollow object	*-∅*	*-∅*	*-∅-e*	*-∅-ssa*	*-∅-ssa-n*

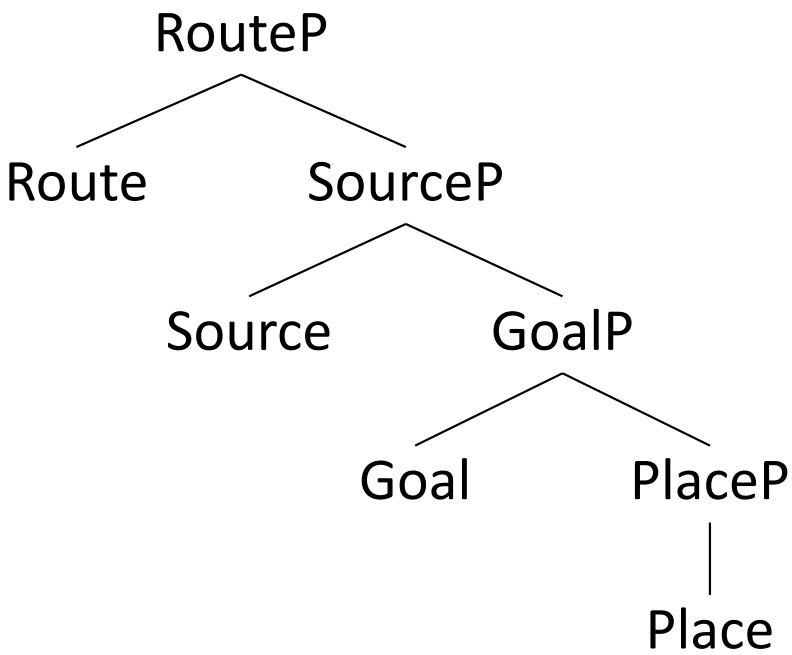
Table 4.4: Spatial case system in Avar (Blake 1994)


Route
Source

(31) a. Source > Goal
b. Route > Goal
c. Route> Source
d. Goal> Place


Route
Source
Goal
Place

Decomposition



Semantic compositionality

- Semantics can back up and support a functional hierarchy.
- Route = **from** X **to** Y (Pantcheva 2011)

Table of Contents

How to spell out?

- How to match a syntactic tree with its phonology?

- Lexicon

< /bla/, [XP X [YP Y]], BLIB >

Spellout

Slovene *jabolk*, ‘apple’ (Caha 2009: 240, Starke 2011a)

NOM	jabolk-o
ACC	jabolk-o
GEN	jabolk-a
DAT	jabolk-u

(32) Lexical items

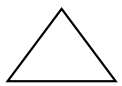
a. < /jabolk/, [N*], APPLE >

b. < /o/, [$_{K2P}$ K2 [$_{K1P}$ K1]], ACC >

c. < /a/, [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]], GEN >

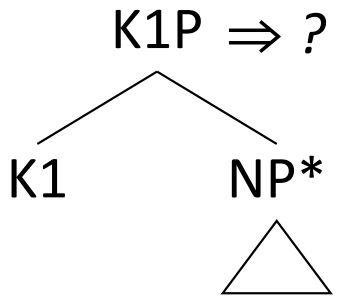
d. < /u/, [$_{K4P}$ K4 [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]]], DAT >

(33) NP* $\Rightarrow$ *jabolk*



- Free Choice and Faithfulness (Caha et al. 2019)

(34)



(35) Lexical items

a. < /jabolk/, [N*], APPLE >

b. < /o/, [$_{K2P}$ K2 [$_{K1P}$ K1]], ACC >

c. < /a/, [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]], GEN >

d. < /u/, [$_{K4P}$ K4 [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]]], DAT >

Spellout algorithm

Starke (2018)

(36) Merge F and

a. Spell out FP

b. If (a) fails, attempt any of the rescue strategies below (in the order given), and retry (a), until spellout is successful

(i) move the spec of the complement of F

(ii) move the complement of F

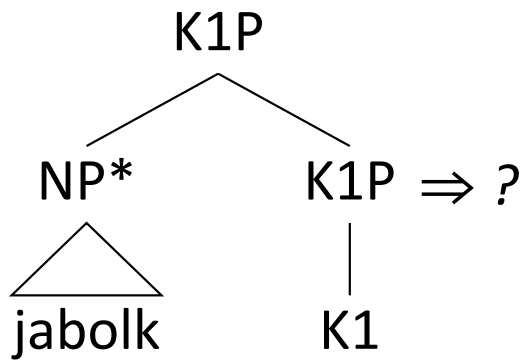
(iii) start a new derivation by merging F with the last successfully spelled out feature, i.e. F^{-1}

Spellout algorithm: easy version

(37) do not move < cyclic phrasal movement < snowball movement < new derivation

Spellout driven movement

(38)



(39) Lexical items

a. < /jabolk/, [N*], APPLE >

b. < /o/, [$_{K2P}$ K2 [$_{K1P}$ K1]], ACC >

c. < /a/, [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]], GEN >

d. < /u/, [$_{K4P}$ K4 [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]]], DAT >

Superset Principle

(40) A lexically stored tree matches a syntactic node iff the lexically stored tree contains the syntactic node. (Starke 2009: 3)

Competition

- All candidates for insertion:

(41)
a. < /o/, [$_{K2P}$ K2 [$_{K1P}$ K1]], ACC >
b. < /a/, [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]], GEN >
c. < /u/, [$_{K4P}$ K4 [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]]], DAT >

Elsewhere

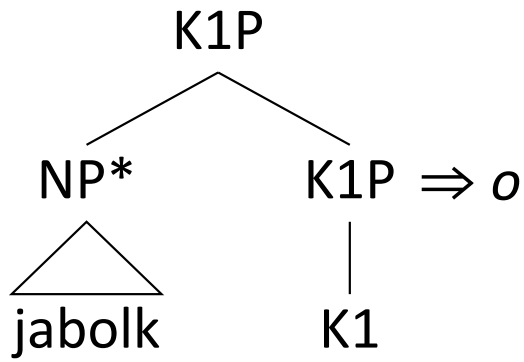
(42) *Elsewhere Condition*
In case two rules, R1 and R2, can apply in an environment E, R1 takes precedence over R2 if it applies in a proper subset of environments compared to R2 (Caha 2009; Kiparsky 1973: 18).

(=Minimize Junk)

(43) < /o/, [$_{K2P}$ K2 [$_{K1P}$ K1]], ACC >

- The winner spells out the syntactic tree.

(44)



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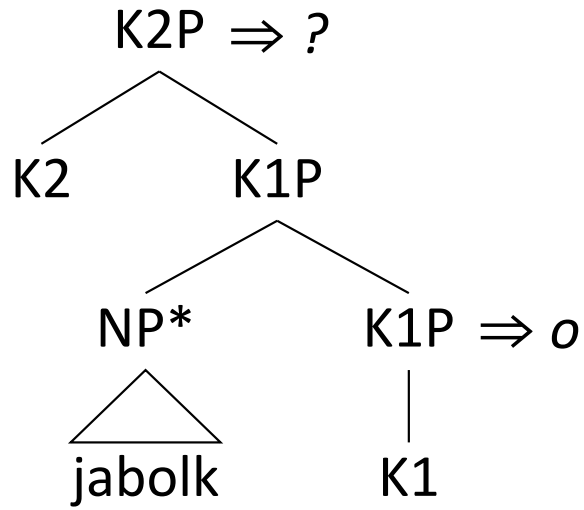


(46) Lexical items

a. < /jabolk/, [N*], APPLE >

b. < /o/, [$_{K2P}$ K2 [$_{K1P}$ K1]], ACC >

c. < /a/, [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]], GEN >

d. < /u/, [$_{K4P}$ K4 [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]]], DAT >

Spellout algorithm

Starke (2018)

(47) Merge F and

a. Spell out FP

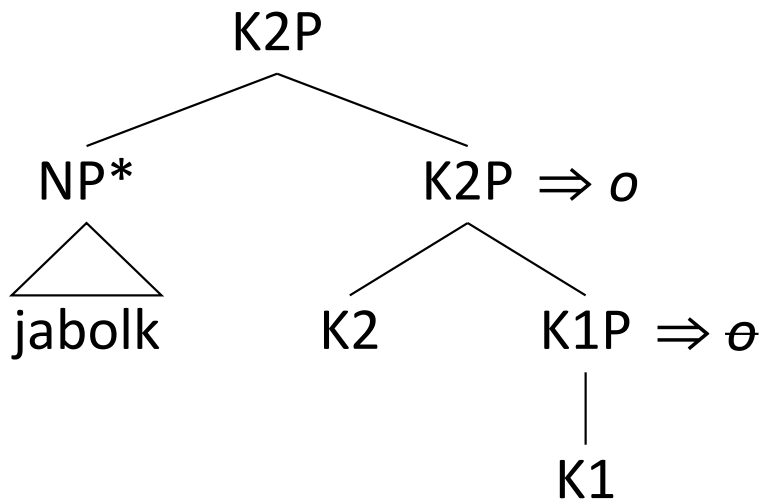
b. If (a) fails, attempt any of the rescue strategies below (in the order given), and retry (a), until spellout is successful

(i) **move the spec of the complement of F**

(ii) move the complement of F

(iii) start a new derivation by merging F with the last successfully spelled out feature, i.e. F^{-1}

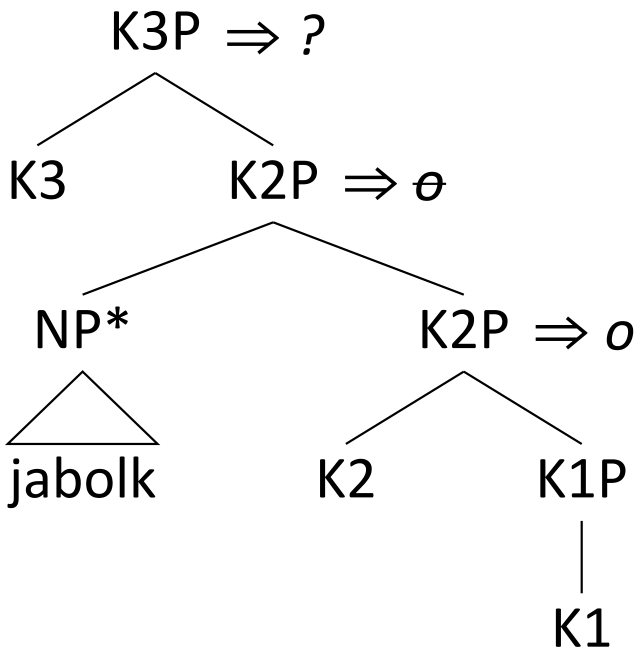
(48)



Cyclic override

Spellout is taken to be cyclic, with a spellout attempt after each Merge operation. Each successful spellout overrides previous successful spellouts. Since Merge is bottom-up, the biggest match will always override the smaller matches. (Starke 2009)

(49)



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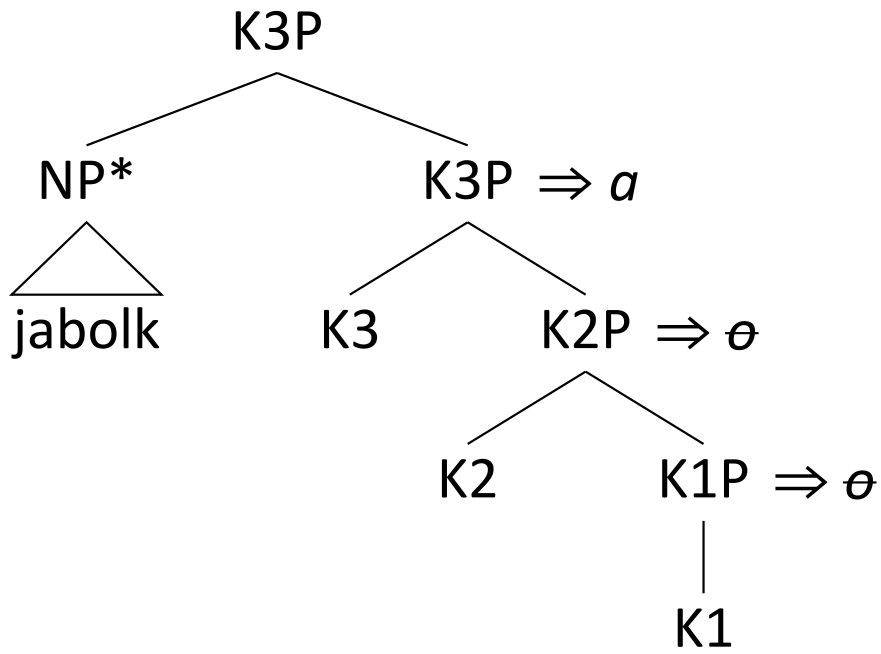

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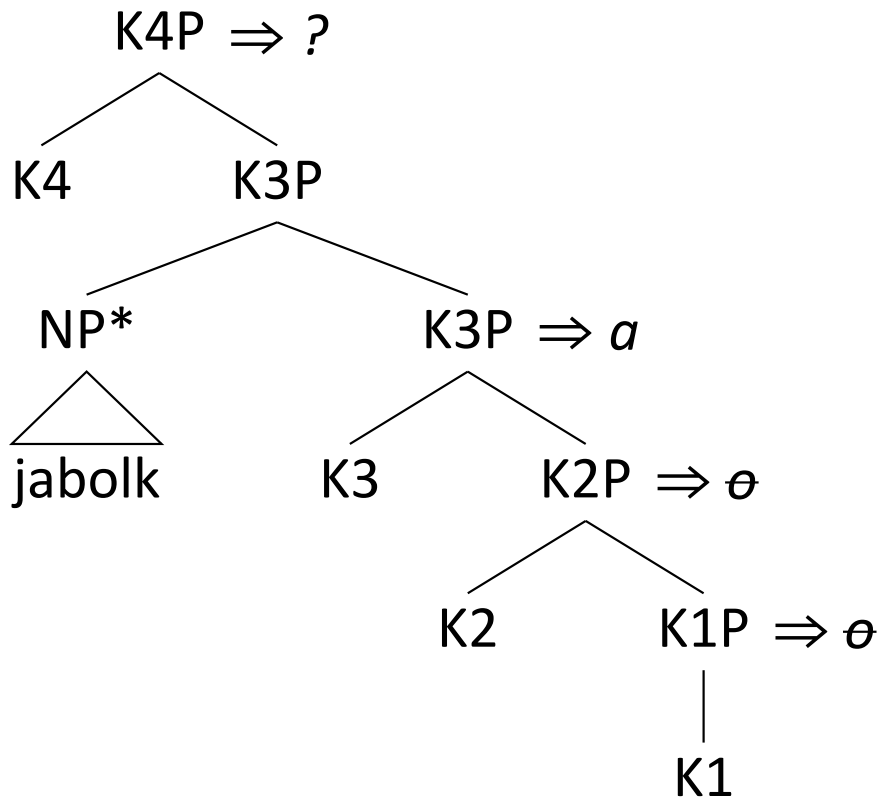


(52) Lexical items

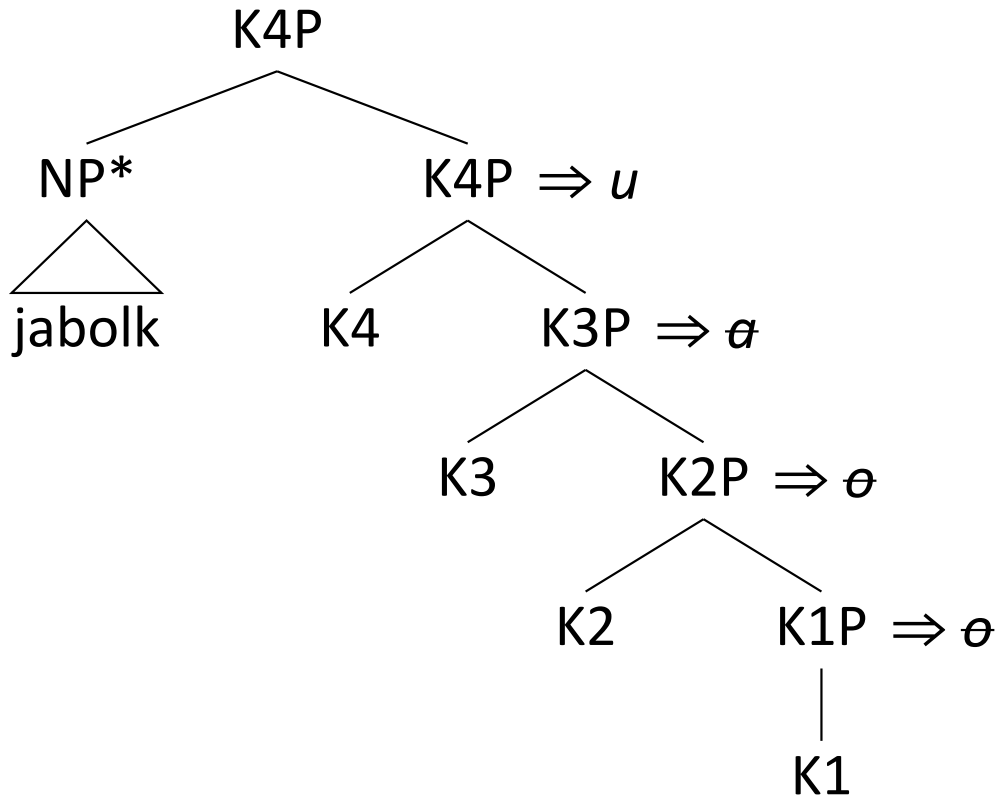
a. < /jabolk/, [N*], APPLE >

b. < /o/, [$_{K2P}$ K2 [$_{K1P}$ K1]], ACC >

c. < /a/, [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]], GEN >

d. < /u/, [$_{K4P}$ K4 [$_{K3P}$ K3 [$_{K2P}$ K2 [$_{K1P}$ K1]]]], DAT >

(53)



Case compounding

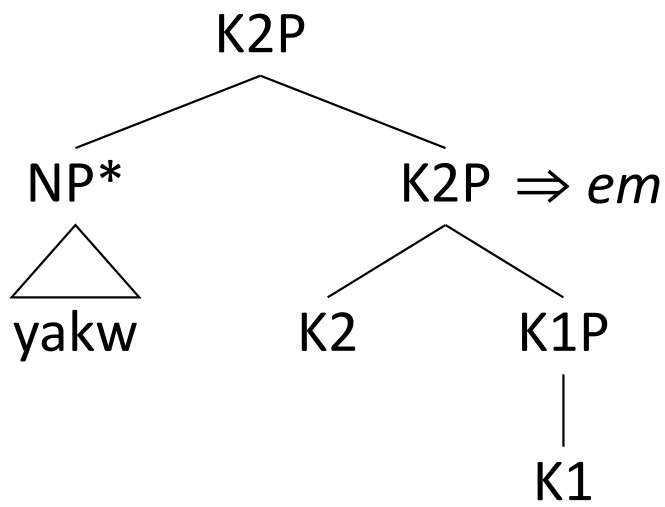
West-Tocharian case compounding

	horse.PL	**man.PL**
NOM	yakw-i	enkw-i
ACC	yakw-em	enkw-em
GEN	yakw-em-ts	enkw-em-ts

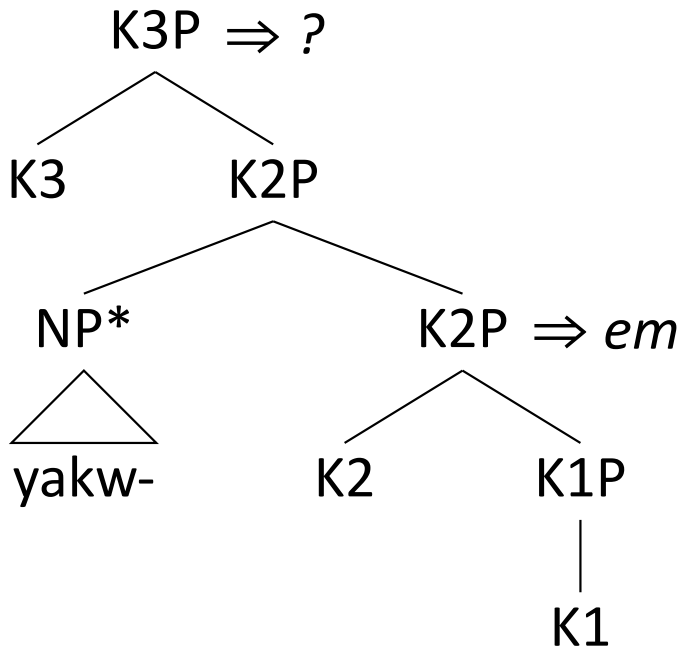
(54) a. < /-em/, [$_{K2P}$ K2 [$_{K1P}$ K1]] >

b. < /-ts/, [$_{K3P}$ K3] >

(55)



(56)



(57) a. < /-em/, [$_{K2P}$ K2 [$_{K1P}$ K1]] >

b. < /-ts/, [$_{K3P}$ K3] >

Spellout algorithm

Starke (2018)

(58) Merge F and

a. Spell out FP

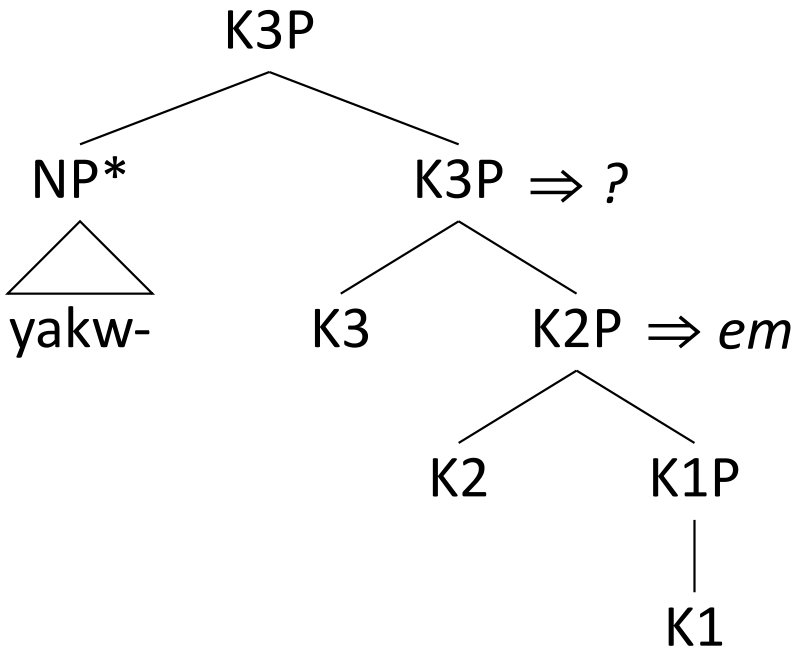
b. If (a) fails, attempt any of the rescue strategies below (in the order given), and retry (a), until spellout is successful

(i) **move the spec of the complement of F**

(ii) move the complement of F

(iii) start a new derivation by merging F with the last successfully spelled out feature, i.e. F^{-1}

(59)



(60) a. < /-em/, [$_{K2P}$ K2 [$_{K1P}$ K1]] >

b. < /-ts/, [$_{K3P}$ K3] >

Spellout algorithm

Starke (2018)

(61) Merge F and

a. Spell out FP

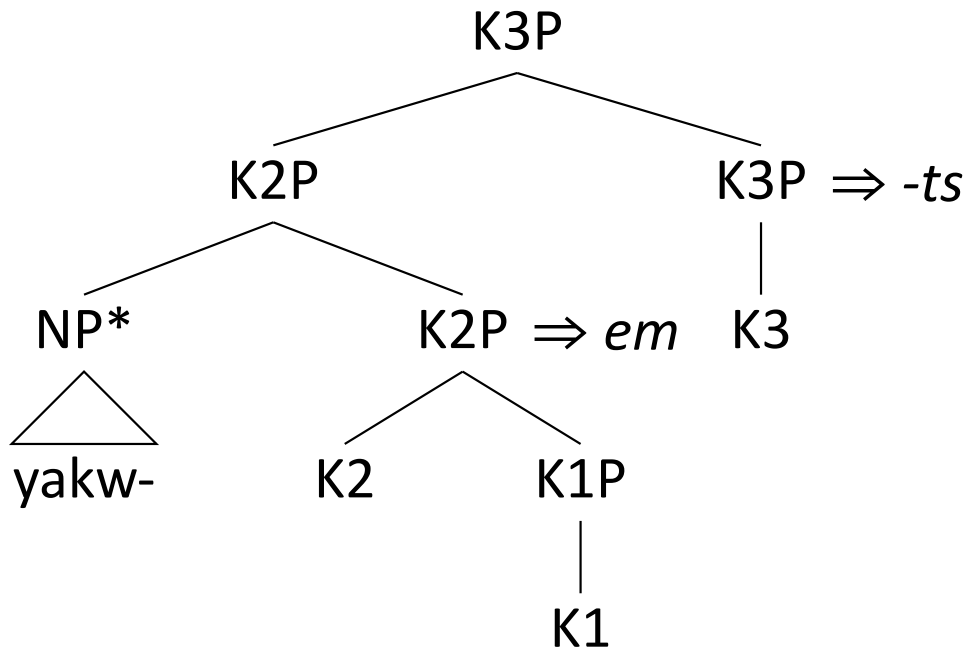
b. If (a) fails, attempt any of the rescue strategies below (in the order given), and retry (a), until spellout is successful

(i) move the spec of the complement of F

(ii) move the complement of F

(iii) start a new derivation by merging F with the last successfully spelled out feature, i.e. F^{-1}

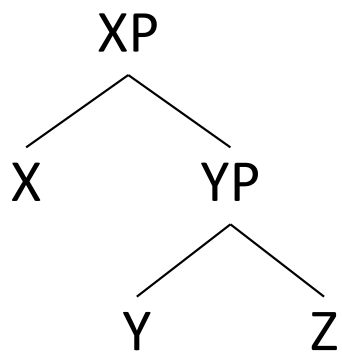
(62)



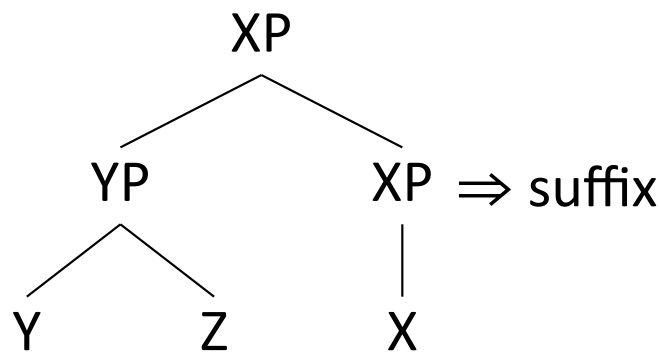
Prepositions

- Distinction between PRE and POST is syntactically anchored (Starke 2018)

(63)

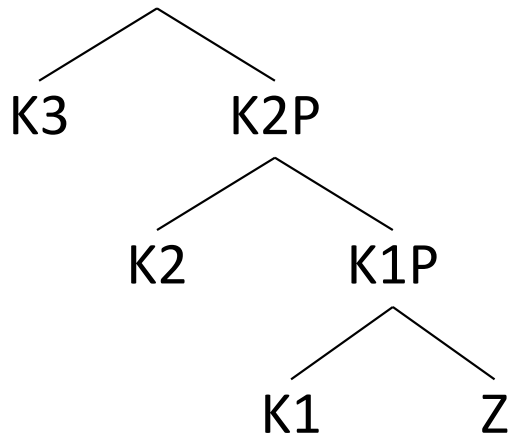


(64)

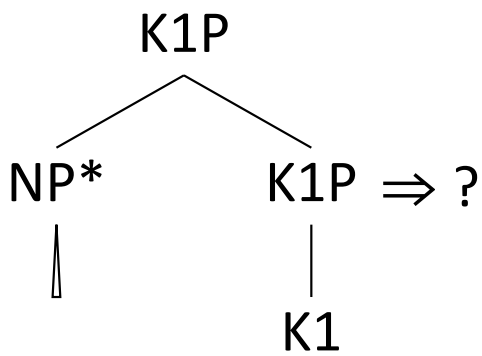


preposition

(65) < /of/, K3P >



(66)



Spellout algorithm

Starke (2018)

(67) Merge F and

a. Spell out FP

b. If (a) fails, attempt any of the rescue strategies below (in the order given), and retry (a), until spellout is successful

(i) move the spec of the complement of F

(ii) move the complement of F

(iii) start a new derivation by merging F with the last successfully spelled out feature, i.e. F^{-1}

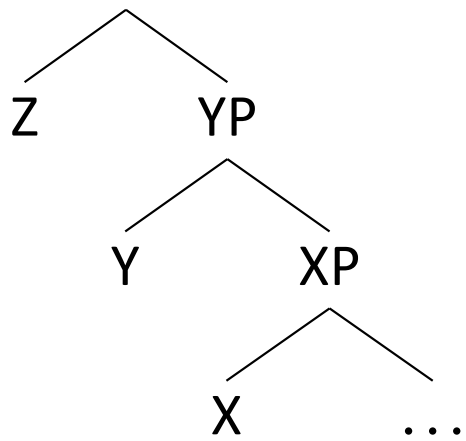
English lexicon

(68) </sugar/, $[_{ZP}\ [_{YP}\ [_{XP}\ [\ X\ ]\ [\ \ldots\ ]\ ]\ ]\ ]$, SUGAR >

(69) < /∅/, $[_{K2P}\ [_{K1P}\ [\ K1\ ]\ [\ Z\ ]\ ]\ ]$ >

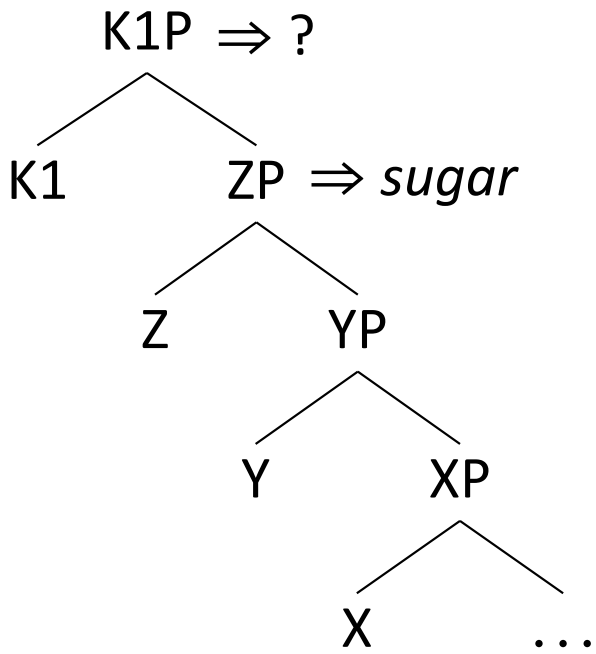
(70) < /of/, $[_{K3P}\ [_{K2P}\ [_{K1P}\ [\ K1\ ]\ [\ Z\ ]\ ]\ ]]$ >

(71) ZP $\Rightarrow$ sugar

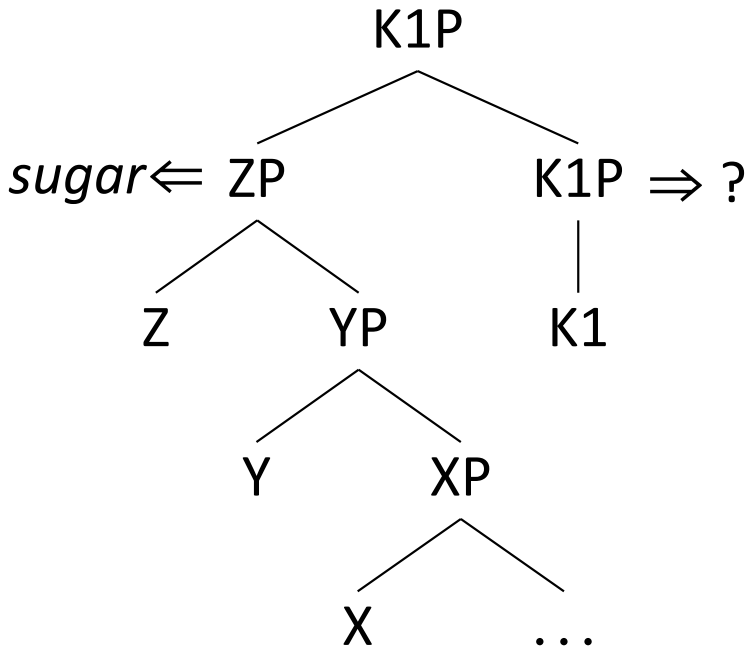


(72) </sugar/, [$_{ZP}$ [$_{YP}$ [$_{XP}$ [X] [. . .]]]] , SUGAR >

(73)



(74)



(75) $< /\varnothing/, [_{K2P} [_{K1P} [\ K1\ ] [\ Z\ ]\ ]\ ] >$

Spellout algorithm

Starke (2018)

(76) Merge F and

a. Spell out FP

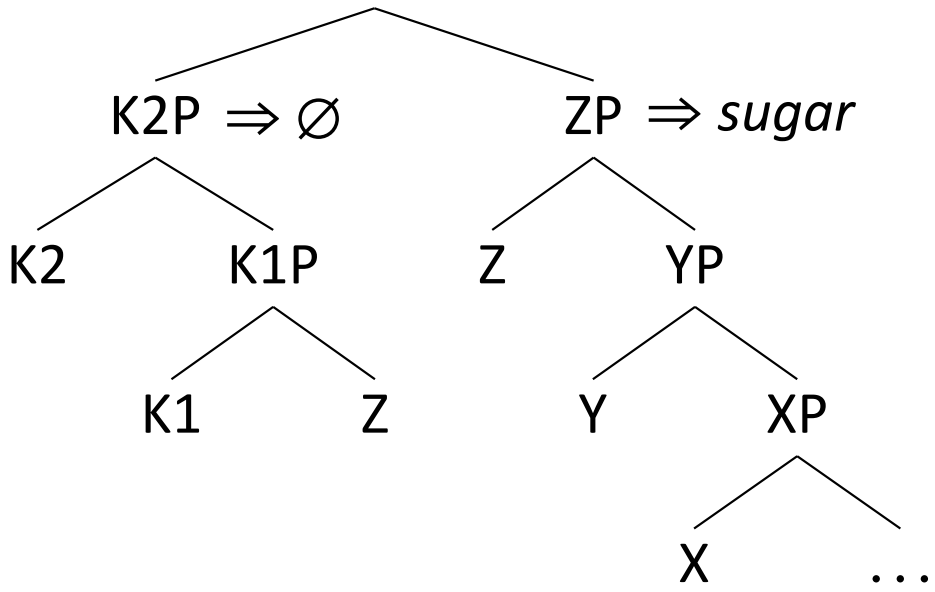
b. If (a) fails, attempt any of the rescue strategies below (in the order given), and retry (a), until spellout is successful

(i) move the spec of the complement of F

(ii) move the complement of F

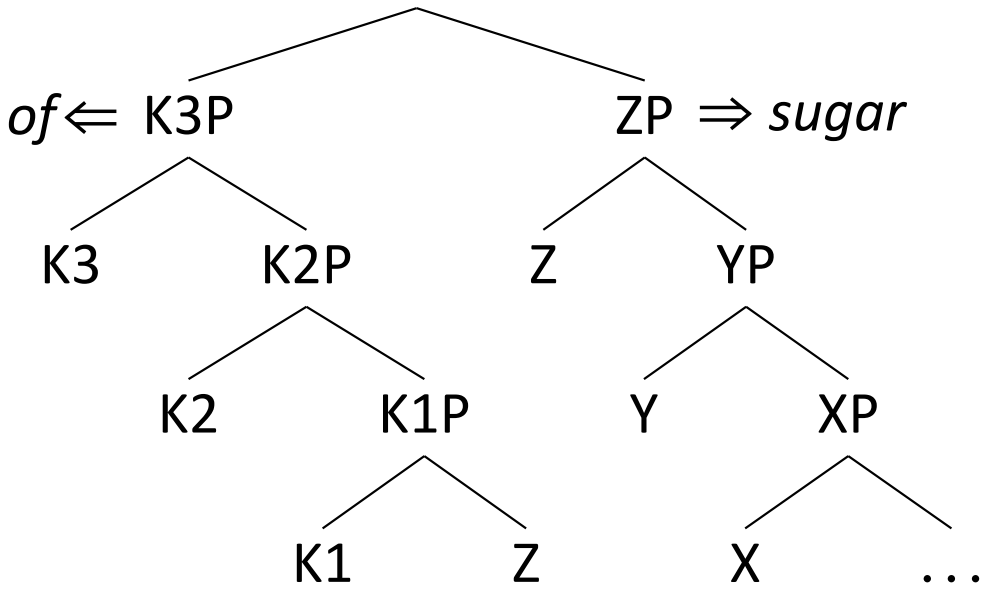
(iii) start a new derivation by merging F with the last successfully spelled out feature, i.e. F^{-1}

(77)



(78) < /∅/, [$_{K2P}$ [$_{K1P}$ [K1] [Z]]] >

(79)



(80) < /of/, [$_{K3P}$ [$_{K2P}$ [$_{K1P}$ [K1] [Z]]]] >

Table of Contents

Nanosyntax and *ABA

(81) a. < /A/, [$_{XP}$ X [$_{YP}$ Y [$_{ZP}$ Z]]] >

b. < /B/, [$_{YP}$ Y [$_{ZP}$ Z]] >

(82) a. < /A/, [$_{XP}$ X [$_{YP}$ Y [$_{ZP}$ Z]]] >

b. < /B/, [$_{YP}$ Y [$_{ZP}$ Z]] >

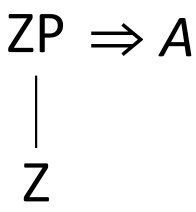
ZP $\Rightarrow$ *B*

|

Z

- Imagine

(83)
a. < /A/, [ZP] >
b. < /B/, [YP Y [ZP Z]] >
c. *< /A/, [XP X [YP Y [ZP Z]]] >

(84)


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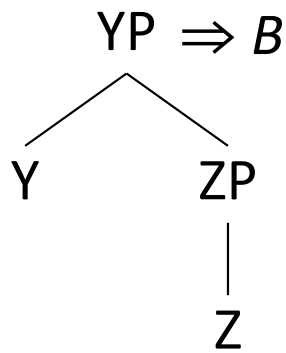

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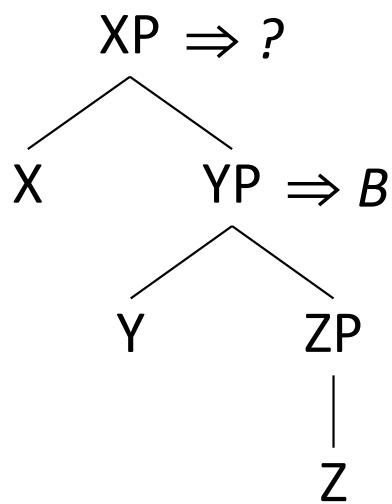


Weak phrasal spellout and head insertion?

- Chung (2007):

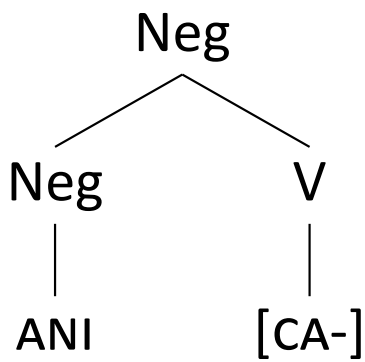
(87) a. [KNOW] ⟷ /al-/ ‘know’
b. [SLEEP] ⟷ /ca-/ ‘sleep’
c. [+neg] ⟷ /an(i)/ ’not’

(88) [+neg, KNOW] ⟷ /molu/ ‘not know’

(89) a. The subset principle

b. The phonological exponent of a vocabulary item is inserted into a morpheme of the terminal string if the item matches all or only a subset of the grammatical features specified in the terminal morpheme. (Halle and Marantz 1993)

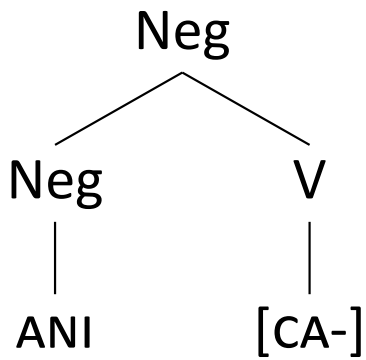
(90)



(89) a. The subset principle

b. The phonological exponent of a vocabulary item is inserted into a morpheme of the terminal string if the item matches all or only a subset of the grammatical features specified in the terminal morpheme. (Halle and Marantz 1993)

(90)



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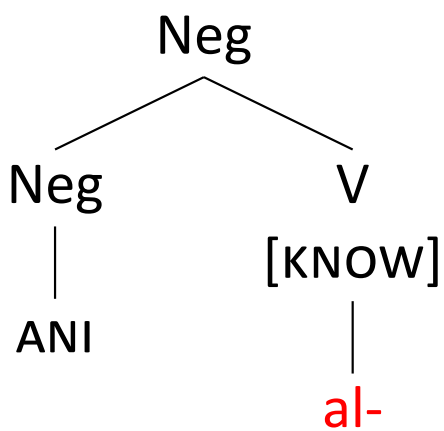


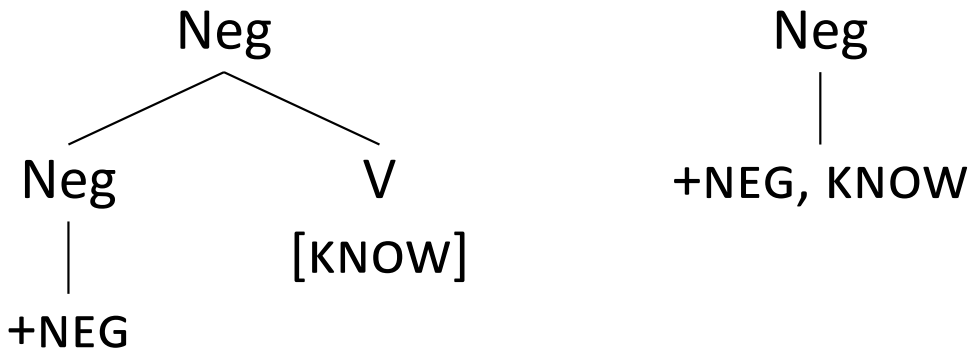
(92) [+neg, KNOW] ⟷ /molu/
'not know'

Solution: Fusion

- Fusion = Phrasal Spellout (driven by VI)
- Postsyntactic operation before VI: fusing two heads

(93) [+neg, KNOW] ⟷ /molu/ ‘not know’

(94)



A timing paradox

- Fusion applies if there is a suppletive VI in the lexicon.
- An operation that precedes Vocabulary Insertion is conditioned by Vocabulary insertion
- This paradox is avoided if Strong Phrasal Spellout is adopted

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