

Multiple probing in A-over-A configurations

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1 Introduction

- So called infinitives in Bantu languages are (vP/TP) nominalizations
- Northern Ndebele (Zimbabwe, S44, Nguni group): "infinitive" = nominalization of class 15

Nominalizations in Ndebele can be targeted (in their entirety) by agreement (1) and raising (2):

- (1) Abafana ba-za-**ku**-phinda **uku**-pheka. (2) **Uku-pheka**_i ku-za-phindwa *t_i* ngabafana.
 2boy 2s-FUT-15o-repeat 15-cook 15-cook 15s-FUT-repeat.PSV by.boys
 'The boys will cook again.' lit. Cooking will be repeated by the boys.

At the same time, they are *permeable* to agreement (3) and raising (4):¹

- (3) Ba-a-**yi**-phinda [_{DP} uku-**yi**-pheka **i**-nyama] (4) **U-Zodwa**_i u-qala [_{DP} uku-pheka *t_i*].
 2s-PST-9o-repeat 15-9o-cook 9-meat 1-Zodwa 1s-be.first 15-cook
 'They will cook the meat again' 'Zodwa first cooks'

Since nominalizations are possible targets themselves, (3)-(4) violate locality/minimality (A-over-A type)

Claim I: The violations are only apparent

In every apparent violation, the operation targets both the nominalization and a DP inside of it:



Claim II: Class 15 is featurally underspecified, compared to other classes

- (5) a. "Class 1" b. "Class 2" c. "Class 15"
 ϕ ϕ ϕ
 | / \ |
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Outline

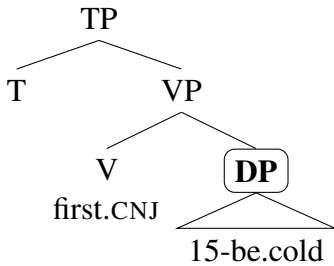
- §2-3 Raising out of class 15 DPs
- §4 Agreement across class 15 DPs
- §5 The elsewhere distribution of class 15 agreement/raising
- §6 Conclusion and implications for ϕ -geometry in Bantu

¹ 1s = class 1 subject agr, 1o = class 1 object agr, 1 = class 1 nominal prefix, CNJ= conjoint form, DSJ = disjoint form

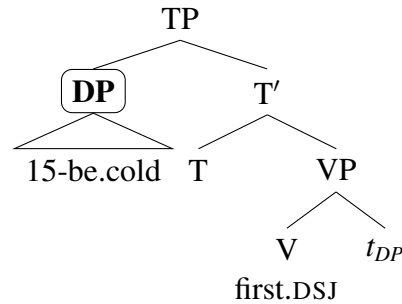
2 Raising out of class 15 DPs

- *qala* ‘do/be first’ is an unaccusative verb selecting a nominalization (6-a)
- The entire nominalization can optionally raise to subject (6-b)

(6) a. Ku-∅-qala [DP **uku-banda**]
 15s-CNJ-first 15-be.cold
 ‘First, it is cold’



b. [DP **Uku-banda**]_i ku-**ya**-qala *t_i*
 15-be.cold 15s-DSJ-first
 ‘First, it is cold’

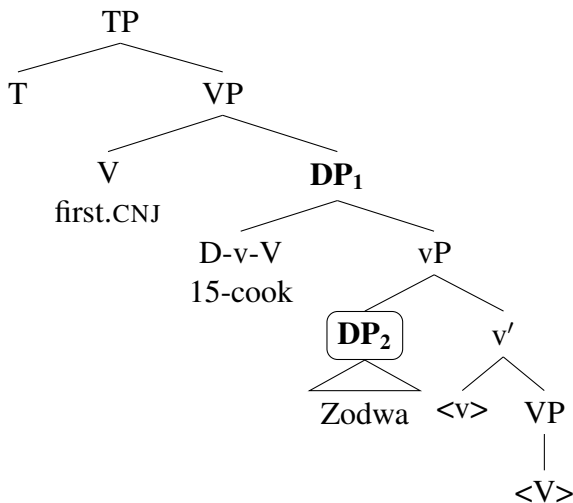


Conjoint form (∅) → some phrase inside VP

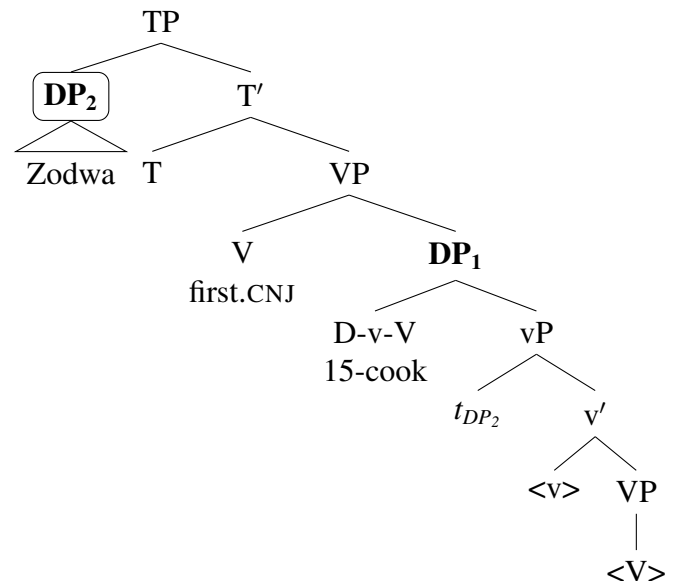
Disjoint form (**ya**) → no VP-internal phrase

- In the same construction, a DP may raise from inside the nominalization

(7) a. Ku-∅-qala [DP **uku-pheka uZodwa**]
 15s-CNJ-first 15-cook 1Zodwa
 ‘Zodwa first cooks’



b. **UZodwa**_i u-∅-qala [DP **uku-pheka t_i**]
 1Zodwa 1s-CNJ-first 15-cook
 ‘Zodwa first cooks’



- (7-b) is not a control structure: active–passive synonymy

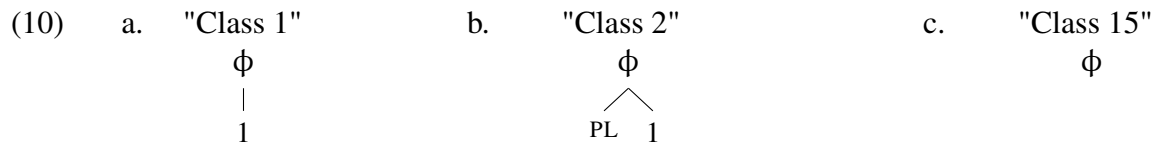
(8) UZodwa u-qala [**uku-pheka inyama**].
 1Zodwa 1s-first 15-cook 9meat
 ‘Zodwa first cooks meat.’

(9) **Inyama**_i i-qala [**uku-phekwa t_i**] nguZodwa.
 9meat 9s-first 15-cook. **PSV** by.Zodwa
 ‘The meat is cooked first by Zodwa’ ≈(8)

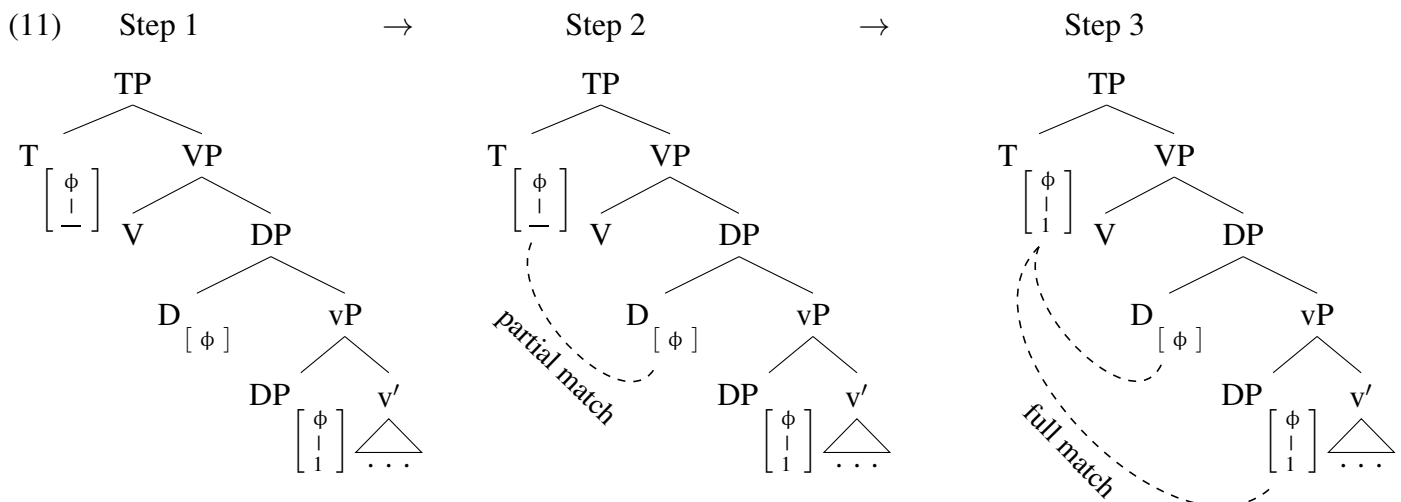
3 Analysis

Class 15 is featurally underspecified, compared to other classes

- ϕ -features represented as feature geometries (Harley & Ritter 2002; Béjar & Rezac 2009)
- Class combines gender and number: e.g. class 2 = class 1+PL (cf. Carstens 1991)
- **What we call "Class 15" is a ϕ -geometry with no dependents**

Raising out of nominalization: ϕ -probe finds two DPs

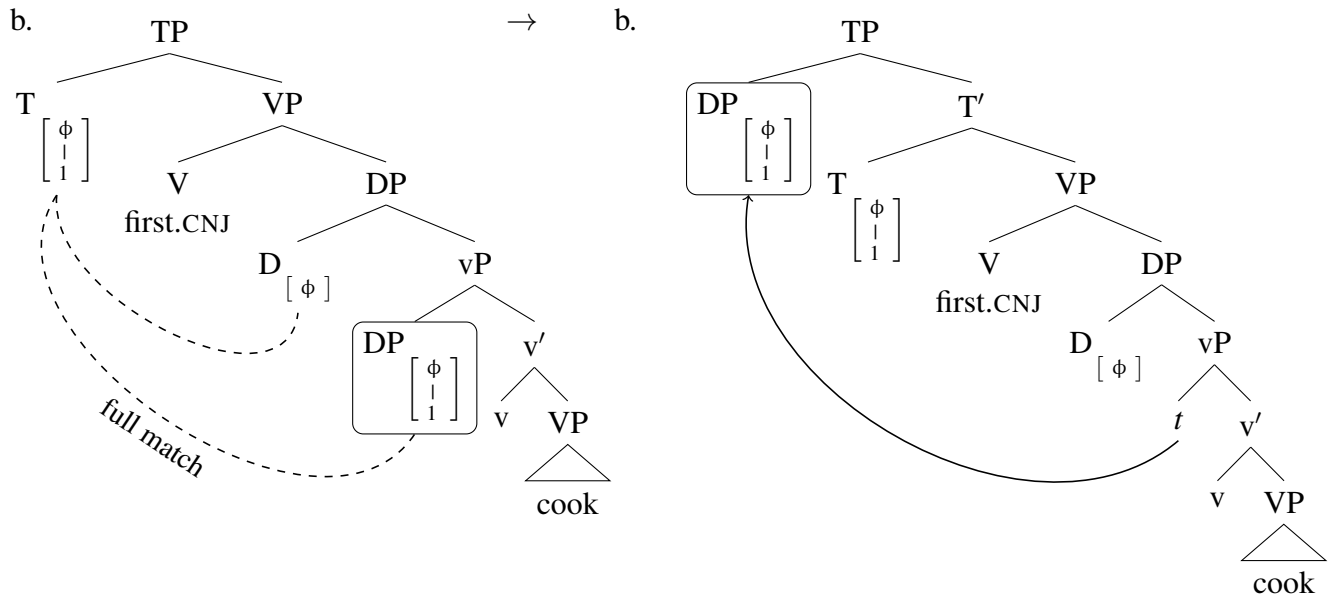
- ϕ -probes are themselves geometries and may be specified to search for a specific kind of ϕ -geometry (Béjar 2003; Rezac 2003; Nevins 2011; Preminger 2011)
- A probe may be satisfied using multiple DPs; partially matched probe remains active (Béjar 2003; Béjar & Rezac 2009; Deal 2015; Coon & Keine 2018)
- Ndebele ϕ -probes are fully matched (satisfied) by a ϕ -geometry with at least one dependent: ϕ



- Valuation implemented as feature-geometric union: a valued probe is the union of the probe's and the goal's geometries (Preminger 2017)
- Since class 15 is a proper subgeometry of class 1, the final result of valuation is identical to agreement with class 1 only.

- Raising to subject linked to ϕ -agreement: raised subject must control agreement; in-situ subject cannot — the ϕ -probe and EPP on T must be satisfied by the same DP (Baker 2003; Carstens 2005)
- EPP is satisfied by the DP that fully matches the probe (*Best Match*, Coon & Bale 2014; van Urk 2015) → **raising out of a nominalization**

- (12) a. UZodwa_i u- \emptyset -qala [_{DP} uku-pheka t_i]
 1Zodwa 15s-CNJ-first 15-cook
 ‘Zodwa first cooks’



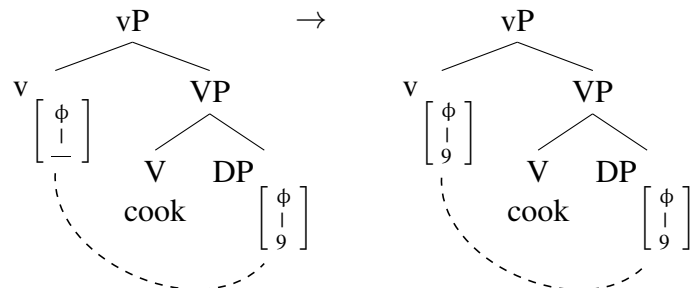
(See Halpert 2012, 2015 for a similar analysis of hyperraising in Zulu, a closely related language.)

4 Agreement across class 15

- As in many Bantu lgs, object agreement in Ndebele is optional (marks definiteness/discourse salience)
- Little v optionally has an object-agreement probe²

(13) Optionality of object agreement

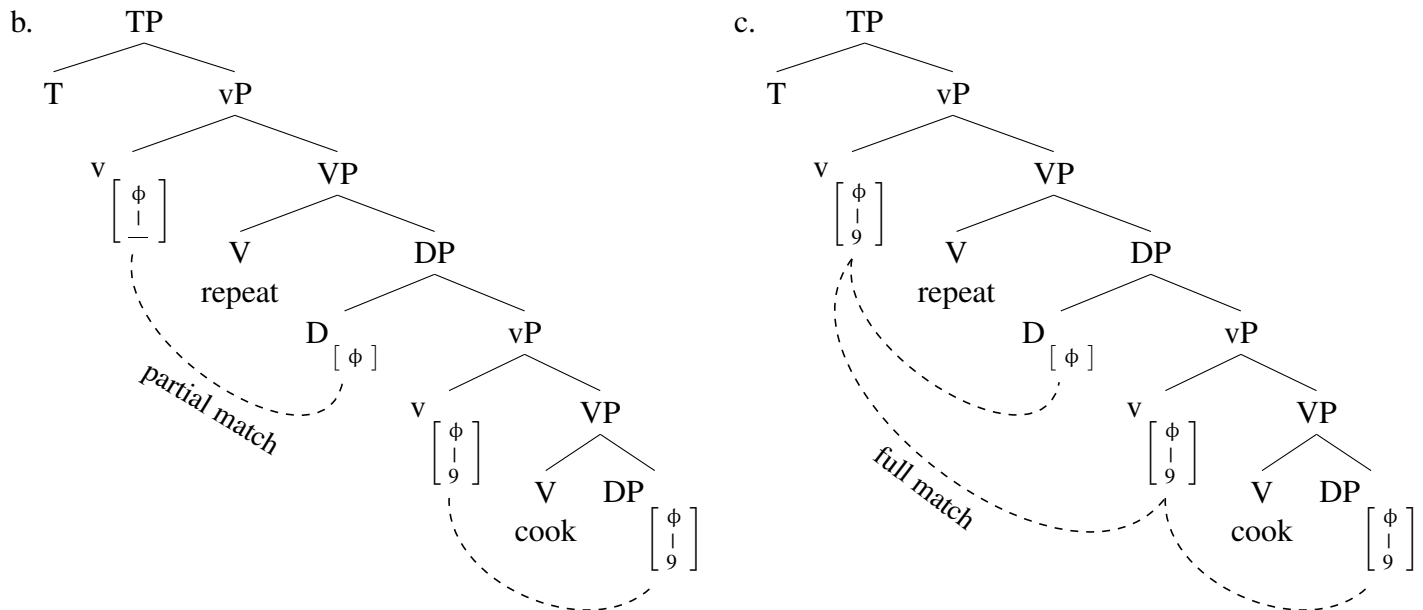
- a. UZodwa u-za-pheka i-nyama.
 Zodwa 1s-FUT-cook 9-meat
 ‘Zodwa will cook meat’
- b. UZodwa u-za-**yi**-pheka **i-nyama**.
 Zodwa 1s-FUT-9o-cooks 9-meat
 ‘Zodwa will cook the meat.’



² Additionally, agreed-with objects are dislocated or null (i.a. Bresnan & Mchombo 1987; Van der Spuy 1993; Baker 2003). This, however, will not be relevant here, and is not represented in the trees for simplicity.

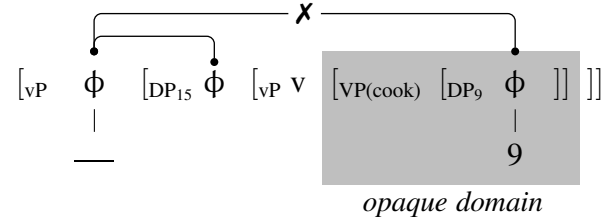
(14) Object agreement across a nominalization

- a. Ngi-za-**yi**-phinda [DP uku-**yi**-pheka **i-nyama**].
 1sg.s-FUT-9o-again 15-9o-cook 9-meat
 'I will cook the meat again'



- Long distance object agreement is contingent on embedded object agreement

- (15) *Ngi-za-**yi**-phinda [DP uku-pheka **i-nyama**].
 1sg.s-FUT-9o-repeat 15-cook 9-meat
 'I will cook the meat again'



- v in (15) has no ϕ -features
- Assuming phasal vP, the object itself is inaccessible to the matrix probe
- Stipulation: DP is not phasal in Ndebele – the nominalization itself does not block agreement.³

5 The predicted elsewhere distribution of class 15 agreement/raising

Class 15 agreement:

- is always the realization a **partially satisfied probe**⁴
 - is possible only when there is no other accessible DP (with a more specified geometry)
- Probe [DP-15 **DP** [phase/vP . . .]] → agreement with the nominalization-internal DP
 - Probe [DP-15 [phase/vP . . .]] → agreement with the entire nominalization

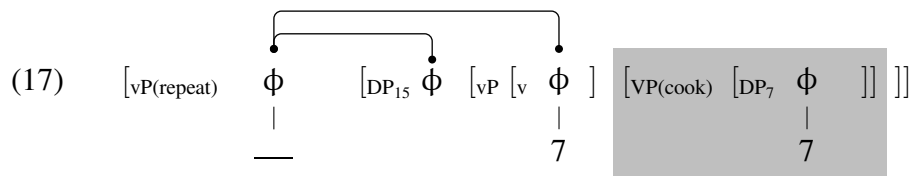
³ If necessary, this stipulation may be avoided by adopting Rackowski & Richards's (2005) view of the PIC as intervention that may be obviated by agreement with the phasal category (here, the class 15 DP). See Halpert 2012, 2015 for extending this theory to A-movement to derive hyperraising in Zulu.

⁴ By assumption, partially matched probes are tolerated by the grammar – they do not cause a derivational "crash" (Preminger 2011, 2014). They are found whenever a fully matching agreement controller is not accessible.

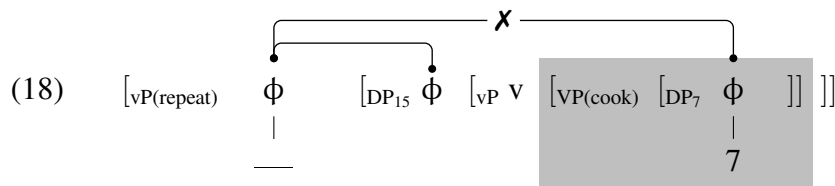
5.1 Embedded object agreement bleeds agreement with the nominalization

- (16) a. Ngi-**ku**-phindile [DP-15 **uku**-pheka isi-tshwala]
 1sg.s-15o-repeat 15-cook 7-porridge
 ‘I cooked porridge again’
- b. Ngi-**si**-phindile [DP-15 uku-**si**-pheka **isi**-tshwala]
 1sg.s-7o-repeat 15-7o-cook 7-porridge
 ‘I cooked porridge again’
- c. *Ngi-**ku**-phindile [DP-15 **uku**-**si**-pheka **isi**-tshwala]
 1sg.s-15o-repeat 15-7o-cook 7-porridge
 ‘I cooked porridge again’

- (16-c): the matrix probe inescapably finds the valued probe on embedded v, giving (16-b)



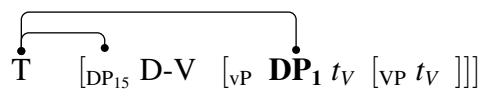
- (16-a): lack of embedded object agreement → the nominalization is the only accessible goal



Class 15 agreement can only surface if no other DP is available → elsewhere distribution

5.2 Raising of the entire nominalization is impossible when it contains a bare DP external argument

- (19) a. Ku- \emptyset -qala [DP uku-pheka **uZodwa**] no agreement/raising
 15s-CNJ-first 15-cook 1Zodwa
 ‘Zodwa_{Foc} first cooks’
- b. **UZodwa** u- \emptyset -qala [DP uku-pheka t_i]
 1Zodwa 1s-CNJ-first 15-cook
 ‘Zodwa first cooks’
- c. *_{[DP Uku-pheka **uZodwa**]_i} ku-/u-ya-qala t_i
 15-cook 1Zodwa 15s/1s-DSJ-first
 ‘Zodwa first cooks’



- The nominalization’s external argument is at the edge of embedded vP
- The edge is accessible to matrix T
- After finding class-15 DP, the probe inescapably finds the embedded subject

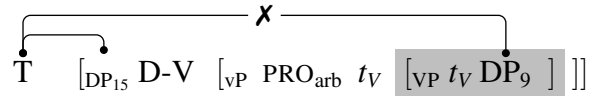
5.3 A nominalization can be raised when the external argument is absent or oblique

A control nominalization can undergo raising:

(20) a. Ku-∅-qala [DP uku-pheka inyama]
 15s-CNJ-first 15-cook 9meat
 ‘Cooking meat happens first’

no agreement/raising

b. *Inyama i-∅-qala [DP uku-pheka t_i]
 9meat 9s-CNJ-first 15-cook
 (‘Cooking meat happens first’)



c. [DP Uku-pheka inyama]_i ku-ya-qala t_i
 15-cook 9meat 15s-DSJ-first
 ‘Cooking meat happens first’

- The nominalization’s external argument is an arbitrary PRO (no ϕ -features)
- The embedded object is inside VP → inaccessible to matrix T
- The nominalization is the only goal → only the entire nominalization can undergo raising

Nominalized *weather*-predicates can undergo raising:

(21) a. Ku-∅-qala [DP uku-banda]
 15s-CNJ-first 15-be.cold
 ‘First, it is cold’

b. [DP Uku-banda]_i ku-ya-qala t_i
 15-be.cold 15s-DSJ-first
 ‘First, it is cold’

Nominalizations with oblique external arguments can undergo raising:

(22) a. Ku-a-zizwa [DP₁₅ uku-khala ko-sana]
 15s-PST-heard 15-cry OBL-1child
 ‘A child’s crying was heard’

b. *Ko-sana_i u-/ku-a-zizwa [DP₁₅ uku-khala t_i]
 OBL-1child 1s/15s-PST-heard 15-cry
 (‘A child’s crying was heard/A child was heard crying’)

c. [DP₁₅ Uku-khala ko-sana]_i ku-a-zizwa t_i .
 15-cry OBL-1child 15s-PST-heard
 ‘A child’s crying was heard’

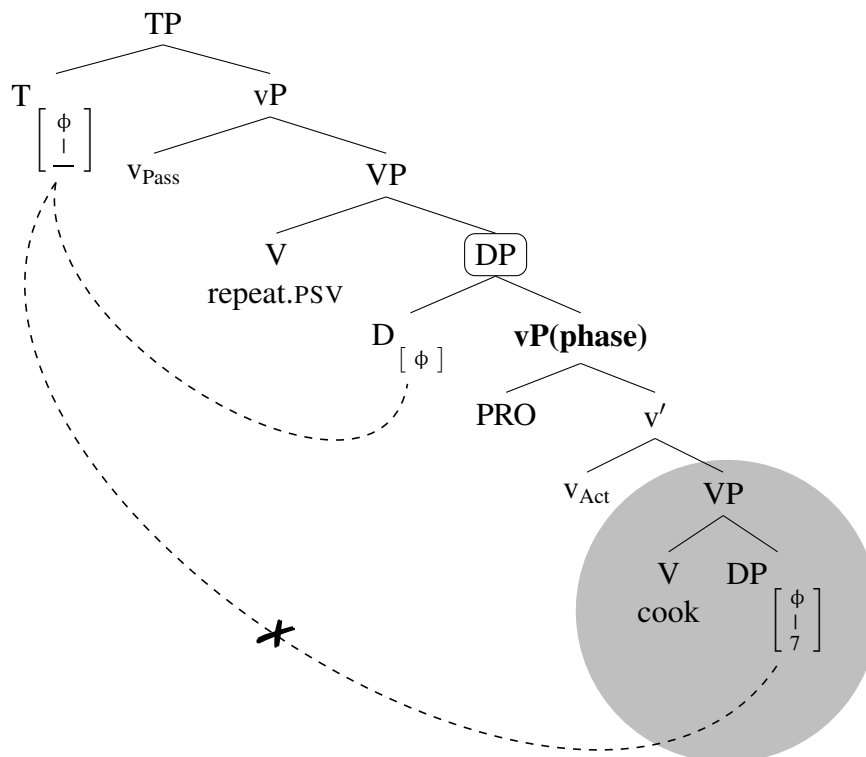
- Oblique DPs are not possible targets for agreement/raising (22-b)
- This allows for raising of the entire nominalization (22-c)

5.4 A passivized nominalization cannot undergo raising

(23) Matrix passive: the nominalization becomes the subject

- a. Abafana ba-za-phinda [DP uku-pheka isi-tshwala.]
 2boys 2s-FUT-repeat 15-cook 7-porridge
 ‘The boys will cook porridge again’
- b. [DP Uku-pheka isi-tshwala]_i ku-za-phindwa t_i (ngabafana).
 15-cook 7-porridge 15s-FUT-repeat. **PSV** by.boys
 ‘The boys will cook porridge again’
 (lit. ‘Cooking porridge will be repeated by the boys’)
- c. *Isi-tshwala_i si-za-phindwa [DP uku-pheka t_i] (ngabafana).
 7-porridge 7s-FUT-repeat. **PSV** 15-cook by.boys
 (‘Porridge will be cooked by the boys again’)

(24) Structure of (23-b): the nominalization is the only accessible goal → it can undergo raising



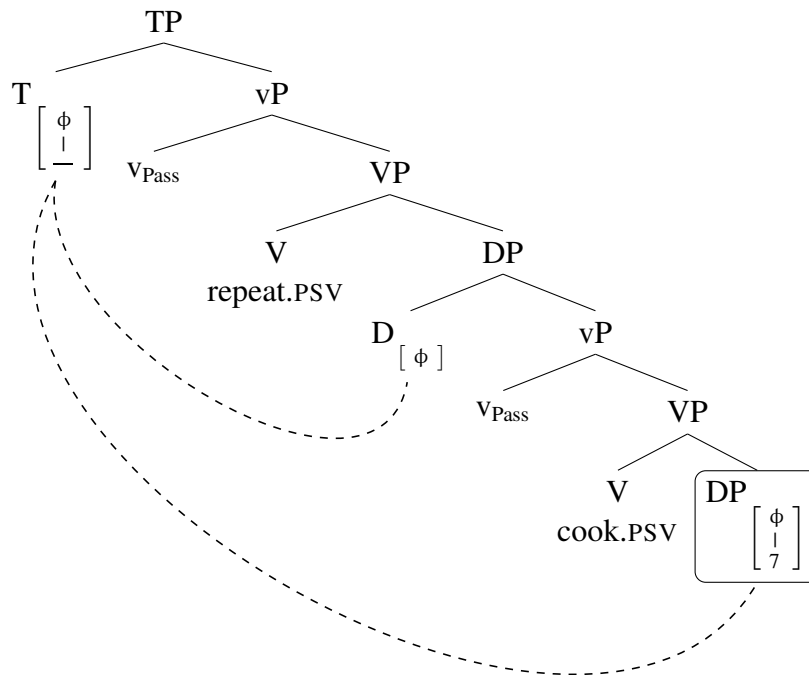
(25) Matrix + embedded passive: embedded object becomes matrix subject

- Isi-tshwala_i si-za-phindwa [DP uku-phekwa t_i] (ngabafana). (cf. (23-c))
 7-porridge 7s-FUT-repeat. **PSV** 15-cook. **PSV** by.boys

‘The porridge will be cooked by the boys again.’ (lit. The porridge will be repeated to be cooked.)

- Unlike active vP, passive vP is permeable for raising – by assumption, **not phasal**

(26) A nominalization of a *passive* vP → internal argument accessible (25)



- The accessibility of the embedded object bleeds raising of the entire nominalization ...

(27) *_{[DP Uku-phekwa isi-tshwala]_i} ku-za-phindwa _{t_i} (ngabafana).
 15-cook.PSV 7-porridge 15s-FUT-repeat.PSV by.boys
 ('Cooking porridge will be done by the boys again')

- ... deriving the contrast between active and passive nominalizations with respect to raising:

(28) [_{DP Uku-pheka isi-tshwala]_i} ku-za-phindwa _{t_i} (ngabafana). (repeated from (23-b))
 15-cook 7-porridge 15s-FUT-repeat.PSV by.boys
 'The boys will cook porridge again'
 (lit. 'Cooking porridge will be repeated by the boys')

6 Conclusion and implications for ϕ -feature geometry in Bantu languages

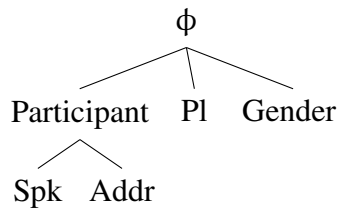
Summary

- Class 15 is geometrically underspecified
- A probe may be satisfied partially, and using multiple DPs
 - Apparent A-over-A violations
 - Bleeding of agreement with nominalization by nominalization-internal agreement
 - Constraints on raising of a nominalization based on material contained in it
 - Asymmetry between active and passive nominalizations with respect to raising

Implications

- Typological research has reveal a structured organization of ϕ -features (Harley & Ritter, 2002)

(29) ϕ -geometry (Harley & Ritter 2002, simplified)



- A more complex geometry available in a language implies the availability of its less specified versions

(30) $a \rightarrow a, a, a$
 $\begin{array}{c} a \\ \swarrow \quad \searrow \\ b \quad c \end{array} \quad \begin{array}{c} a \\ | \\ b \end{array} \quad \begin{array}{c} a \\ | \\ c \end{array}$

- Contrastive underspecification is used in defining pronominal paradigms, e.g.

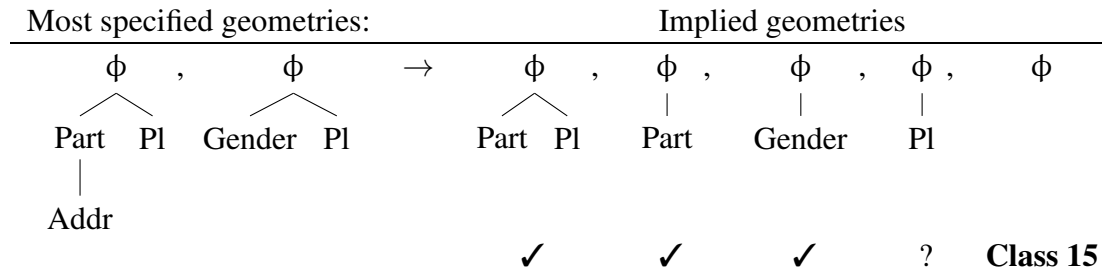
(31) $\frac{1\text{Pl} \rightarrow 1\text{Sg} \quad 3\text{Pl} \quad 3\text{Sg}}{\phi \quad \phi \quad \phi \quad \phi}$
 $\begin{array}{c} \phi \\ \swarrow \quad \searrow \\ \text{Part} \quad \text{Pl} \end{array} \quad \begin{array}{c} \phi \\ | \\ \text{Part} \end{array} \quad \begin{array}{c} \phi \\ | \\ \text{Pl} \end{array}$

- Bantu DPs are traditionally described as **always having either person or class features:**

(32)

	SG	PL
1st	ϕ Part	ϕ └─┬─ Part Pl
2nd	ϕ Part Addr	ϕ └─┬─ Part Pl Addr
3rd	Class 1: ϕ 1	Class 2: ϕ └─┬─ Pl 1
	Class 3: ϕ 3 ...	Class 4: ϕ └─┬─ Pl 3 ...

(33) Implied geometries in Bantu



- Class 15 is the counterpart of the 3sg (neuter/inanimate) geometry – they are the most underspecified geometries in their respective systems.
- Crosslinguistically, the underspecification of 3sg(Neut) is manifested by the appearance of 3sg(Neut) agreement when no agreement controller is available (Preminger 2014). For example:

(34) haya kar (Hebrew)
 was.3sg(M) cold
 ‘It was cold.’

⇒ 3sg.N is as unspecified as the probe itself. No valuation → 3sg.N agreement exponent

- In Ndebele, the lack of a controller gives rise to the appearance of class 15 agreement:

(35) Ku-ya-banda.
 15s-DSJ-cold
 ‘It’s cold’

Remaining question:

Is there evidence, in Ndebele or related languages, for the existence ϕ (the plural of class 15)?

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