Cyclic Selection and verbal periphrasis

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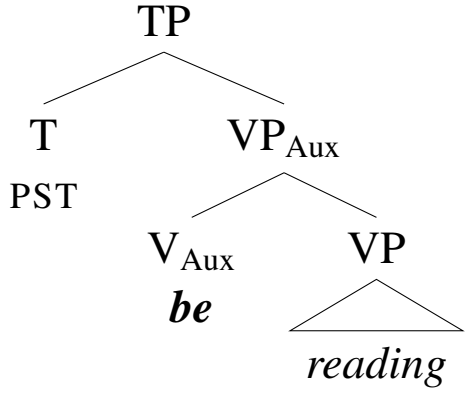
Parts based on joint work with Karlos Arregi (UChicago)

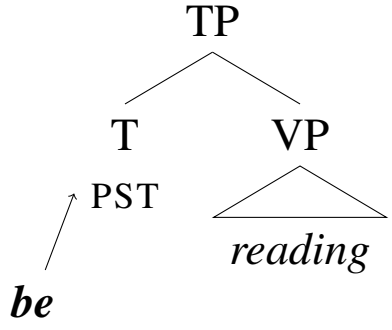
1 Introduction

(1) I was reading.

(2) Base-generation of the auxiliary



(3) Insertion of the auxiliary



- Arguments for the insertion approach: **last-resort** distribution and **overflow** pattern
- **Claim**: both last-resort and overflow are compatible with base-generation
- **Proposal**: Auxiliaries are c-selected as specifiers (**Cyclic Selection**)
- **Evidence** from Swahili that auxiliaries are merged in a specifier position.

2 Approaches to default periphrasis

default periphrasis = compound tenses with an auxiliary verb (*be* or *have*)

(4) a. She **is** eating.
b. She **has** eaten.
c. It **was** eaten.

i) Default auxiliaries **"support"** inflections:

(5) a. work-s
b. work-ing
c. *work-ing-s
d. **i**-s work-ing

ii) They are impossible unless necessary (a **last-resort** phenomenon):

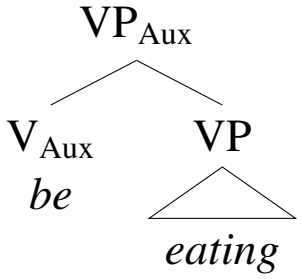
(6) a. She work-s.
b. *She **i**-s work.

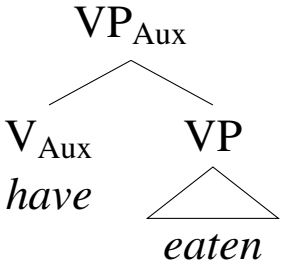
2.1 Auxiliary verbs: base-generation vs insertion

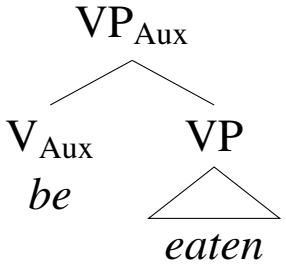
The traditional approach to compound tenses: auxiliaries are **base-generated** as...

- a verb

  (i.a. Ross 1967, 1969; Huddleston 1974; Emonds 1978; Pollock 1989; Déchaine 1993; Déchaine 1995; Roberts 1998; Schütze 2003).

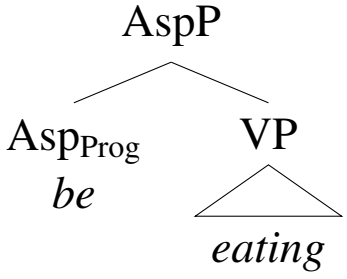


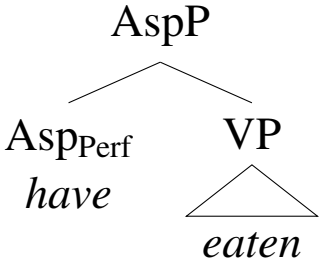


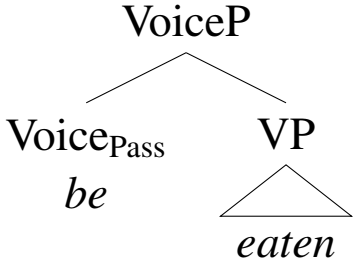


- a functional head

  (i.a. Hoffman 1966; McCawley 1988; Tenny 1987; Cinque 1998, 1999, 2001).





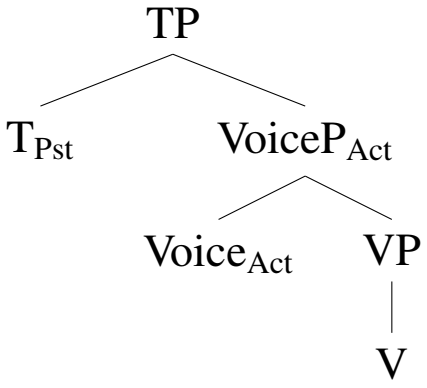


The insertion approach: auxiliaries are **inserted** into an independently built syntactic structure

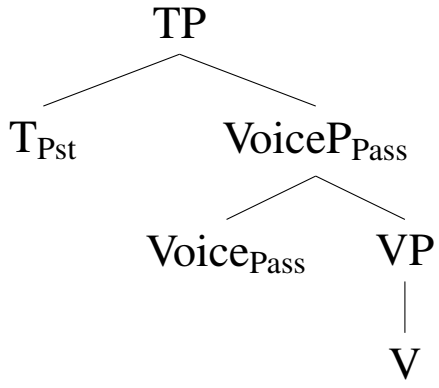
(Bach 1967; Embick 2000; Arregi 2000; Cowper 2010; Bjorkman 2011; Arregi & Klecha 2015; Fenger 2019, 2020; Calabrese 2019).

Synthetic and periphrastic tenses are structurally the same

(7) I ate.



(8) It was eaten.



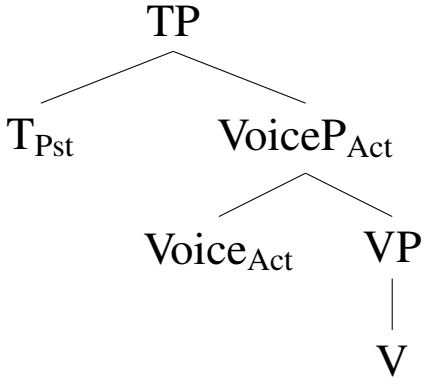
No special projection for the auxiliary

The Insertion Approach: components

I. A Stranded Infl Constraint: ***[Infl]**

Inflectional heads need to be in a relation with a verb (relation = agreement/head movement)

(9)



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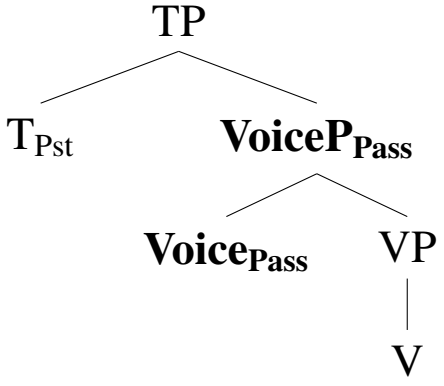


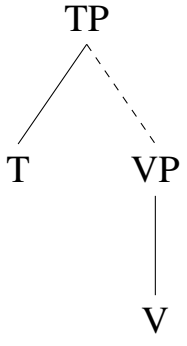
II. An auxiliary-insertion rule: **[Infl]** $\rightarrow$ **[Infl V]**

III. A distinction between *transparent* and ***opaque*** heads.

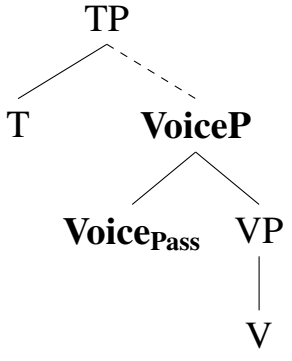
Opaque heads, like Voice$_{Pass}$, prevent higher heads from establishing this relation with V.
Other heads are transparent in this sense (e.g. Voice$_{Act}$).

Opaque heads in English: **Voice$_{\textbf{Pass}}$, Asp$_{\textbf{Prog}}$** and **Asp$_{\textbf{Perf}}$**

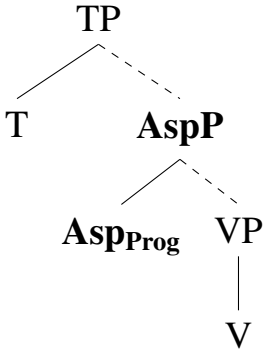
(11) I eat.



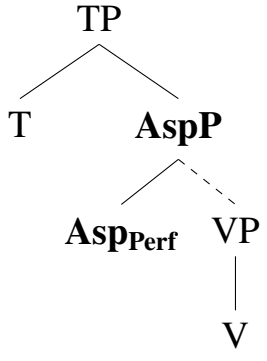
(12) It was eaten.



(13) I am eating.

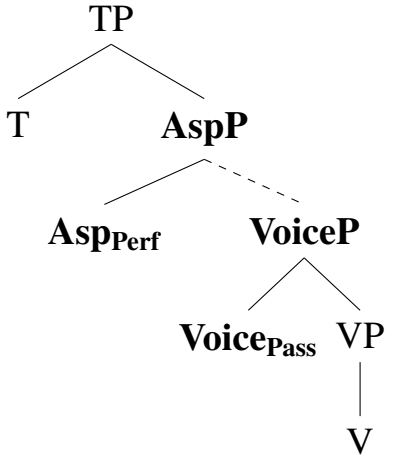


(14) I have eaten.

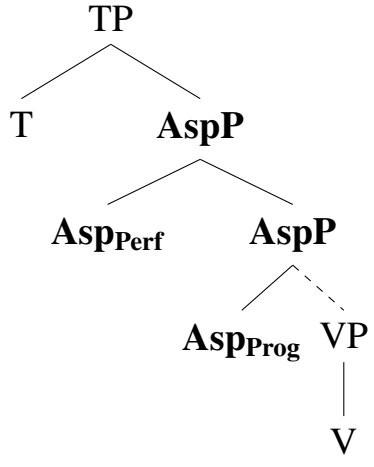


Opaque heads in English: **Voice$_{\textbf{Pass}}$, Asp$_{\textbf{Prog}}$** and **Asp$_{\textbf{Perf}}$**

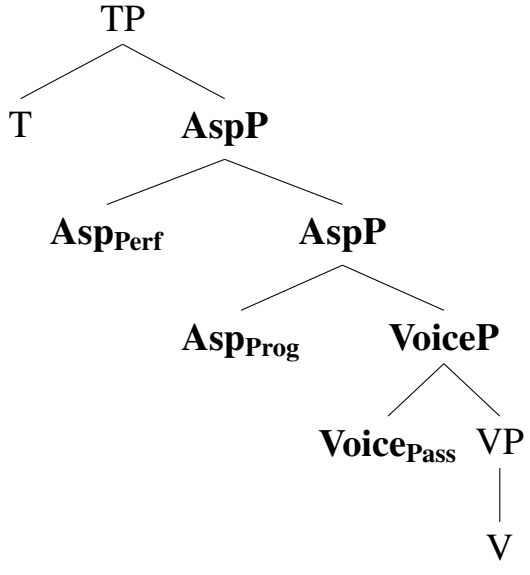
(15) It has been eaten.



(16) I have been eating.



(17) ?It has been being eaten.



3 Why insertion, not selection?

Last-resort/elsewhere distribution

Crosslinguistic pattern:

(18) a. *She work-ing-s.
b. She **i**-s work-ing.

(19) a. She work-s.
b. *She **i**-s work.

Unattested pattern:

(20) a. *She **i**-s work-ing.
b. She work-ing-s.

(21) a. *She work-s.
b. She **i**-s work.

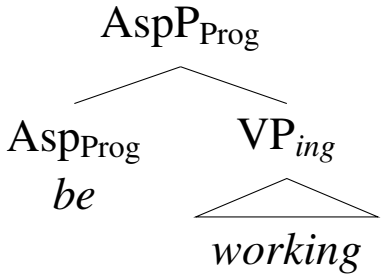
work-ing-s → *work-s*

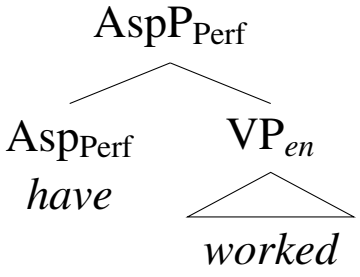
The overflow pattern of periphrasis (Bjorkman, 2011)

In English, there is a **one-to-one correspondence** between inflectional categories and auxiliaries:

(22)
a. She **is** working.
b. She **was** working.
c. She will **be** working.

a. She **has** worked.
b. She **had** worked.
c. She will **have** worked.





There is no progressive tense without the auxiliary *be*.
There is no perfect tense without the auxiliary *have*.

In many languages, there no such one-to-one correspondence between aux and a given inflection:

(23) *Swahili*

a. ni-**li**-**kuwa** ni-**na**-soma. Past Imperfective
1SG-PST-AUX 1SG-IMPF-read
'I was reading/I used to read'.

b. ni-**li**-soma. Simple Past
1SG-PST-read
'I read' (Past).

c. ni-∅-**na**-soma (*ni-∅-**kuwa** ni-**na**-soma) Present Imperfective
1SG-PRES-IMPF-read
'I am reading/I read'.

Overflow periphrasis (Bjorkman 2011):

Neither Asp_{Impf} nor T_{Pst} requires an auxiliary.

→ **The auxiliary cannot be (in a selectional relation with) either.**

→ a problem for the base-generation approach

Swahili perfect tenses look the same: periphrasis in the past, synthesis in the present

(24) *Swahili perfect tenses*

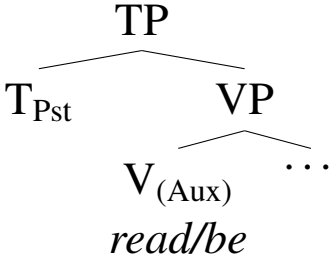
a. ni-**li**-**kuwa** ni-**me**-soma
1SG-PST-AUX 1SG-PERF-read
'I had read.'

b. ni-∅-**me**-soma (*ni-∅-**kuwa** ni-**me**-soma)
1SG-PRES-PERF-read
'I have read'.

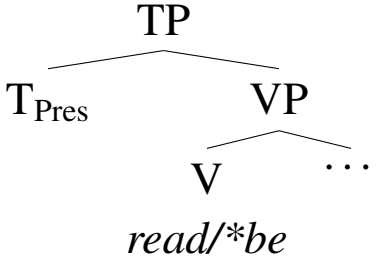
→ a crosslinguistically robust pattern

Base-generation approaches are based on selection, i.e. a lexical idiosyncrasy

Past T:
[Sel: $V_{\pm Aux}$]



Present T:
[Sel: V_{-Aux}]



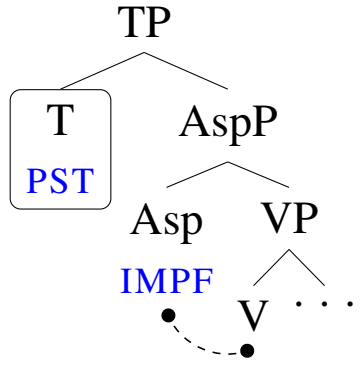
An insertion approach can derive overflow periphrasis from underspecification

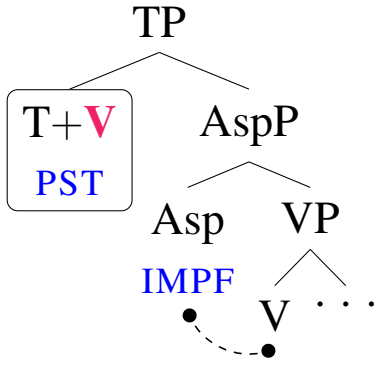
(Bjorkman, 2011; Pietraszko, 2016, 2017)

Hypothesis: Present tense is/can be syntactically unmarked (absence of some or all features)

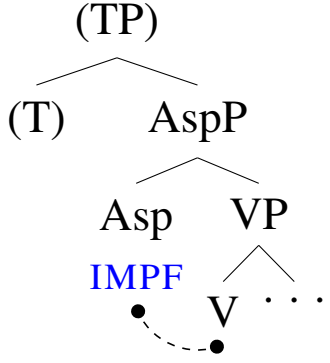
(25) Past T is featurally marked → has to be supported when stranded

stranded Infl





(26) Present T is featurally unmarked → nothing to support



- In English, there is periphrasis in the present tense

(27) a. I am reading. b. I have read.

- In Swahili, there are not periphrastic present tenses

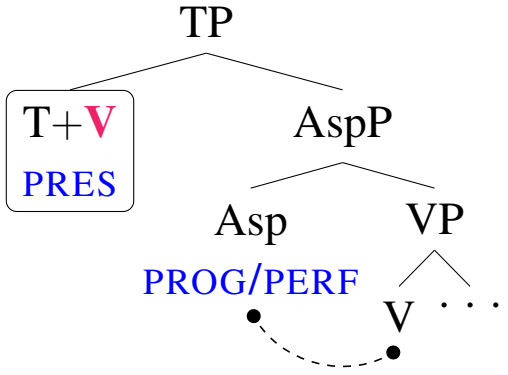
(28) a. ni-∅-na-soma.
1SG-PRES-IMPF-read
'I am reading'.

b. ni-∅-me-soma.
1SG-PRES-PERF-read
'I have read'.

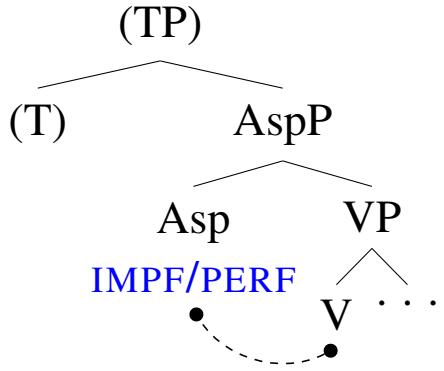
Languages encode featural contrasts differently (Harley & Ritter, 2002; Cowper, 2005)

a. English T: PST/PRES
b. Swahili T: (PST) (no feature = present tense interpretation)

(29) Present T in English



(30) Present T in Swahili



Recap

- The base-generation approach
  - does not explain last resort distribution of auxiliaries
  - fails to capture the overflow pattern of periphrasis
- The insertion approach explains these facts

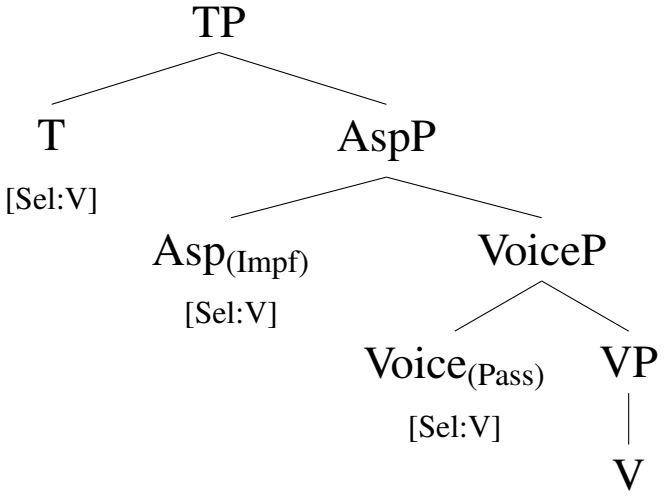
Upcoming

- We don't actually need insertion.
- A base-generation approach can derive these facts if **selection is cyclic**:
  - Merge of a specifier if a selectional feature is not satisfied by the complement

4 Cyclic Selection and last resort Merge

Main Claim: Auxiliary verbs are c-selected by functional heads in the clausal spine

(Déchaine 1995; Cowper 2010; Pietraszko 2016, 2017, Arregi & Pietraszko, in prep.)



Synthesis

All heads with [Sel:V] check it against the lexical verb.

Periphrasis with 1 auxiliary

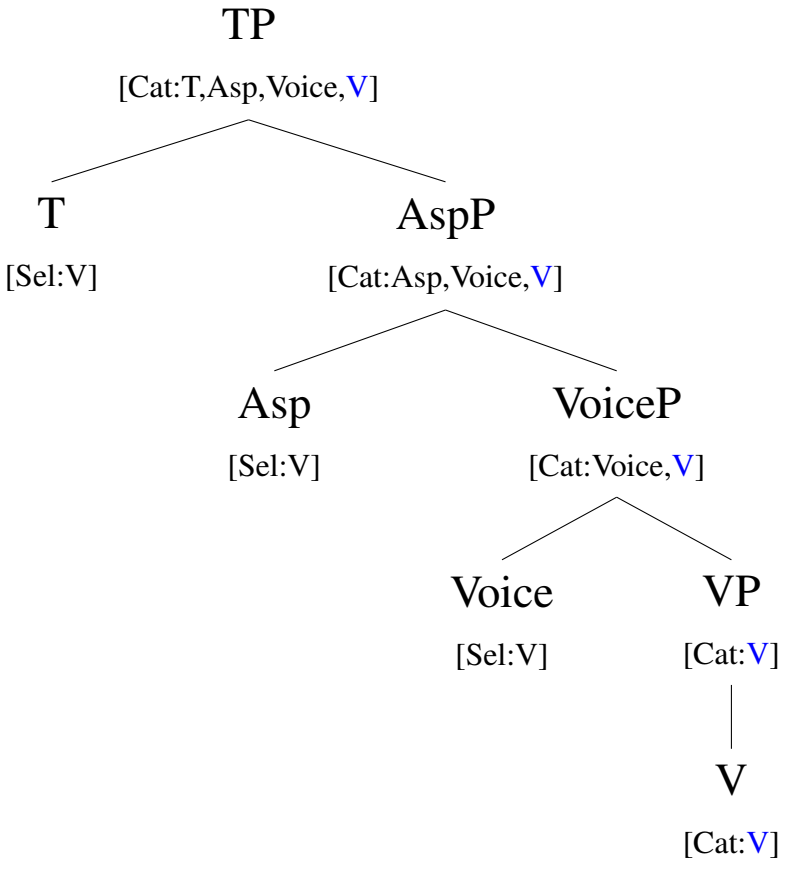
[Sel:V] of one head cannot be satisfied by the lexical verb and triggers merge of a dummy verb

Periphrasis with 2 auxiliaries

[Sel:V] of two heads cannot be satisfied by the lexical verb and trigger merge of a dummy verb

ASSUMPTION: All heads in the verbal extended projection are verbal (Grimshaw 1991, 2000)

IMPLEMENTATION: cumulative projection of category features (Keine 2019, Arregi & Pietraszko in prep.)



→ Selection is satisfied locally (under sisterhood)

ASSUMPTION: The building of functional hierarchies is not triggered by c-selection, but is determined by a predefined hierarchy (Abney 1987; Cinque 1998, 1999; Svenonius 1994; Adger & Svenonius 2011; Ramchand & Svenonius 2014)

IMPLEMENTATION: Functional hierarchies are built by a special kind of Merge

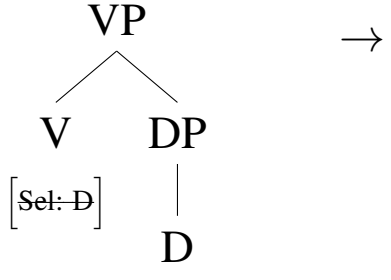
(31) Two types of structure building (Adger, 2010)

a. *Sel-Merge:* c-selection-triggered Merge

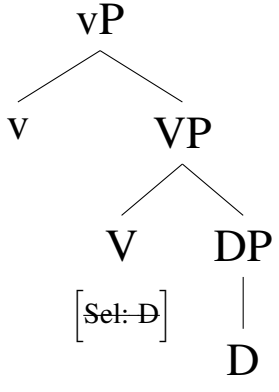
b. *HoP-Merge:* Merge determined by a fixed order of functional projections

(32) The verbal extended projection: ⟨T, Asp, Voice, v, V ⟩

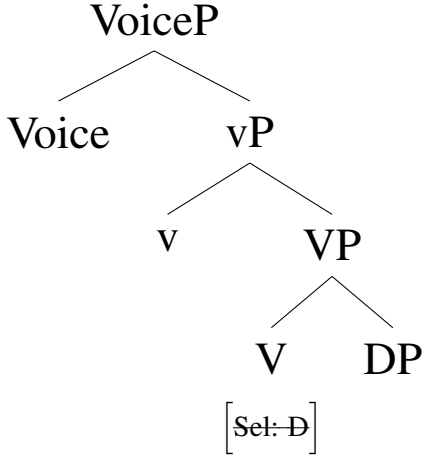
(33) Sel-Merge(V,DP)

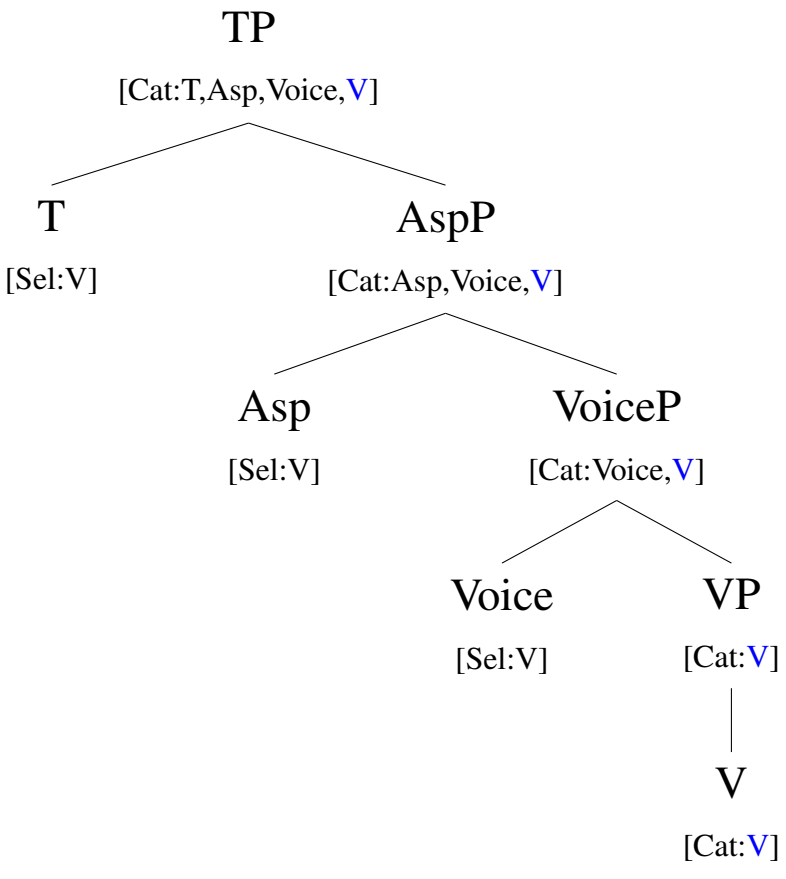


(34) HoP-Merge(v,VP)



(35) HoP-Merge(Voice,vP)



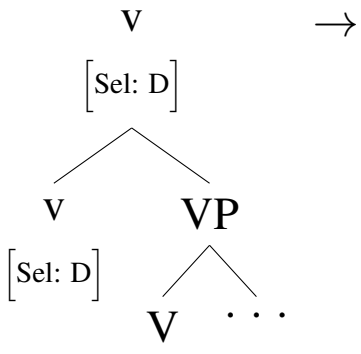


- Functional heads merge with their complements via HoP-Merge

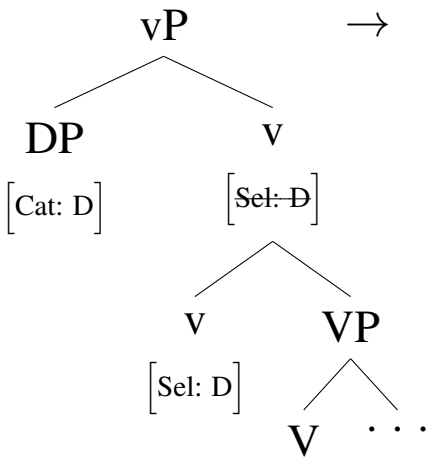
- Their selectional features are satisfied immediately ***after*** merge

Selectional features not discharged immediately at Merge project to the root node
(*Cyclic Selection*, Pietraszko 2016, 2017; cf. *Cyclic Agree*, Rezac 2003; Béjar & Rezac 2009)

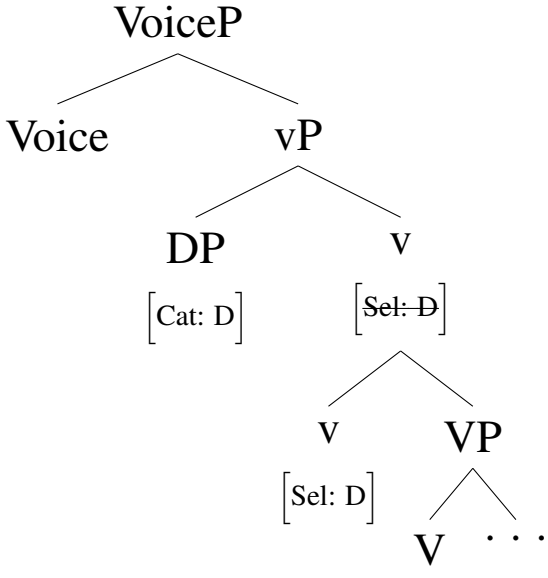
(36) HoP-Merge(v,V)



(37) Sel-Merge(v,D)

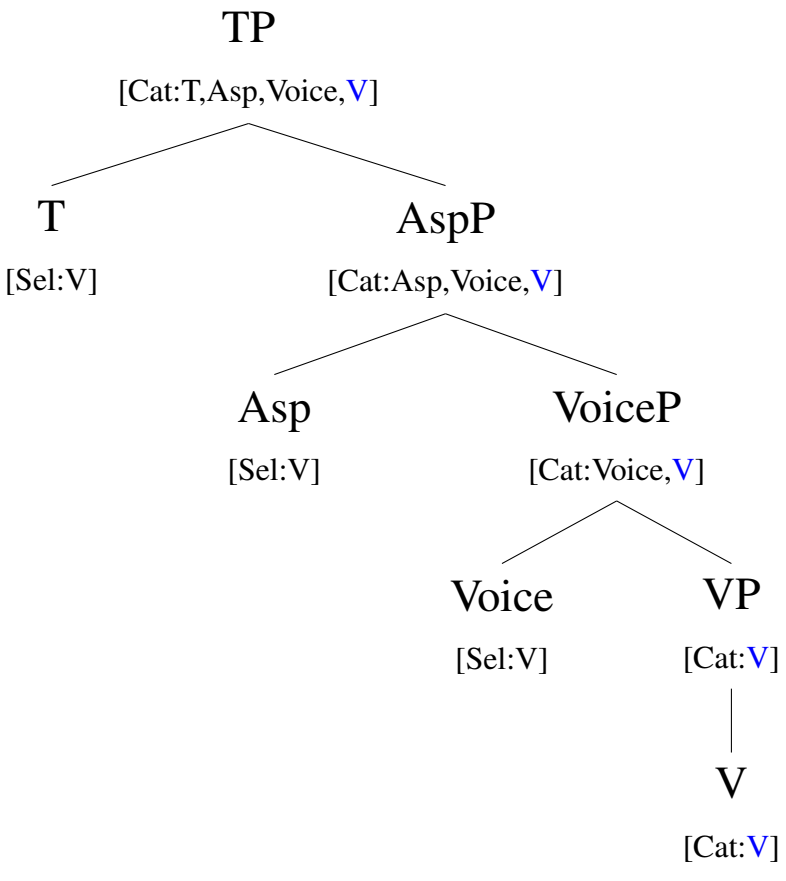


(38) HoP-Merge(v,Voice)

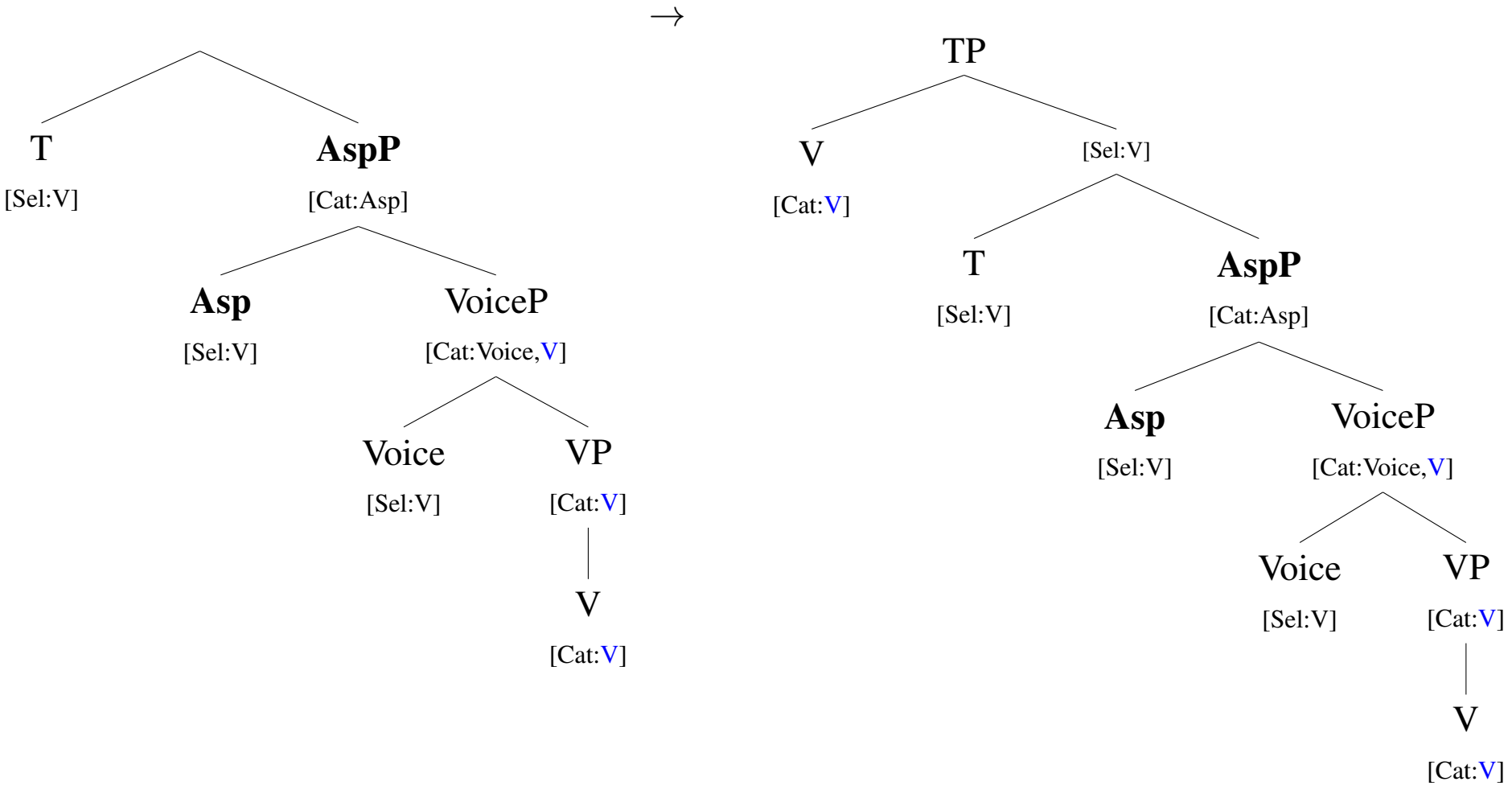


→ c-selectional features of functional heads trigger Merge of a specifier, not a complement.

Synthesis: Sel:V on every F is checked by F's complement



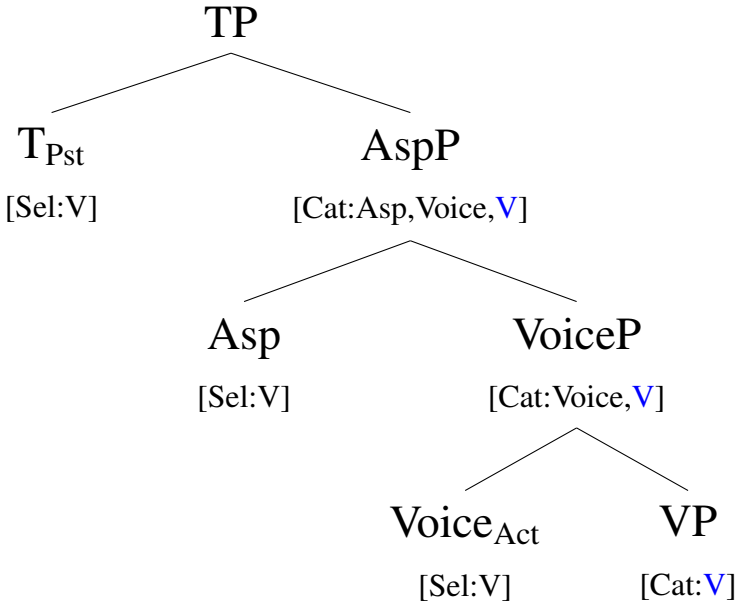
Periphrasis: Sel:V of some F cannot be checked by F's complement.



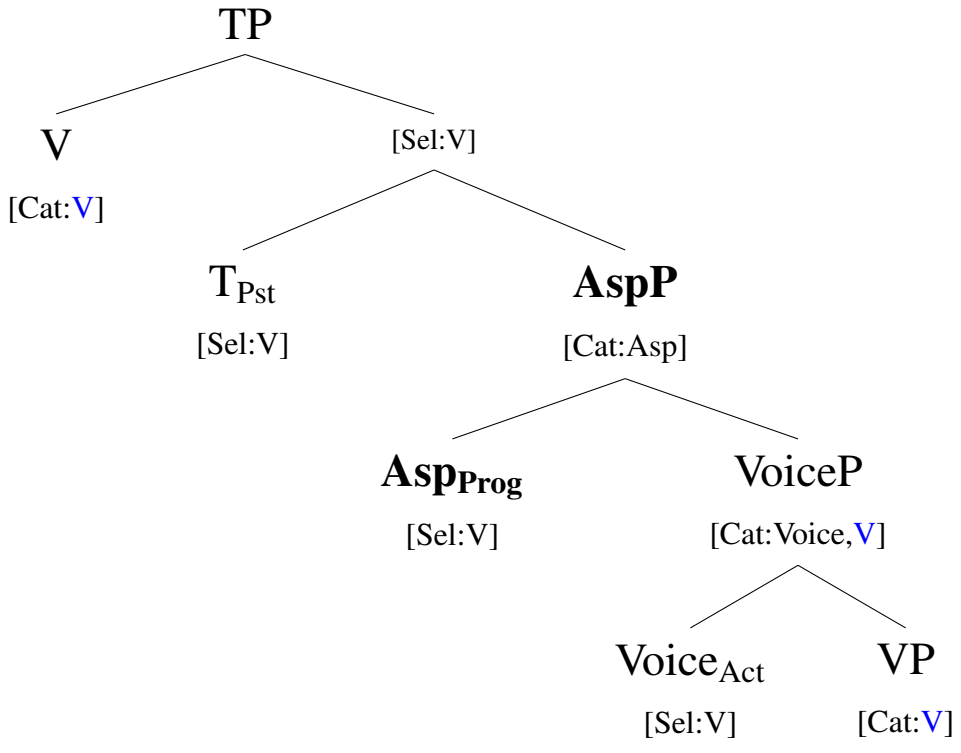
Transparent head – a head that projects the Cat-feature of its complement

Opaque head – a head that doesn't project the Cat feature of its complement

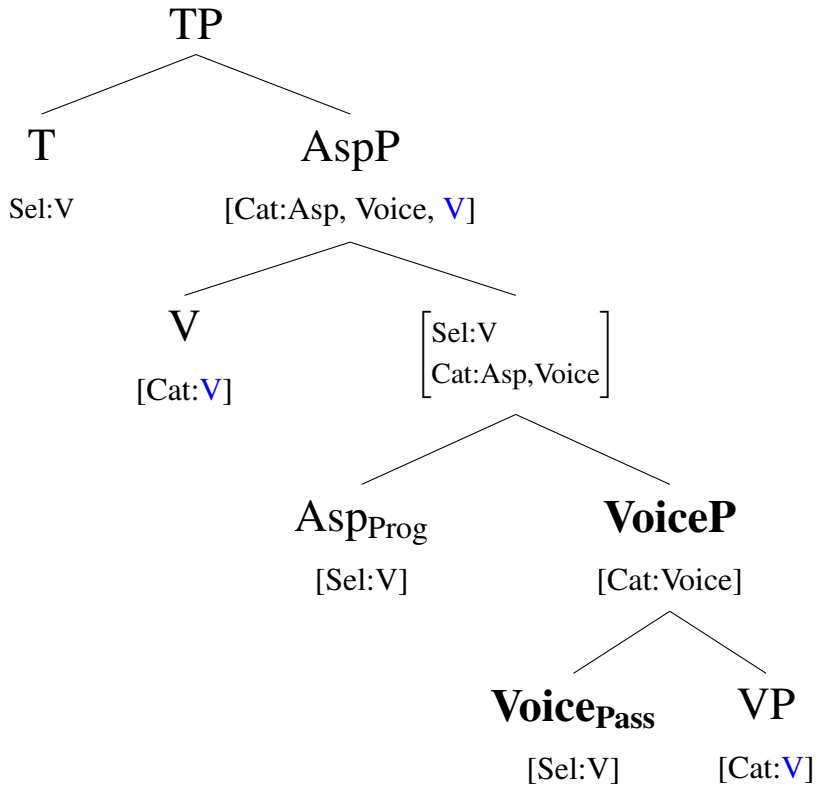
(39) I ate.



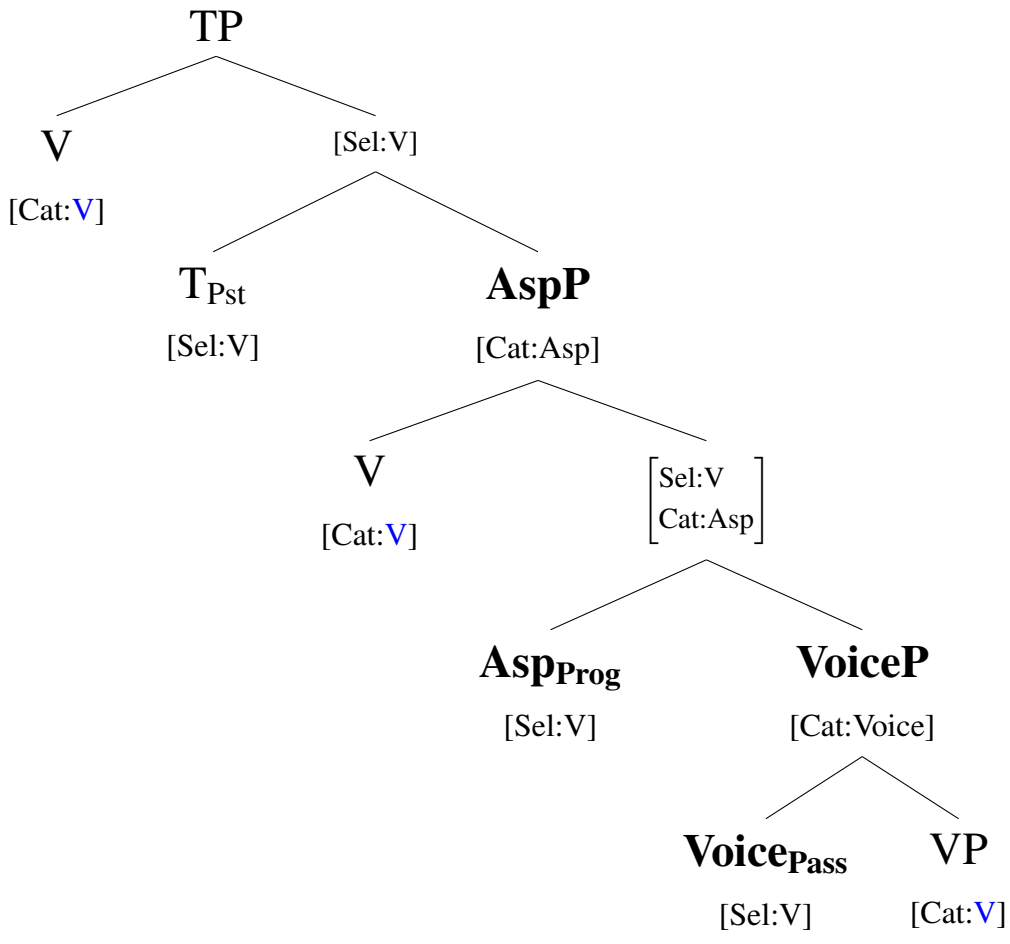
(40) I was eating.



(41) It was eaten.

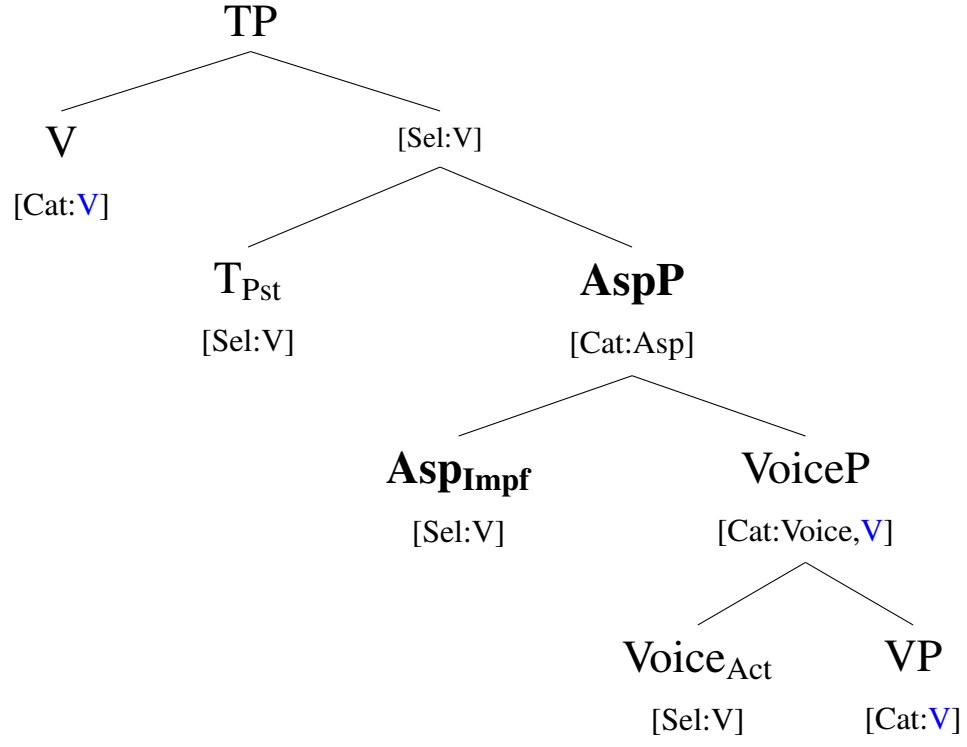


(42) It was being eaten.

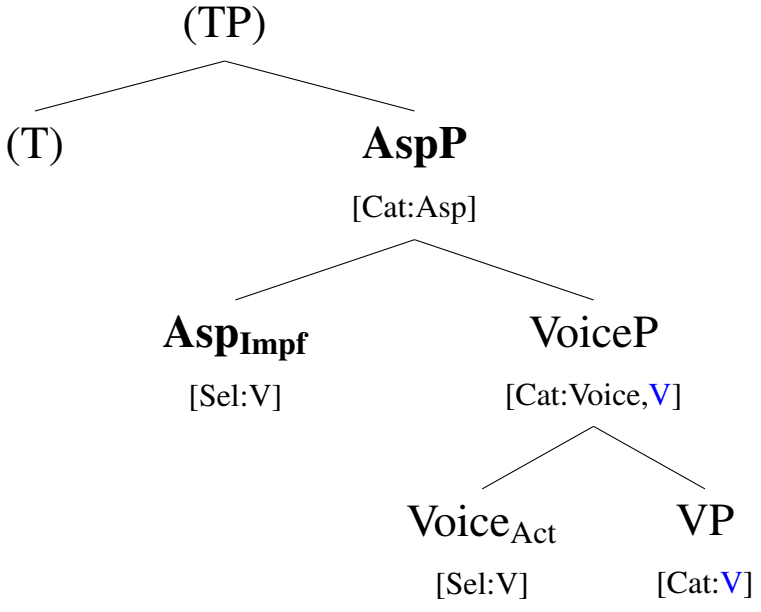


The *overflow pattern* still derives from underspecification of present T:

(43) Ni-li-kuwa ni-na-soma
1sg-PST-AUX 1sg-IMPF-read
I was reading.



(44) Ni-∅-na-soma
1sg-PRES-IMPF-read
I am reading.



The *last-resort profile* is a consequence of cyclic application of operations.

(45) A Cyclic Agree paradigm

a. *Object accessible → agreement with object*

g-xatav
2sg-draw
'I draw you'

b. *Object accessible → agreement with subject impossible*

*__v__-xatav
1sg-draw
Intended: 'I draw you'

c. *Object inaccessible → agreement with subject required*

v-xatav
1sg.s-draw
'I draw him'

(Georgian, data from Halle & Marantz 1993:117)

The *last-resort profile* is a consequence of cyclic application of operations.

(46) A Cyclic Selection paradigm

a. *Main V accessible → checking by main V (synthesis)*

She work-**s**.

b. *Main V accessible → checking by Aux V (periphrasis) impossible*

*She i-**s** work.

c. *Main V inaccessible → checking by Aux (periphrasis) required*

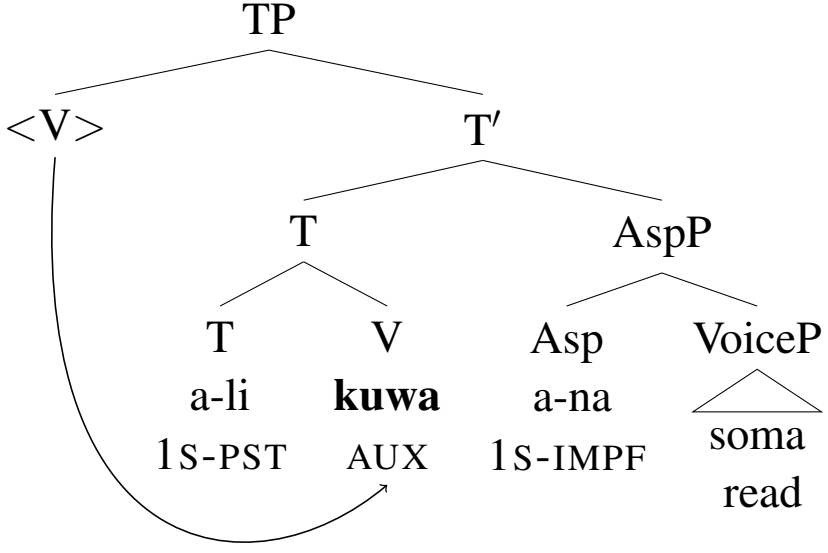
She i-**s** work-**ing**.

The auxiliary is **a head in a specifier position** – a configuration obtained by certain types of head movement (Kayne, 1991; Fukui & Takano, 1998; Toyoshima, 2001; Matushansky, 2006; Vicente, 2007; Harizanov, 2019)

- V internally merged in Spec,TP: V-to-T head movement
- V externally merged in Spec,TP: Auxiliary "insertion"

  → Both followed by ***m-merger*** with the selecting/attracting head (Matushansky 2006)

(47) *M-merger* of an auxiliary (Swahili Past Imperfective)



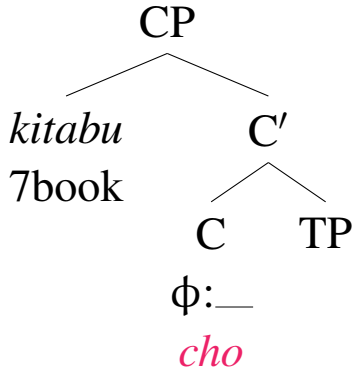
Summary

- Both the overflow pattern and last-resort are compatible with base-generation if auxiliaries as selected cyclicly as specifiers.
  - Overflow is a consequence of featural underspecification (lack of Sel:V in present tense T)
  - Last-resort profile is a consequence of cyclicity of operations
- Advantages
  - no need to define a violation ([*Infl])
  - no need for an insertion operation ([Infl] $\rightarrow$[Infl V])
  - a connection between the violation and the repair: Sel:V
    - Violation: inability to check Sel:V
    - Repair: Merge triggered by Sel:V

Upcoming: Further argument that auxiliaries are merged in a specifier position.

5 Swahili relative clauses: an argument for auxiliary merge in a specifier position

In Swahili, the relative C always agrees with the relativized NP.



Option 1: The agreement affix is attached to a complementizer

Option 2: The agreement affix is attached to T that head-moves to C

(Kinyalolo 1991; Ngonyani 1999; Demuth & Harford 1999; Henderson 2003; Ngonyani 2006)

(48) kitabu [$_{CP}$ amba-**cho** a-li-ki-soma] *Relative clause with a COMP*
7book COMP-C7 1S-PST-7O-read
'the book that he read'

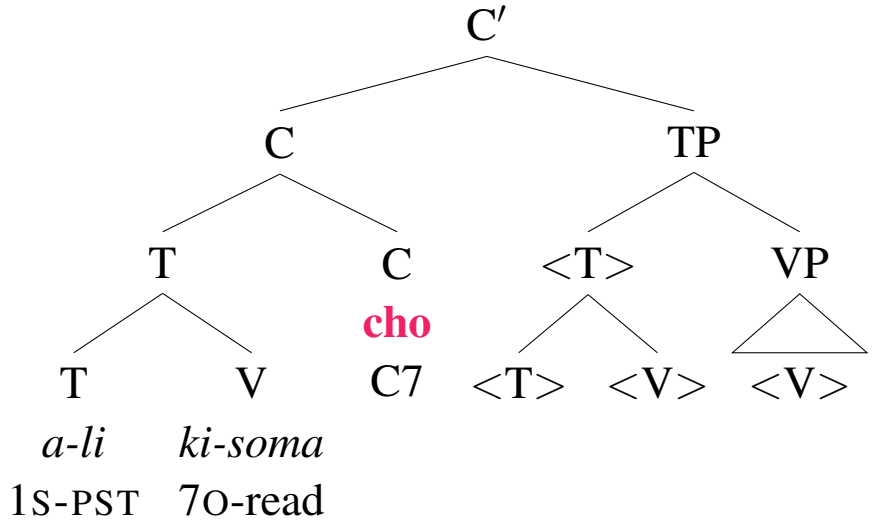
(49) a. kitabu [$_{CP}$ a-li-**cho**- ki-soma] *Relative clause with T-to-C movement*
7book 1S-PST-C7- 7O-soma
'the book that he read'

b. *kitabu [$_{CP}$ a-li-ki-soma-**cho**]
7book 1S-PST-7O-soma-C7

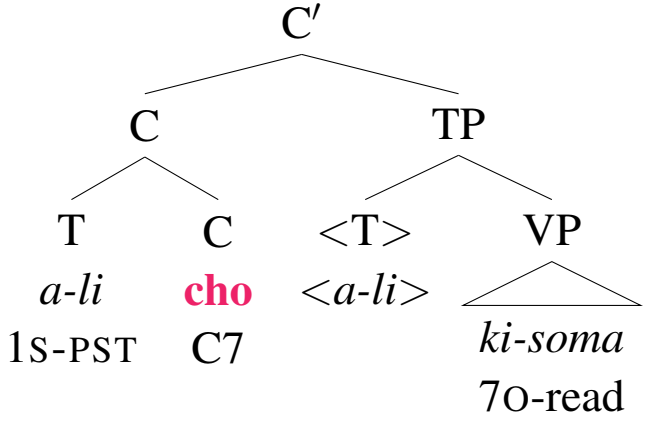
Traditional account: T-to-C movement strands V behind because there is no V-to-T movement

(Buell 2002; Henderson 2003; Ngonyani 1999, 2006; Pietraszko 2018)

V-to-T-to-C head movement:



No V-to-T, only T-to-C:



(50) *kitabu [$_{CP}$ a-li-ki-soma-**cho**]
7book 1S-PST-7O-soma-C7
('the book that he read')

(51) kitabu [$_{CP}$ a-li-**cho**- ki-soma]
7book 1S-PST-C7- 7o-soma
'the book that he read'

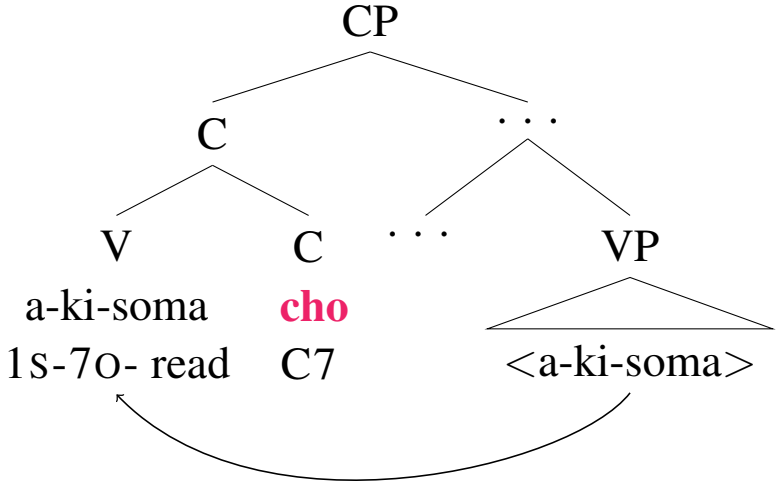
Additional evidence: actual V-to-C movement looks different

(52) *Tenseless relative clause*

kitabu [$_{CP}$ a-ki-soma-**cho** <a-ki-soma>]

7book 1S-7O-read-C7

'the book that he reads'

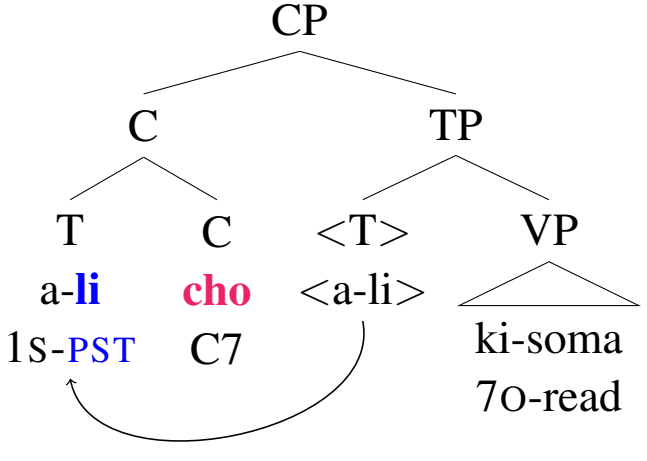


(53) *Tensed relative clause*

kitabu [$_{CP}$ a-**li**-**cho**- ki-soma]

7book 1S-PST-C7- 7O-soma

'the book that he read'



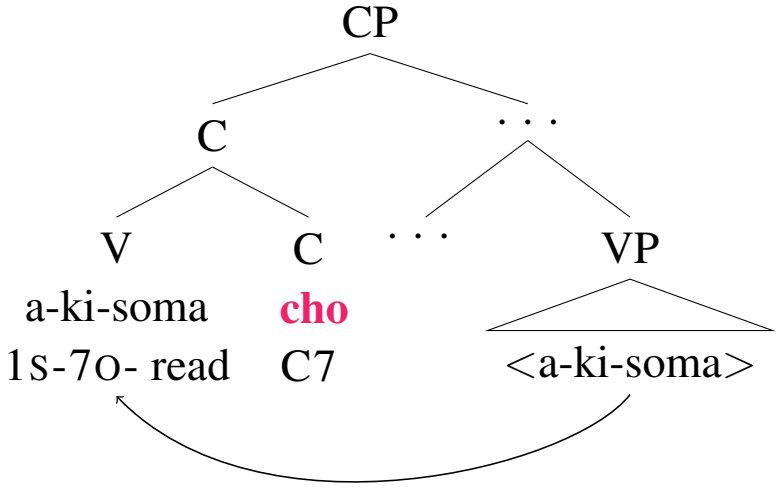
OBSERVATION: When V does move to C, it is linearized to its left.

CONCLUSION: V in tensed relatives does **not** move to C.

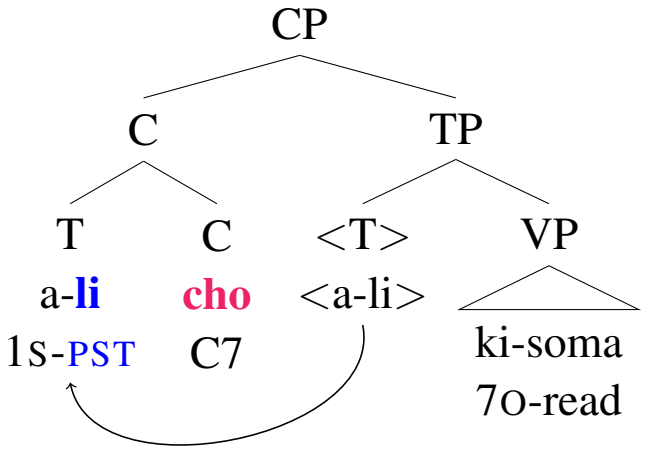
Corroborating evidence from prosody (based on Barrett-Keach 1986; Ngonyani 1999, 2006; Henderson 2003)

- Swahili has penultimate stress
- In tenseless relatives, V and C form one stress domain
- In tensed relatives, T and C form one stress domain, to the exclusion of V

(54) *Tenseless relative clause*
(a.ki.so.ˈma.cho)$_\omega$

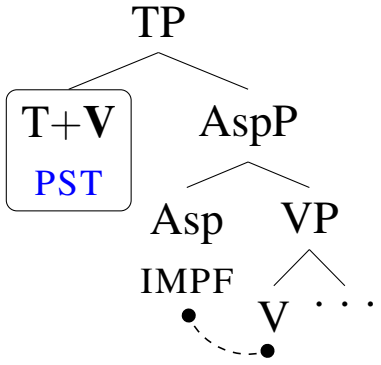


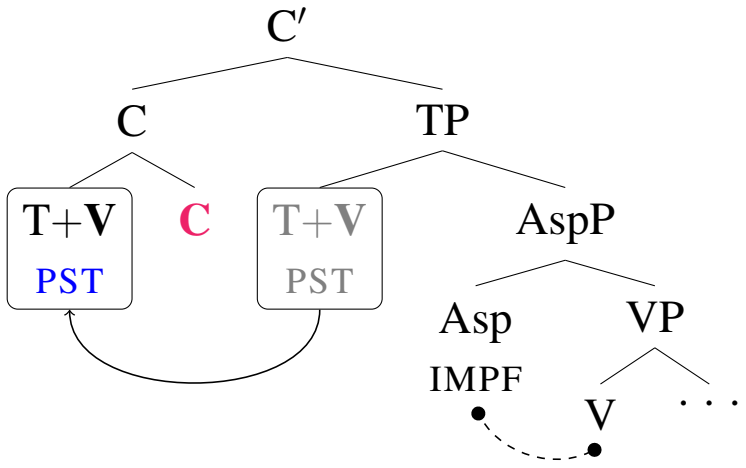
(55) *Tensed relative clause*
(a.ˈli.cho)$_\omega$ (ki.ˈso.ma)$_\omega$ → a.ˌli.cho.ki.ˈso.ma



A verb that doesn't move to C: **doesn't invert with it** and **forms a separate stress domain**

The Insertion Approach predicts the auxiliaries supporting tense should invert with C



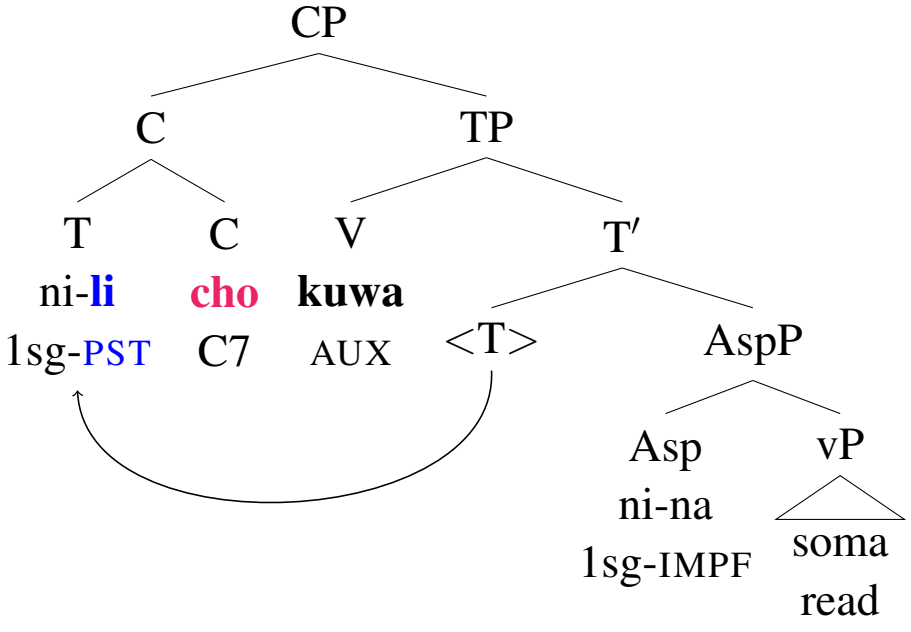


(56) Ni-li-**kuwa** ni-na-soma.
1SG-PST-**AUX** 1SG-IMPF-read
'I was reading'

(57) *kitabu [$_{CP}$ ni-li-**kuwa-cho** ni-na-soma]
7book 1SG-PST-**AUX**-C7 1SG-IMPF-read
'the book that I was reading'

Auxiliaries behave like verbs that do <u>not</u> move to T or C.

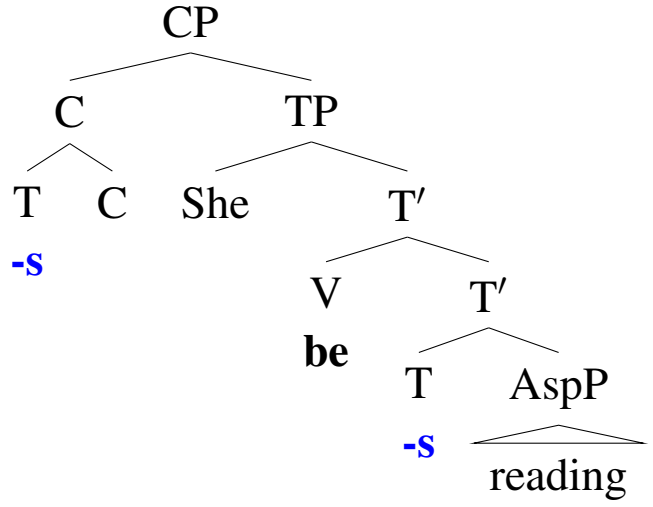
(58) kitabu [$_{CP}$ (ni-ˌli-**cho**-)$_{\omega}$ ('**kuwa**)$_{\omega}$ ni-na-soma]
7book 1SG-PST-**C7**- **AUX** 1SG-IMPF-read
'the book that I was reading'



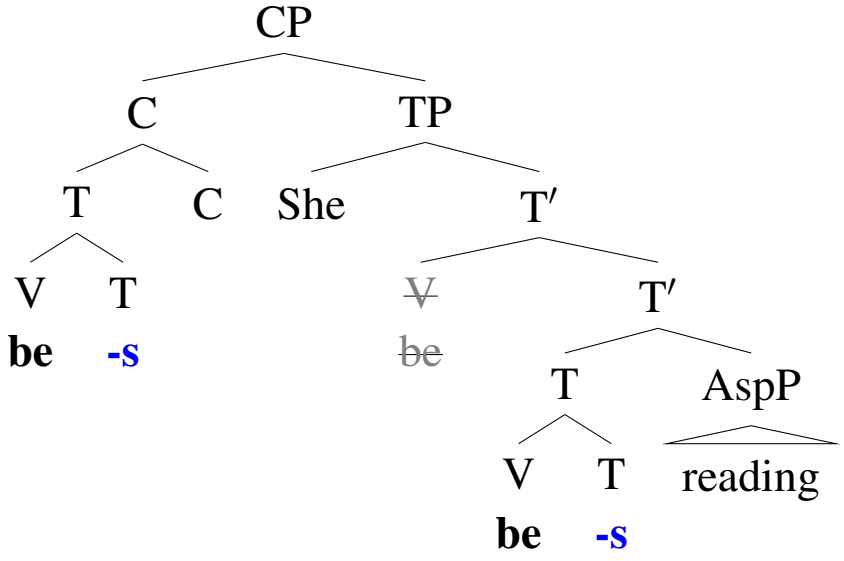
→ Aux-to-T m-merger is bled by T-to-C movement

No such bleeding occurs in English

*



Aux-to-T m-merged feeds T-to-C HM



(59) *Do-**es** she **be** reading?

(60) **I**-**s** she reading?

Possible accounts of the variation:

i. different ordering of operations in the two languages

ii. m-merger feeds T-to-C movement in both languages but does so postsyntactically

(Harizanov & Gribanova, 2019; Arregi & Pietraszko, 2018, 2021)

Either way, **the auxiliary in Swahili cannot be inserted in T directly.**

Conclusion

- Default periphrasis is cyclic selection of a V via regular, selection-triggered Merge
  $\rightarrow$ A base-generation analysis with the explanatory value of the insertion approach

- Its pieces are not new
  - the verbal nature of clausal functional heads
  - the opacity of certain functional heads
  - cyclic probing (not only ϕ but also Sel)
  - heads as specifiers (not only internal but also external Merge)

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An attempt at a base-generation analysis of the overflow pattern in Swahili

(61) ni-li-**kuwa** ni-na-soma
1SG-PST-**AUX** 1SG-PROG-read
'I was reading'.

(62) ni-ta-**kuwa** ni-na-soma
1SG-FUT-**AUX** 1SG-PROG-read
'I will be reading'.

(63) ni-∅-na-soma
1SG-PRES-PROG-read
'I am reading'.

(64) a. Asp: [Sel:VP_{ing}]

b. T_{Past}: [Sel:VP or AspP]

c. T_{Fut}: [Sel:VP or AspP]

d. T_{Pres}: [Sel:VP or VP_{ing}]