

# Reassessing functional verb diagnostics

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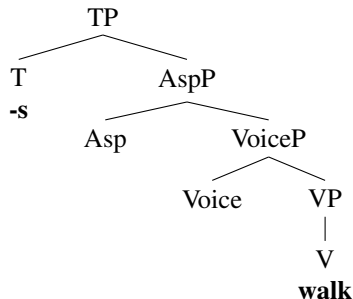
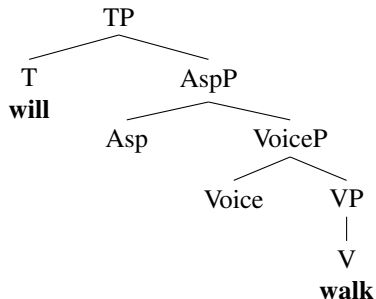
The Foundations of Extended Projections Workshop  
October 27-28, 2022  
UiT The Arctic University of Norway



# Introduction

## *Functional verb*

A verb that occupies a position in the extended projection of another verb.



***will* and *-s* belong to the same category**

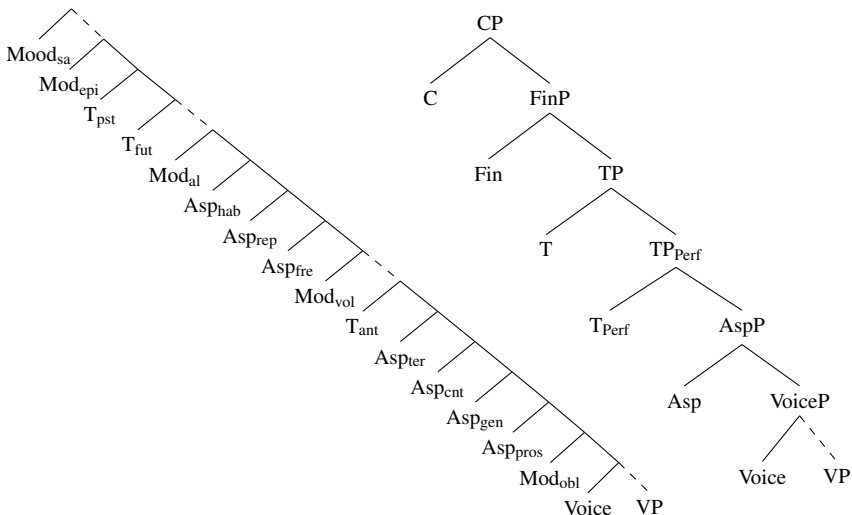


## The affix analogy method on a large scale (Cinque 1998, 2004)

- OBSERVATION 1: Some languages have habitual aspect affixes  
→ **The Italian verb *solere* ‘usually do’ is a functional verb ( $Asp_{hab}$ )**
- OBSERVATION 2: Some languages have terminative aspect affixes  
→ **The Italian verb *smettere (di)* ‘stop’ is a functional verb ( $Asp_{termin}$ )**
- OBSERVATION 3:  $solare \prec smettere, *smettere \prec solare$ 
  - (1) Certe cose si sogliono smettere di fare dopo una certa età  
Certain things one use.to stop do after a certain age
  - (2) \*Certe cose si smettono di soler fare dopo una certa età  
Certain things one stop use.to do after a certain age

→  **$AspP_{hab} > AspP_{termin}$**  (Italian, Cinque 1998:118–119)

# Functional verbs reveal the shape of the clausal functional hierarchy

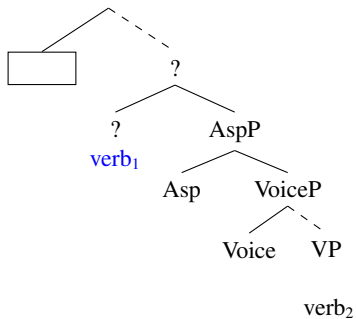


# Overview

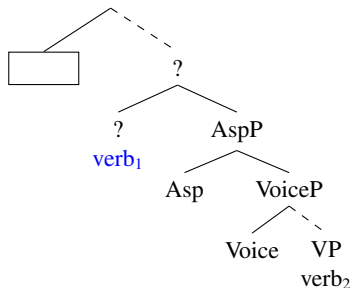
- 1 Potential functional verb diagnostics
  - Monoclausality
  - Nominalization
  - Meaning
  - Crosslinguistic analogy
  - Affix analogy
  - Argument structure
  - Permeability
  - Strict ordering
  - Syntactic unembeddability
- 2 Correct diagnostics applied to embedding verbs in Ndebele
  - Fewer functional verbs than expected
  - Consequences for the nature of functional verbs
- 3 Conclusion



## (5) Multiverb construction 1



## (6) Multiverb construction 2



- If  is higher in the EP than Asp, the result is **consistent** a single EP  
→ verb<sub>1</sub> might be functional
- If  is *not* higher in the EP than Asp, the result is **inconsistent** a single EP  
→ verb<sub>1</sub> must be lexical





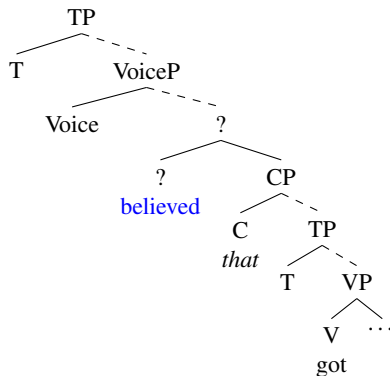






## Biclausality diagnosing a lexical verb

- (7) It is believed that Leif Erikson got there first.



**Biclausality is a conclusive diagnostic for a lexical verb.**





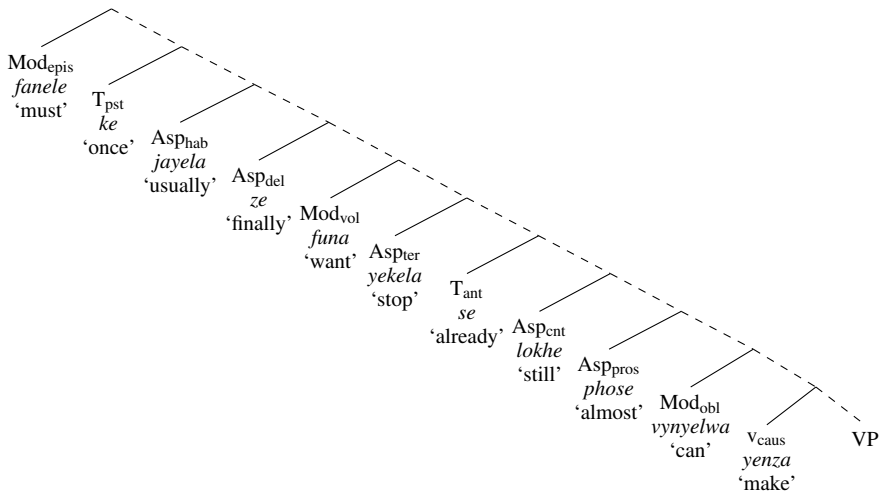


- 1 Mono- vs. bi-clausality – ✓ as a **negative** diagnostic
- 2 Nominalization – ✓ as a **negative** diagnostic
- 3 Meaning
- 4 Crosslinguistic analogy
- 5 Affix analogy
- 6 Argument structure
- 7 Permeability
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## D3: Meaning



**Meaning diagnostic:** If deontic *can* is merged in ModP, then so is *be allowed*.

- *be allowed* can appear under modals, *can* cannot:

(12) I might *be allowed* to leave early.

(13) \*I might *can* leave early

- *be allowed* can appear in a reduced clause, *can* cannot:

(14) I appreciate *being allowed* to leave early.

(15) \*I appreciate *canning* leave early.

- *be allowed* is lower than sentential negation, *can* is higher:

(16) ... to not *be allowed* to leave

(17) I {*can*} not {\**can*} leave

→ *be allowed* is lower in the clause than deontic *can*.

**Same meaning ≠ same category**

- 1 Mono- vs. bi-clausality ✓ as a **negative** diagnostic
- 2 Nominalization ✓ as a **negative** diagnostic
- 3 Meaning ✗
- 4 Crosslinguistic analogy
- 5 Affix analogy
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## D4: Crosslinguistic analogy

- English *must* is a FV

→ The verb ‘must’ in other languages is a FV, too.

- (18) a. Ku-**fanele** [<sub>CP</sub> ukuthi uSipho u-hamb-ile.] (Zulu)  
 17s-**must** COMP 1Sipho 1s-leave.PST  
 ‘Sipho must have left’.
- b. Ku-**a-∅** ku-**fanele** [<sub>CP</sub> ukuthi uSipho u-∅-be e-hambile.]  
 17s-**PST-AUX** 17s-**must** COMP 1Sipho 1s-**PST-AUX** 1s-leave.PERF  
 ‘Sipho must have left’.  
 Lit. It had to be the case that Sipho had left.

→ ‘must’ in Zulu is a lexical verb.

- 1 Mono- vs. bi-clausality ✓ as a **negative** diagnostic
- 2 Nominalization ✓ as a **negative** diagnostic
- 3 Meaning ✗
- 4 Crosslinguistic analogy ✗
- 5 Affix analogy
- 6 Argument structure
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## D5: Affix analogy

- Some languages have a causative morpheme (Caus<sup>0</sup>).

(19) Ndebele

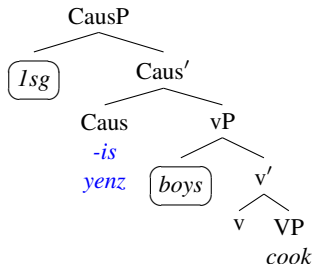
- a. Abafana ba-phek-é inyama  
2boys 2s-cook-PST 9meat  
'The boys cooked meat'
- b. Ngi-phek-**is**-é abafana inyama  
1sg-cook-**CAUS**-PST 2boys 9meat  
'I made the boys cook meat'

→ The English causative verb *make* is a FV (Caus<sup>0</sup>).

(20) I **made** the boys cook meat.

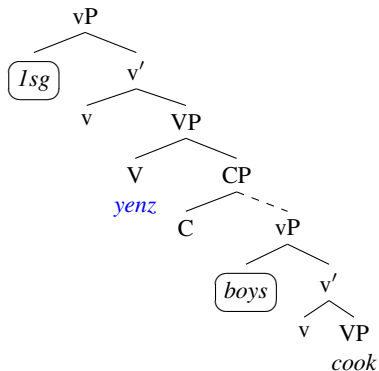
## Affix analogy within a language?

- (21) Ngi-phek-**is**-é abafana.  
 1sg-cook-CAUS-PST 2boys  
 'I made boys cook'
- (22) Ngi-**yenz**-é abafana be-phek-e.  
 1sg-make-PST 2boys 2-cook-SBJV  
 'I made boys cook'



## The causative verb embeds a complementizer

- (23) Ngi-**yenz**-é (ukuthi) abafana be-phek-e  
 1sg-make-PST (COMP) 2boys 2s-cook-SBJV  
 'I made boys cook'





## The causative verb embeds Voice, the affix doesn't

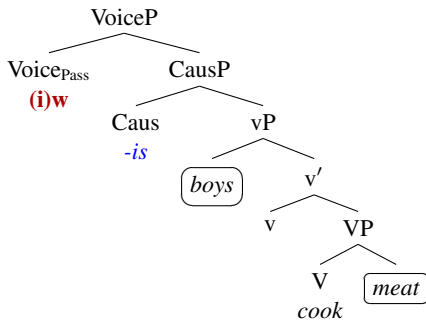
(24) Ngi-**yenz**-é inyama i-phek-**w**-e  
 1sg-**make**-PST 9meat 9-cook-**PASS**-SBJ  
 'I made someone cook the meat'

(25) a. \*Ngi-phek-**w-is**-é inyama  
 1sg-cook-**PASS-CAUS**-PST 9meat  
 ('I made someone cook the meat.')

b. Ngi-phek-**is-w**-é inyama  
 1sg-cook-**CAUS-PASS**-PST 9meat  
**Cannot** mean: 'I made someone cook the meat.'

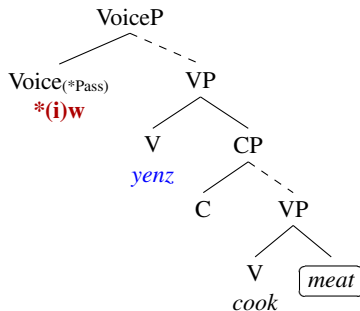
## Synthetic causative can be passivized

- (26) Abafana ba-phhek-**is-w**-e inyama.  
 2boys 2s-cook-**CAUS-PASS**-PST 9meat  
 'The boys were made to cook meat'



## The causative verb can't be passivized

- (27) \*Abafana ba-**yenz-iw**-e (ukuthi) bephek-e inyama  
 2boys 2s-**make-PASS**-PST (COMP) 2s-cook-SBJV 9meat  
 ('The boys were made to cook meat')



## Object agreement

(28) Synthetic causative: max 1 obj agreement

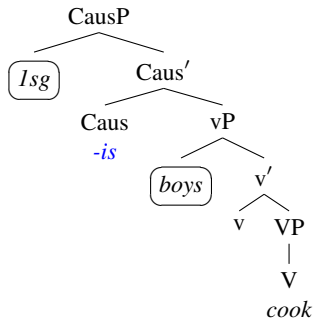
- a. Ngi-za-**ba**-phek-**is**-a      abafana inyama.  
 1sg-FUT-**2o**-cook-CAUS-FV 2boys 9meat  
 'I will make the boys cook meat'
- b. \*Ngi-za-**ba-yi**-phek-**is**-a      abafana inyama.  
 1sg-FUT-**2o-9o**-cook-CAUS-FV 2boys 9meat  
 'I will make the boys cook the meat '

(29) Periphrastic causative: 2 obj agreements allowed → **bi-clausal**

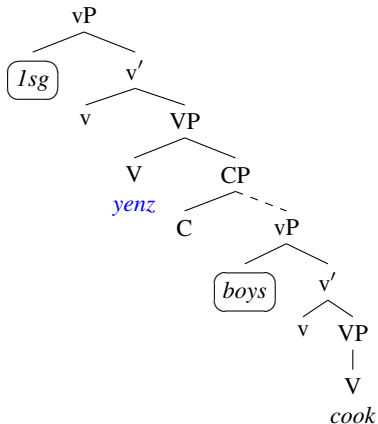
- a. Ngi-za-(**ba**)-yenz-a      abafana be-(**yi**)-phek-e      inyama  
 1sg-FUT-(**2o**)-make-FV 2boys 2s-(**9o**)-cook-SBJV 9meat  
 'I will make the boys cook '

‘make’ ≠ Caus<sup>0</sup>

(30) Synthetic causative



(31) Periphrastic causative



- 1 Mono- vs. bi-clausality ✓ as a **negative** diagnostic
- 2 Nominalization ✓ as a **negative** diagnostic
- 3 Meaning ✗
- 4 Crosslinguistic analogy ✗
- 5 Affix analogy ✗
- 6 Argument structure
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## D6: Argument structure

- Lexical verbs are thematic
- Functional verbs are athematic

*athematic* – having no argument other than the embedded clause

(32) a. The boys **might have** eaten the cake.

b. The cake **might have** been eaten by the boys.

(33) a. Abafana ba-**lokhe** be-pheka isuphu.

2boys 2s-**continue** 2s-cook 9soup

‘The boys are still cooking soup’

b. Isuphu i-**lokhe** i-phek-w-a ng-abafana.

9soup 9s-**continue** 9s-cook-PASS-FV by-2boys

‘The soup is still being cooked by the boys.’

# Athematic → functional

Zulu has raising out of finite CPs

(Zeller 2006, Halpert 2012, 2015)

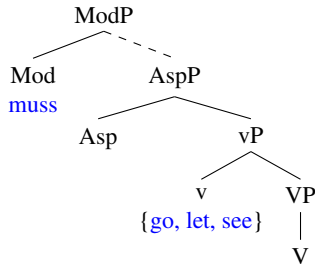
- (34) a. **Ku-fanele** [<sub>CP</sub> ukuthi **uSipho** u-hambile.]  
 17s-**must** COMP 1Sipho 1s-leave.PST  
 ‘Sipho must have left’.
- b. **USipho** ku-**fanele** [<sub>CP</sub> ukuthi u-hambile.]  
 1Sipho 17s-**must** COMP 1s-leave.PST  
 ‘Sipho must have left’.



# Thematic → lexical

German (from Wurmbrand 2001)

- (35) a. Hans **muss** schwimmen **gehen**  
 Hans **must** swim **go**  
 ‘Hans must go swimming’
- b. \*Hans **ging** schwimmen **müssen**  
 Hans **went** swim **must**  
 (John went to get ordered to swim’)



- (36) a. Es **muss** schneien.  
 It **must** snow
- b. \*Es **geht** schneien.  
 It **goes** snow

## Exhaustive control

- Exhaustive control arises through restructuring (Wurmbrand 1998)
- Cinque 2004, Grano 2015: restructuring verbs are functional
  - **Incorrect prediction #1: EC verbs cannot have internal arguments**

(37) Der Roman wurde **ihm** zu lesen **empfohlen**  
 the novel-NOM was **him.DAT** to read **recommended**  
 ‘They recommended to him to read the novel’

(German, Wurmbrand 2004:998)

- **Incorrect prediction #2: EC verbs can’t take DP complements**
- (38) Ngi-a-ku-zama u-ku- {gijima/\*buthana}. (Ndebele)  
 1sg-PST-15o-try D-15- {run/\*meet}  
 ‘I tried to {run/\*meet}’

- 1 Mono- vs. bi-clausality ✓ as a **negative** diagnostic
- 2 Nominalization ✓ as a **negative** diagnostic
- 3 Meaning ✗
- 4 Crosslinguistic analogy ✗
- 5 Affix analogy ✗
- 6 Argument structure ✗
- 7 Permeability
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## D7: Permeability (or Monoclausality of the irrelevant kind)

**Diagnostic:** Clause-bound processes allowed → only one LV

[CP . . . [CP . . . ]]

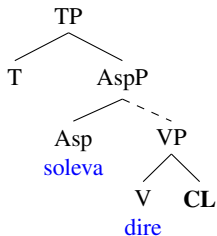
- (39) Gianni **lo** *soleva dire* <lo> spesso. (Italian, Cinque 1998:116)  
 Gianni **CL** used.to say often  
 ‘Gianna used to say it often.’

**Clitic climbing possible → monoclausal → *soleva* is functional**

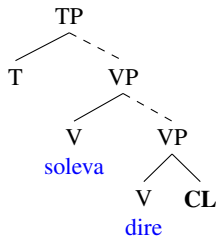
## Permeability → single extended projection

- (40) Gianni **lo** **soleva dire** <lo> spesso.  
 Gianni **CL** used.to say often  
 ‘Gianna used to say it often.’

- (41) *Functional restructuring*



- (42) *Lexical (non-)restructuring*



**Clause-bound phenomena do not diagnose functional verbs.**

- 1 Mono- vs. bi-clausality ✓ as a **negative** diagnostic
- 2 Nominalization ✓ as a **negative** diagnostic
- 3 Meaning ✗
- 4 Crosslinguistic analogy ✗
- 5 Affix analogy ✗
- 6 Argument structure ✗
- 7 Permeability ✗
- 8 Strict ordering
- 9 Syntactic unembeddability

## D8: Strict vs. flexible ordering

- (43) *solare* < *smettere*, \**smettere* < *solare* (Italian)
- Certe cose si **sogliono smettere** di fare dopo una certa età  
Certain things one **use.to stop** do after a certain age
  - \*Certe cose si **smettono di soler** fare dopo una certa età  
Certain things one **stop use.to** do after a certain age

→ *solare* and *smettere* are functional verbs

- (44) *qala* < *funa*, *funa* < *qala* (Ndebele)
- Ngi-**qala** u-ku-**funa** u-ku-pheka. ‘I’m starting to want to cook’  
1sg-start D-15-want D-15-cook
  - Ngi-**funa** u-ku-**qala** u-ku-pheka. ‘I want to start cooking’  
1sg-want D-15-start D-15-cook

→ *qala* and *funa* are lexical verbs

- (45) Ordering-based diagnostics: If two verbs are
- freely** ordered with each other, they are **both lexical**
  - strictly** ordered with each other, they are **both functional**

## freely order $\rightarrow$ both lexical

*want (LV)*  $\prec$  *continue (FV)*

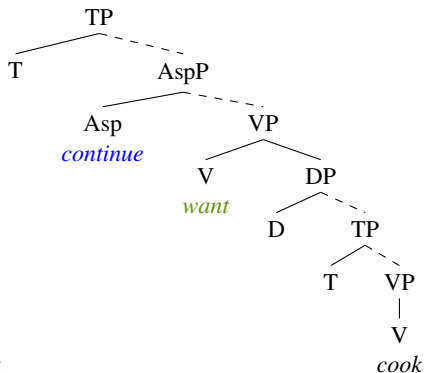
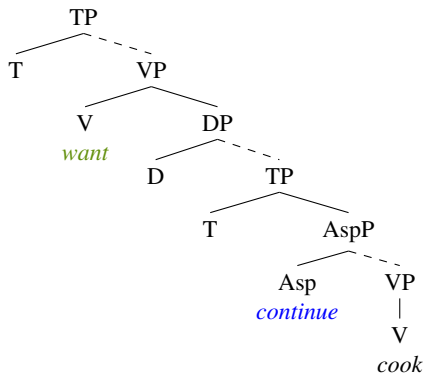
- (46) Ngi-funa u-ku-be    ngi-lokhe    ngi-pheka.  
 1sg-want D-15-AUX 1sg-continue 1sg-cook  
 'I want to continue cooking'

*continue (FV)*  $\prec$  *want (LV)*

- (47) Ngi-lokhe    ngi-funa u-ku-pheka.  
 1sg-continue 1sg-want D-15-cook  
 'I still want to cook'



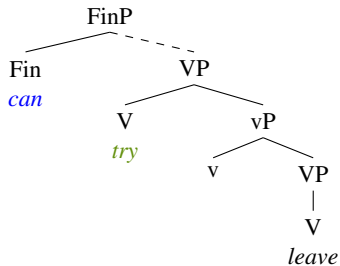
freely order  $\rightarrow$  both lexical



## strictly order $\rightarrow$ both functional

### Rigid order with one lexical verb

- (48) can  $\prec$  try, \*try  $\prec$  can
- I can try to leave.
  - \*I try to can leave.



## strictly order $\rightarrow$ both functional

### Rigid order with two lexical verbs (Zulu)

- (49) USipho ku-fanele ukuthi u-hamb-ile. *'fanele' is a lexical verb*  
 1Sipho 15-must COMP 1s-leave-PST  
 'Sipho must have left'.
- (50) USipho u-zam-ile u-ku-hamba. *'zam' is a lexical verb*  
 1Sipho 1s-try-PST D-15-leave  
 'Sipho tried to leave'.
- (51)  $must \prec try, *try \prec must$
- a. USipho ku-fanele ukuthi u-zam-ile u-ku-hamba.  
 1Sipho 15-must COMP 1s-try-PST D-15-leave  
 'Sipho must have tried to leave'.
- b. \*USipho u-zam-ile u-ku-fanele ukuthi u-hamb-ile.  
 1Sipho 15-try-PST D-15-must COMP 1s-leave-PST



■ **free** ordering:

- lexical  $\prec$  lexical
- lexical  $\prec$  functional
- functional  $\prec$  lexical
- \*functional  $\prec$  functional

■ **strict** ordering:

- functional  $\prec$  functional
- lexical  $\prec$  lexical (semantic restriction)
- functional  $\prec$  lexical (+ reduced complement)
- lexical  $\prec$  functional (semantic restriction)

- 1 Mono- vs. bi-clausality ✓ as a **negative** diagnostic
- 2 Nominalization ✓ as a **negative** diagnostic
- 3 Meaning ✗
- 4 Crosslinguistic analogy ✗
- 5 Affix analogy ✗
- 6 Argument structure ✗
- 7 Permeability ✗
- 8 Strict vs. flexible ordering ✗
- 9 Syntactic unembeddability

**strict ordering:**

- **functional**  $\prec$  **functional**
- **lexical**  $\prec$  **lexical** (semantic restriction)
- **functional**  $\prec$  **lexical** (+ reduced complement)
- **lexical**  $\prec$  **functional** (semantic restriction)



## D9: Syntactic unembeddability (the only positive FV diagnostic)

- DIAGNOSTIC: If a verb cannot be embedded, it is because either
  - It's semantically incompatible with the matrix predicate, or
  - It's a functional verb

- PROCEDURE (applied to the English *can*)

- Identify unembeddability

(52) I **can start** cooking.

(53) \*I **started canning** cook.

- Rule out a semantic explanation

(54) I **am allowed** to **start** cooking.

(55) I **started being allowed** to cook.

- CONCLUSION

*can* is functional verb

- 1 Mono- vs. bi-clausality ✓ as a **negative** diagnostic
- 2 Nominalization ✓ as a **negative** diagnostic
- 3 Meaning ✗
- 4 Crosslinguistic analogy ✗
- 5 Affix analogy ✗
- 6 Argument structure ✗
- 7 Permeability ✗
- 8 Strict vs. flexible ordering ✗
- 9 Syntactic unembeddability ✓ as a **positive** diagnostic











## Syntactic unembeddability of *lokhe* ‘continue’

Two verbs that mean ‘continue/still be doing’

- |      |   |      |  |
|------|---|------|--|
| (56) | Ngi- <b>lokhe</b> ngi-phéka.<br>1sg- <b>continue</b> 1sg-cook.IMPF<br>I continue cooking. | (57) | Ngi- <b>qhubeka</b> u-ku-pheka.<br>1sg- <b>continue</b> D-15-cook<br>I continue cooking. |
|------|---|------|--|

Syntactic unembeddability of *lokhe*

- (58) \*Ngi-qala [(be)  ngi-**lokhe**  ngi-phéka.]  
1sg-first [(AUX) 1sg-**continue** 1sg-cook.IMPF]  
(‘First, I continue to cook’)
- (59) Ngi-qala [ngi-**qhubeka** u-ku-pheka.]  
1sg-first [1sg-**continue** D-15-cook]  
‘First, I continue to cook’



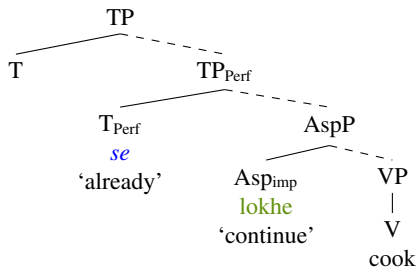








*se*  $\prec$  *lokhe*, \**lokhe*  $\prec$  *se*



- (64) a. u-*se* e-*lokhe* e-phéka  
 1-*already* 1-*continue* 1-cook.IMP  
 ‘I’m already continuing to cook’
- b. \*u-*lokhe* e-*se* e-phéka  
 1-*continue* 1-*already* 1-cook.IMP









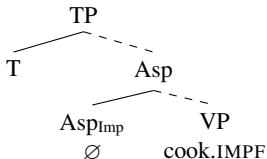




- Ndebele has an FP that can express habitual aspect.

(70) Ngi-a-gijim-a.  
1sg-PST-run-FV  
'I ran'

(71) Ngi-a-∅      ngi-∅-gíjima.  
1sg-PST-AUX 1sg-ASP-run.IMPF  
'I used to run' or 'I was running'.



- It also has a lexical verb expressing habitual aspect.

(72) Ngi-a-∅      ngi-jayeLe   u-ku-gijima.  
1sg-PST-AUX 1sg-used.to D-15-run  
'I used to run'

- But the verb cannot be merged in the position of the prefix.

(73) \*Ngi-a-∅      ngi-jayeLe   gijima/ngi-gíjima/ngi-gijime.  
1sg-PST-AUX 1sg-used.to run/1sg-run.IMPF/1sg-run.SBJV







## Conclusions

- Carefully diagnosed FVs in Ndebele reveal 1-4 functional projections.
- Most cartographic FPs are likely non-existent in Ndebele.
  
- LVs cannot be merged in functional positions.
- FVs are not lexical verbs merged in functional positions.
  
- FVs are of the same category as verbal affixes
  - FVs need not have lexical counterparts
  - Lexical counterparts are synchronically accidental



Thank you!