

The distribution of φ -probes in the inflectional structure

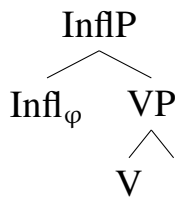
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1. Introduction

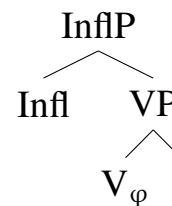
"Subject-Verb agreement"

(1) Infl-origin of φ -probes



⇒ AGR on functional heads
(Chomsky 1981, Pollock 1989)

(2) Verb-origin of φ -probes



⇒ AGR on the verb
(Iatridou 1990)

The two views are not easy to discern: V and Infl often cooccur in the same word

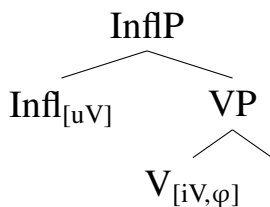
Argument from Bantu against Infl-origin (sections 2 & 3)

The lack of consistent association of functional heads with φ -probes

- Inconsistent loci of φ in simple vs compound tenses (section 2)
- Inconsistent loci of φ in aspectual verb constructions (section 3)

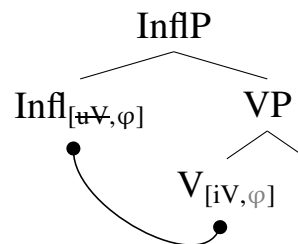
Proposal: Verb-origin & φ -percolation under V-checking (section 4)

(3) φ -probe introduced by V



V-checking
φ-percolation

(4) φ -probing from Infl



This account derives the attested variability of φ -probe positions.

2. Inconsistent loci of φ in simple vs compound tenses

In Bantu languages, every verb in a clause is fully inflected for subject agreement.

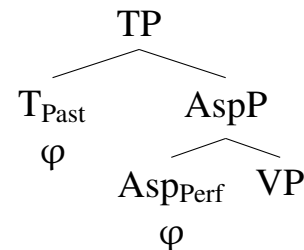
- (5) a. **U-∅-be** **u-phek-ile.** *Ndebele* (Pietraszko 2017)
 2sg-PST-AUX 2sg-cook-PERF
 You had cooked.
- b. Masunga **ma-kili ma-yik-u-a.** *Kilega* (Carstens 2005)
 6yam 6s-still 6s-cook-PASS-FS
 ‘The yams are still being cooked.’
- c. **Ni-li-kuwa ni-ngali ni-ki-fanya kazi.** *Swahili* (Carstens 2001)
 1sg-PST-AUX 1sg-still 1sg-PROG-do work
 ‘I was still working’.

The Infl-origin approach: multiple φ -probes in the clause

- (6) **A-li-kuwa a-me-fariki.**
 3sg-PST-AUX 3sg-PERF-die
 ‘He had died.’
 (*Swahili; Nurse, 2008*)

- Agr on the auxiliary: φ on T
- Agr on the main V: φ on Asp

(Carstens 2001, 2005; Henderson 2006; Baker 2008, Baker & Willie 2010 a.o.)



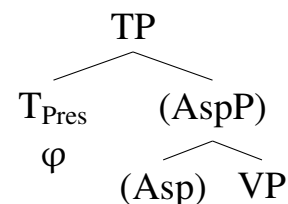
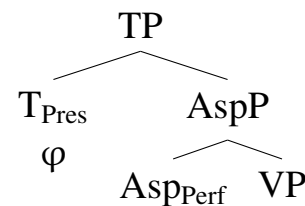
Problem: Asp_{Perf} does not always have a φ -probe

Present Perfect: only one φ

- (7) **A-∅-me-fariki.**
 3sg-PRES-PERF-die
 ‘He has died.’

Simple Present: T_{Pres} has φ

- (8) **A-∅-fariki.**
 3sg-PRES-die
 ‘He dies/is dying.’



(The overflow pattern of auxiliary use (Bjorkman 2011))

Inconsistent distribution of φ :

Asp_{Perf} has a φ -probe when T is [Past] but not when it's [Pres]

Infl-origin approach to φ -distribution in Asp-V constructions

(16) *T appears to always have a φ -probe in Ndebele:*

a. U- \emptyset -pheka inyama.

2sg-PRES-cook 9meat

‘You cook meat’

[TP [T $_{\varphi,Pres}$ u] [VoiceP pheka]]

b. U-a-pheka inyama.

2sg-PAST-cook 9meat

‘You cooked meat’

[TP [T $_{\varphi,Past}$ u-a] [VoiceP pheka]]

Inconsistent appearance of φ on Voice

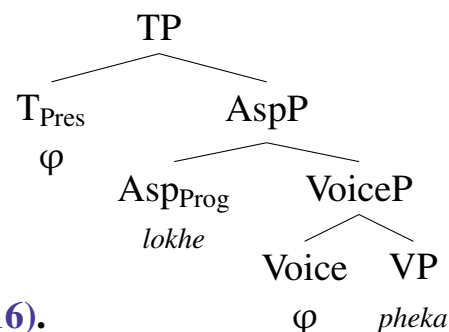
(17) U-lokhe u-phéka

2sg-still 2sg-cook.PROG

‘You are still cooking’

- Agr on *lokhe*: φ on T
- Agr on the main V: φ on Voice

⇒ **Voice is an agreeing head in (17) but not in (16).**



Inconsistent appearance of φ on Asp_{Prog}

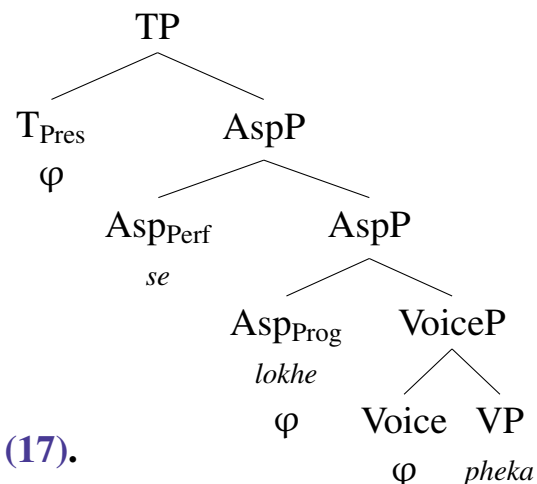
(18) U-se u-lokhe u-phéka

2sg-already 2sg-still 2sg-cook.PROG

‘At this point, you are still cooking’

- Agr on *se*: φ on T
- Agr on *lokhe*: φ on Asp_{Prog}
- Agr on the main V: φ on Voice

⇒ **Asp_{Prog} is an agreeing head in (18) but not in (17).**



Summary of the argument:

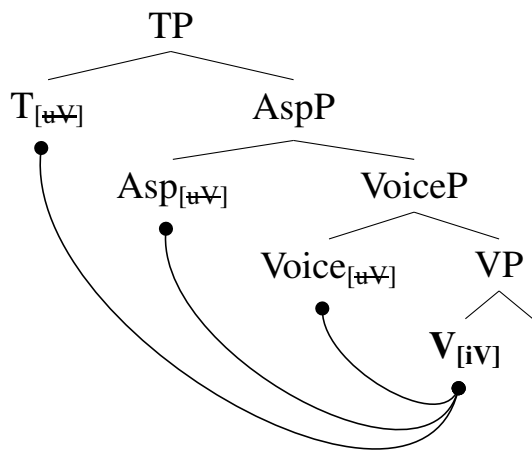
- The locus of φ -probes cannot be described in terms of specific functional heads
- Given that, the Infl-origin approach fails to capture the distribution of φ -probes in Bantu
- One correlation: the number of φ -probes correlates with the number of verbal elements

4. Deriving the distribution: Verb-origin and feature percolation

V-checking in the inflectional domain

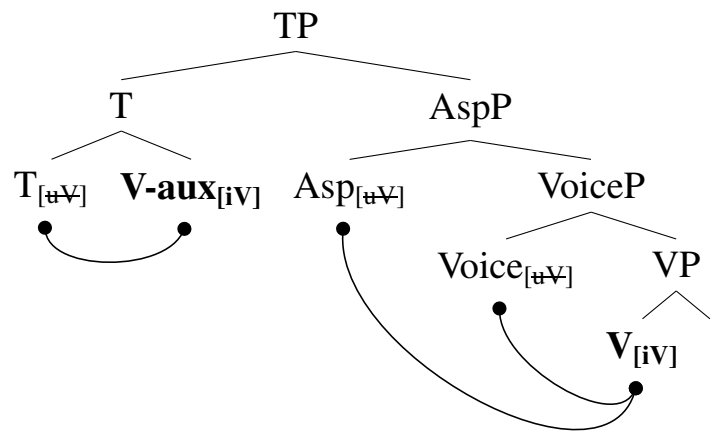
- V and functional heads in its extended projection are related by feature checking (Svenonius 1994, Chomsky 1995, Julien 2002, Adger 2003 a.o.)
- Functional heads check their uV against the verb's iV (Cowper 2010, Pietraszko 2017)

(19) Simple tense



one V-chain: $\langle T, Asp, Voice, V \rangle$

(20) Compound tense



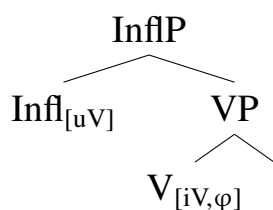
two V-chains: $\langle T, V\text{-aux} \rangle$; $\langle Asp, Voice, V \rangle$

(See Cowper 2010, Pietraszko 2016, 2017 for auxiliary insertion as last resort V-checking)

Feature percolation

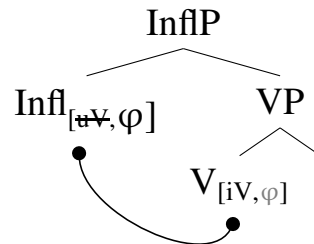
- φ -probes are introduced in the inflectional structure on Vs
- They percolate under V-checking to the top of the V-chain (cf. Grimshaw 1991, 2000)
- Probing takes place after percolation

(21) φ -probe introduced in V



V-checking
 $\xrightarrow{\varphi\text{-percolation}}$

(22) φ -probing from Infl



Agreement in simple vs compound tenses

(23) **Past + Perf \Rightarrow Aux-V**

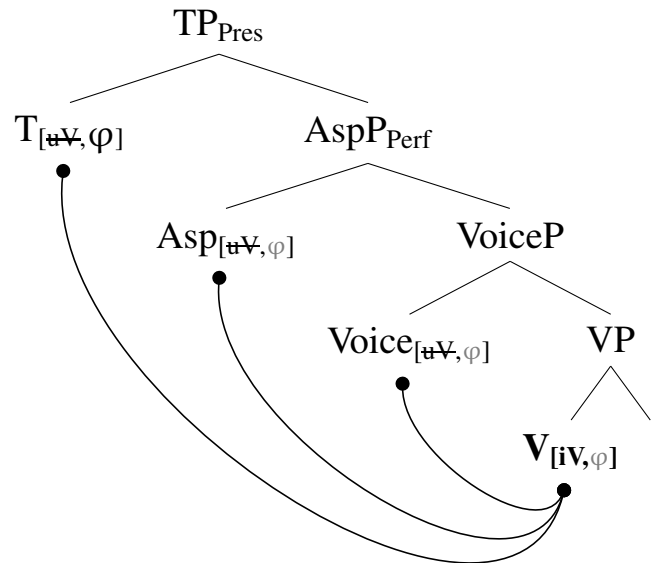
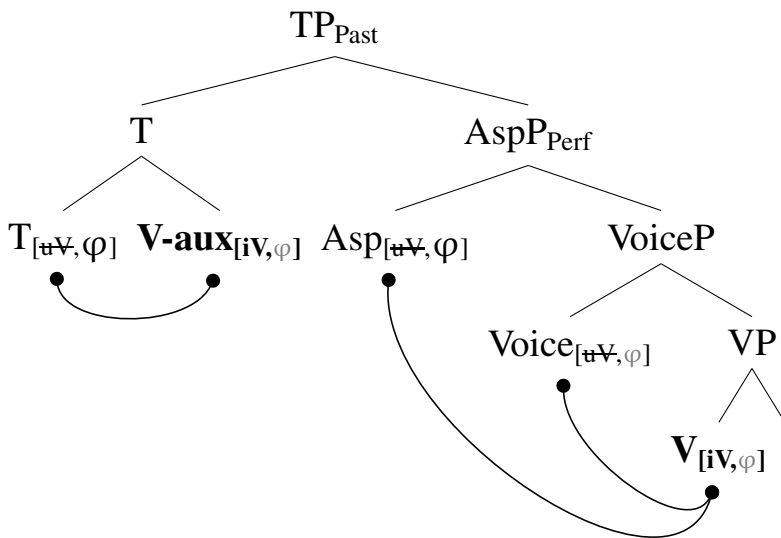
(24) **Pres + Perf \Rightarrow no Aux-V**

a. **A-li-kuwa a-me-fariki.**
 3sg-PST-AUX 3sg-PERF-die
 ‘He had died.’
 $\rightarrow \varphi$ on Asp_{Perf}

a. **A- \emptyset -me-fariki.**
 3sg-PRES-PERF-die
 ‘He has died.’
 \rightarrow No φ on Asp_{Perf}

b. Past Perfect

b. Present Perfect



Two V-chains: $\langle T, V\text{-aux} \rangle$; $\langle Asp, Voice, V \rangle$

One V-chain: $\langle T, Asp, Voice, V \rangle$

$\rightarrow \varphi$ -probing from T and Asp

$\rightarrow \varphi$ -probing from T

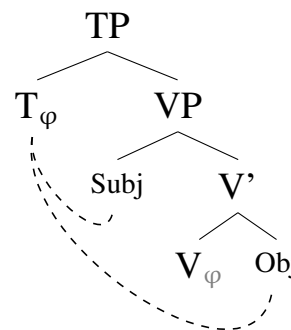
Evidence for φ -percolation

i. **Affix order:** AGR affixes are not adjacent to verb stems

ii. **Locality of agreement:**

(25) *Subject-Object Inversion*

- a. **Imw-ana ka-tula ici-ya.**
 1-child 1s-broke 7-pot
 ‘The child broke the pot.’
- b. **Ici-ya ci-tula imw-ana.**
 7-pot 7s-broke 1-child
 ‘The child broke the pot.’



(Luguru, Marten & van der Wal 2014)

\rightarrow Which DP controls subject agreement correlates with movement to Spec,TP.

Agreement in aspectual-verb constructions

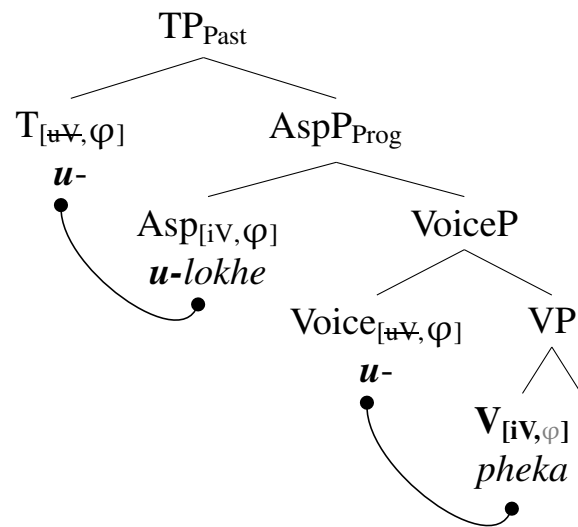
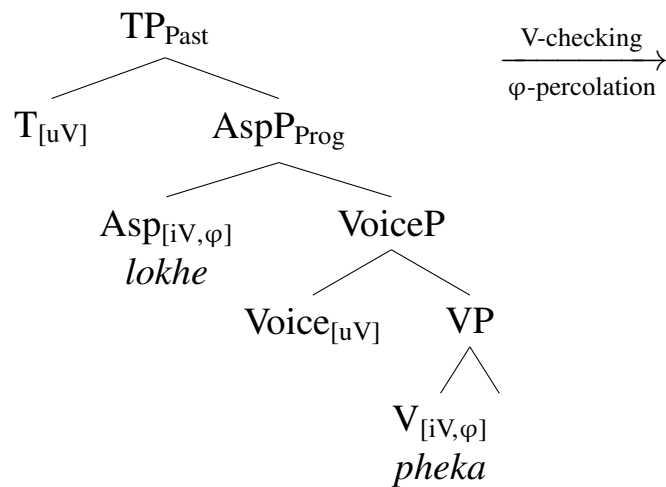
(26) **Aspectual auxiliaries:**

- a. functional heads with an iV feature (rather than uV)
- b. being verbs, they introduce a φ -probes in the structure

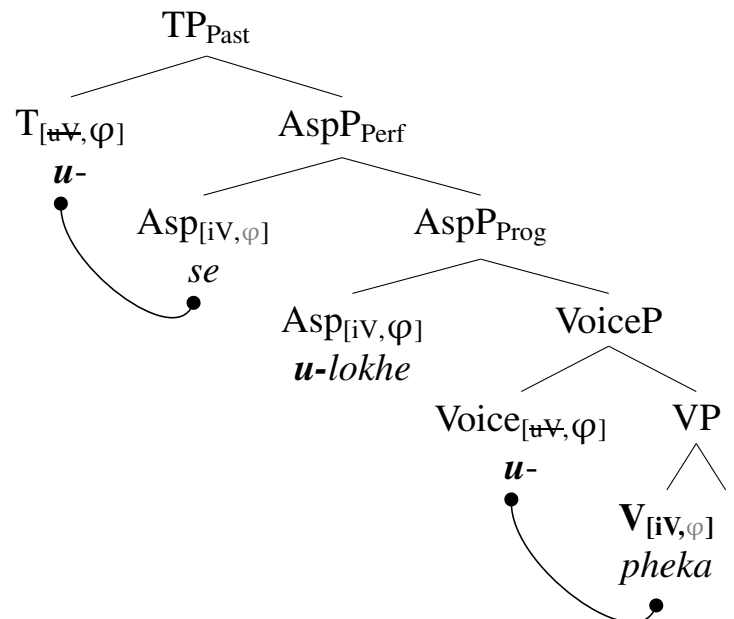
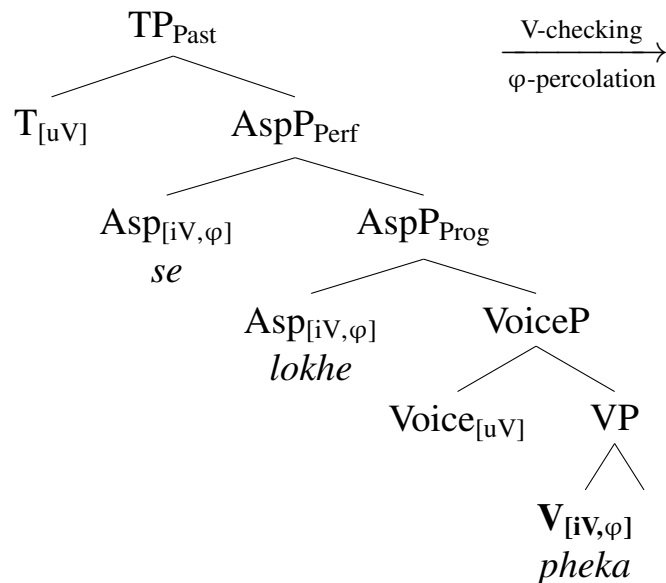
(27) **U-lokhe** u-bála
 2sg-still 2sg-read.PROG
 ‘You are still reading’

(28) **U-se** **u-lokhe** **u-phéka**
 2sg-already 2sg-still 2sg-cook.PROG
 ‘At this point, you are still cooking’

(29) The derivation of (27)



(30) The derivation of (28)



5. Conclusion

- Complete severing of φ -probes from Vs fails to capture their distribution in Bantu lgs
- φ -probes are not a property of individual functional heads, but rather of V-chains
- The size of a V-chain may vary, depending of the syntactic context
- The number of φ -probes is determined by the number of Vs, but their exact probing position is determined derivationally.

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