

Bantu DP Structure: An extension of the *n* analysis of gender

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Theoretical and Experimental Approaches to Gender
Berlin, Germany

June 14, 2018

What: An exploratory project that extends the n analysis of gender (Kramer 2014, 2015) to the Bantu language family.

Why:

- Bantu languages have on average 12-20 noun classes determined by gender and number, making its gender system **more complex** than the 2- and 3- gender systems to which the analysis has previously been applied.
- Bantu nominal morphology is agglutinative and relatively transparent, allowing us to **test predictions** made by the model.

Goal

To show that analyzing gender as located on n in Bantu languages gives **new insight into Bantu DP structure** and provides further evidence for gender on n as a crosslinguistically plausible and uniform analysis.

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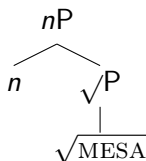
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The n analysis of gender

- Kramer (2014, 2015) proposes that the gender feature is on n , and is thereby assigned to a root when it merges with the nominalizer.
 - ▶ Standard assumption of Distributed Morphology: roots are category-less.

mesa 'table, fem.'

(1)



The n analysis of gender

- There can be **many “flavors” of n**
- The exact number of n and the nature of the features of each n is determined by the details of how nouns are assigned to gender categories in the language.
- For Spanish (2-gender system: masc & fem):

	n	i +FEM	female natural	la chica ‘girl’
(2)	n	i -FEM	male natural	el chico ‘boy’
	n	u +FEM	feminine arbitrary	la mesa ‘table’
	n		no natural gender	el libro ‘book’

The n analysis of gender

- How do we ensure there are no illicit stem-gender combinations?
- Vocabulary Insertion (VI) rules serve as licensing rules:

$$(3) \quad \sqrt{\text{MESA}} \rightarrow \text{mesa}_{fem} / n_{u+\text{FEM}}$$

- Crucially, the lack of a rule like

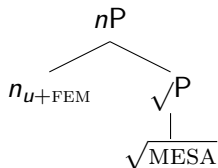
$$(4) \quad *\sqrt{\text{MESA}} \rightarrow \text{mesa}_{masc} / n$$

accounts for the absence of a Spanish noun mesa_{masc} that would determine masculine agreement on modifiers.

The n analysis of gender

mesa 'table, fem.'

(5)



- Bantu languages have on **average 12-20 noun classes**.
- The **singular form** of a noun belongs to a different noun class than the **plural form** of that noun does.
- Noun classes determine concord morphology on nominal modifiers and agreement on verbs.

(6) Swahili

- a. **m-toto hu-yu a-na-soma**
1-child DEM-1 1SM-PRES-read
'this child is reading'
- b. **wa-toto ha-wa wa-na-soma**
2-child DEM-2 2SM-PRES-read
'these children are reading'

Bantu

(7)

Noun class	Example	Gloss
1	<i>m-tu</i>	person
2	<i>wa-tu</i>	people
3	<i>m-ti</i>	tree
4	<i>mi-ti</i>	trees
5	<i>gari</i>	car
6	<i>ma-gari</i>	cars
7	<i>ki-atu</i>	shoe
8	<i>vi-atu</i>	shoes
9	<i>n-yumba</i>	house
10	<i>n-yumba</i>	houses
11	<i>u-bao</i>	board
14	<i>u-kweli</i>	truth
15	<i>ku-soma</i>	to read; reading
16	Noun + locative suffix	specific place
17	Noun + locative suffix	general place
18	Noun + locative suffix	inside place

- We adopt Carstens' (1993) system of labeling **genders** (rather than the “class” labeling) in order to **better capture the relationship between singular and plural noun classes**. For Swahili:

(8)	A	stems of classes 1/2
	B	stems of classes 3/4
	C	stems of classes 5/6
	D	stems of classes 7/8
	E	stems of classes 9/10

- We label possible n in Bantu languages according to Carstens' gender groupings.

(9)	n_A	stems of classes 1/2
	n_B	stems of classes 3/4
	n_C	stems of classes 5/6
	n_D	stems of classes 7/8
	n_E	stems of classes 9/10

- Attempts have been made to provide **semantic underpinnings** for Bantu gender categories (Richardson 1967, Denny & Creider 1976, Contini-Morava 1997) but these are not the focus of our analysis; we therefore abstract away from semantic properties.

- Licensing conditions are in the form of DM-style VI rules. For Swahili:

$$(10) \quad \begin{array}{l} \text{a. } \sqrt{\text{PERSON}} \rightarrow \text{-tu} / n_A \\ \text{b. } \sqrt{\text{TREE}} \rightarrow \text{-ti} / n_B \end{array}$$

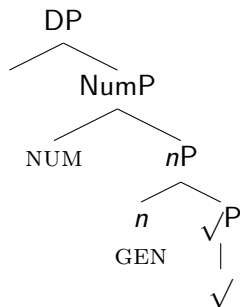
- While stem-gender combinations in (for example) Spanish are limited for inanimate nouns, the combinations are more productive in Bantu.
- Bantu allows many stems to combine with more than one gender, resulting in different meanings:

- (11) a. embe 'mango, Class 5'
ma-embe 'mangos, Class 6'
- b. **mw**-embe 'mango tree, Class 3'
mi-embe 'mango trees, Class 4'
- (12) a. chungwa 'orange, Class 5'
ma-chungwa 'oranges, Class 6'
- b. **m**-chungwa 'orange tree, Class 3'
mi-chungwa 'orange trees, Class 4'

- This suggests some roots are licensed in the presence of more than one flavor of *n*.

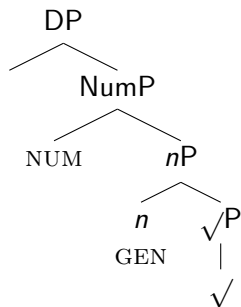
- We assume the nominal structure in (13) and follow much of the literature in assuming that Number is universally projected above *n*.

(13)



- We assume the nominal structure in (14) and follow much of the literature in assuming that Number is universally projected above n .

(14)

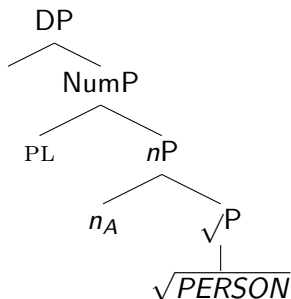


- Noun class prefixes are the spell-out of the fusion of NUM and GEN. To illustrate for Swahili:

- (15)
- $n_A + \text{SG} \rightarrow \text{m- (Class 1)}$
 - $n_A + \text{PL} \rightarrow \text{wa- (Class 2)}$

wa-tu 'people, Class 2'

(16)



(17) $\sqrt{\text{PERSON}} \rightarrow \text{-tu} / n_A$

(18) $n_A + \text{PL} \rightarrow \text{wa- (Class 2)}$

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- In the DM literature, n can also merge with a **phrase not headed by a root** (a *phrase-derived* nominal) (Marantz 2001, Alexiadou 2001 et seq., Arad 2003, Borer 2005, and many others).

“If n has a gender feature when it combines with roots, there is no *a priori* reason that it could not **carry a gender feature when it combines with phrases**” (Kramer 2015: 186).

- **Expectation:** derived nominals might also carry gender features.
- In Bantu languages, where **gender** → **noun class**, this should be easy to investigate.
- We will check out:
 - ① nominalizations (particularly infinitives)
 - ② diminutives and augmentatives
 - ③ locatives

- A consequence of Kramer (2015): all nominalizations of a particular category are expected to have the same gender, because they are derived using the same flavor of n .
- Example: Romanian action/state nominals (also known as infinitives) are formed from a root and are always feminine (Iordăchioaia and Soare 2008, Alexiadou et al. 2010).

(19) o bună *spăla-re* a rufelor e **recomandată**
a.FS good.FS wash-INF of clothes is recommended-FS
pentru țesatură
for fabric
'A good clothes-washing is recommended for fabric.' (Soare 2014, as cited in Kramer 2015)

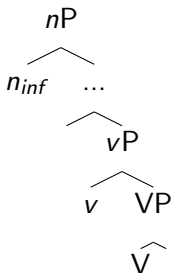
- Can we find evidence of this in Bantu languages?
- Looking for: evidence of a single gender (corresponding noun class) that derives nominals in a consistent category.

- Turns out infinitives get their own noun class marker, as illustrated for Luganda:

- (20)
- a. n-a-lab-a
1SM-PST-see-FV
'I saw.'
 - b. o-**ku**-(mu-)lab-a
AUG-15-(1OM)see-FV
'to see (him/her)'

- We therefore posit that the structure of infinitives in Bantu languages is as in (21), where n_{inf} is added to an initially verbal projection.

(21)



Infinitives

- Bonus: In languages where Class 15 is not used, there is still a single dedicated noun class marker used for infinitives (in the known cases, it is Class 5, as in Kinande (Patricia Schneider-Zioga, p.c.)).
- Even though Kinande has shifted away from Class 15 as deriving infinitives, it is still a consistent gender that derives this class of nominals.

- Two expectations have been met:

- ① *Derived nominals might carry gender features.*

In Bantu languages, gender features determine noun class, and we see that derived nominals like infinitives have noun class prefixes. (More of this soon.)

- ② *All nominalizations of a particular category are expected to have the same gender.*

Infinitives in Bantu languages are typically formed using the Class 15 noun class prefix.

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Denominal nouns

- In addition to deverbal nouns, another type of phrase-derived noun is **denominal nouns**, formed via *n* merging with an *nP*.
- This stacking of multiple *ns* can be seen crosslinguistically, for instance in English nouns like *father-hood* and *owner-ship*.
- It has also been proposed as an analysis for diminutives in languages such as German and Russian (Wiltschko & Steriopoło 2007).

Diminutives & augmentatives

- We see transparent stacking of nominal morphology in some Bantu languages in the formation of diminutives and augmentatives.

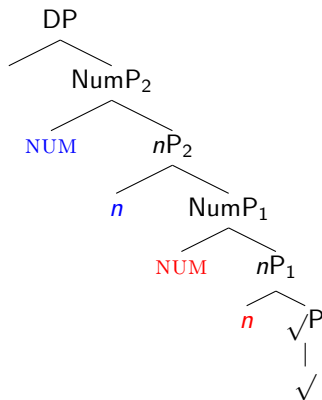
- (22)
- a. mu-kómáná
1-boy
'boy'
 - b. **ru**-mu-kómáná
11-1-boy
'thin, scraggly boy'
 - c. **zi**-mu-kómáná
21-1-boy
'big boy' (Shona; Déchaine et al. 2014:35)

- (23) **vá-má-zi-mi**-súma
2-6-21-4-suma.tree
'Mister Big Suma Trees' (own elicitation)

Diminutives & augmentatives

- Proposed structure:

(24)



(25)

ru-mu-kómáná
11-1-boy
'thin, scraggly boy'

Diminutives & augmentatives

- According to this analysis, a diminutive may have more than one *n* on the complete nominal spine.
- Following Kramer, we say “the highest genders wins”, i.e. agreement with DP-external elements (the verb) can only be determined by the highest gender feature.

Prediction

Only the noun class corresponding to the outer-most class prefix should be able to determine agreement on the verb.

- (26) **chì**-**mù**-kómáná
 7-1-boy
 ‘(The) slim boy.’

Diminutives & augmentatives

- Evidence:

(27) *Shona, Déchaine et al. 2014 adapted*

- a. *chì-mù-kómáná à-nò-fámbá
7-1-boy 1SM-HAB-walk
Intended: '(The) slim boy walks.'
- b. chì-mù-kómáná chì-nò-fámbá
7-1-boy 7SM-HAB-walk
'(The) slim boy walks.'

Prediction - confirmed

Only the noun class corresponding to the outer-most class prefix should be able to determine agreement on the verb.

Diminutives & augmentatives

- Multiple instances of NUM?
- Yes! More data/evidence available.

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- Locatives are part of the noun class system (often but not always with noun class prefixes in Class 16, 17, and 18).

- (28)
- a. **pa**-n-gánda
16-9-house
'at the house'
 - b. **kú**-n-gánda
17-9-house
'to the house'
 - c. **mu**-n-gánda
18-9-house
'in the house' [Bemba, Marten 2012: 433]

- In the majority of Bantu languages, locatives function as DPs, not PPs. This can be seen in their ability to trigger subject and object marking (see Marten 2010 for full discussion).

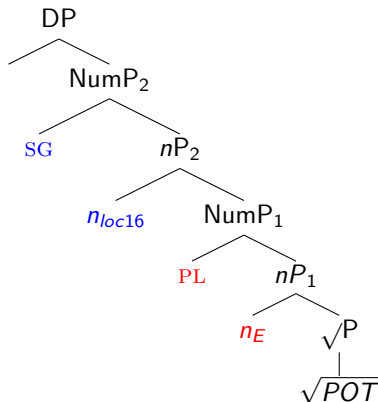
- (29)
- a. **Mu**-nyumba **mu**-na-yera.
18-9.house 18SM-PST-white
'Inside the house is clean.' (Ron Simango, p.c.)
- b. Ndí-ma-**ku**-kóndá **ku** San José.
1SG.SM-PRES.HAB-17OM-love 17 San Jose
'I like (it) (in) San José.' (Bresnan 1991:58)

- We've seen this before: a well-formed noun with additional noun class prefix that contributes new meaning...
 - ▶ Apply same strategy of analyzing this as a denominal noun; this time, *n* carries a locative gender feature.

Locatives

- Structure:

(30)



(31) Nhunzi dzi-ri pa-ma-poto
10-fly 10-be 16-6-pots

'The flies are on the pots.' [Shona, Caha & Pantcheva 2015]

- There is variation in this structure across Bantu languages, in that n_{loc} may take bigger or smaller projection than NumP (in the bonus slides).

- This is a proposal for the Bantu language family, but this also includes languages in which locatives **do not have locative class prefixes**.
- We would like to say these languages still have the same structure with n_{loc} and gender features.

- Evidence:

(32) nyumba-ni **pa-/ku-/m-na** watu wengi
9.house-LOC 16SM/17SM/18SM-be 2.people 2.many
'In/at the house are many people.'

(Swahili; Carstens 1997: 402)

(33) a. nyumba-ni **p-angu pa-zuri**
9.house-LOC 16-my 16-good
'in/at my good house'

b. nyumba-ni **kw-angu ku-zuri**
9.house-LOC 17-my 17-good
'in/at my good house'

c. nyumba-ni **mw-angu m-zuri**
9.house-LOC 18-my 18-good
'in/at my good house' (Swahili; Carstens 1997: 402)

- In some other languages, overt spell-out of the locative noun class is **optional**. Again we see agreement patterns that indicate that n_{LOC} is present in the structure.
- This achieves cross-Bantu consistency in structure, we can adjust language-specific VI rules accordingly.
- What is *-ni*? A flavor of n that derives a locative noun with no further locative specification (more detail in the appendix slides).

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Conclusion

- Extended *n* analysis of gender from 2- and 3-gender systems to **much more complex gender system**.
- Morphology allowed us to **test predictions** made by putting gender on *n*.
- Provided **unified account of nominals** in Bantu languages and gained insight into syntactic structure of derived nominals.
- Offer this exploration as **further evidence** in favor of *n* analysis of gender as crosslinguistically plausible and uniform.

Thank you!

Acknowledgements: We would like to thank Lisa Cheng, Ruth Kramer, Netsai Mhlanga, Peter Msaka, Maria Polinsky, Omer Preminger, Jochen Zeller, and the audiences at CALL 2017, LSA 2018, and Stanford Syntax & Morphology Circle for helpful comments. All errors are our own.

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Nominalizations

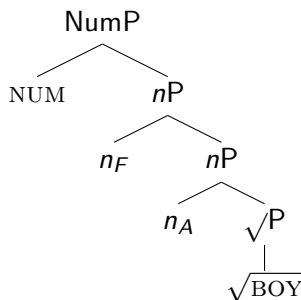
	class 1	class 3	class 5	class 7	class 8	class 9	class 11	class 14
<i>lamba</i> 'be hungry'	<i>umlambi</i> 'hungry person'	<i>umlambo</i> 'state of becoming hungry'	<i>ilamba</i> 'chronically hungry person'	<i>isilambi</i> 'severely hungry/poor person'	<i>izilambi</i> 'severely hungry/poor people'		<i>ulambo</i> 'hunger'	<i>ubulambo</i> 'quality of hunger'
<i>godola</i> 'shiver'	<i>umgodoli</i> 'shivering person'			<i>isigodoli</i> 'extremely shivering person'	<i>izigodoli</i> 'extremely shivering people'	<i>ingodoli</i> 'expert shiverer'		
<i>khuthala</i> 'be diligent'	<i>umkhuthali</i> 'diligent person'			<i>isikhuthali</i> 'extremely diligent person'	<i>izikhuthali</i> 'extremely diligent people'	<i>inkuthalo</i> 'act of being diligent'		
<i>tyeba</i> 'be fat'			<i>ityeba</i> 'rich person'	<i>isityebi</i> 'extremely rich person'	<i>izityebi</i> 'extremely rich people'			
<i>bhitya</i> 'be thin'			<i>ibhityo</i> 'thin person'					
<i>luphala</i> 'be old'	<i>umluphali</i> 'old person'		<i>iluphala</i> 'old person'	<i>isiluphali</i> 'old person'	<i>iziluphali</i> 'old people'			
<i>bola</i> 'rot'	<i>umboli</i> 'rotten person'			<i>isiboli</i> 'extremely rotten person'	<i>iziboli</i> 'extremely rotten people'		<i>ubolo</i> 'state of rot'	<i>ububolo</i> 'quality of rot'
<i>phakama</i> 'rise'	<i>umphakami</i> 'conceited person'			<i>isiphakami</i> 'extremely conceited person'	<i>iziphakami</i> 'extremely conceited people'	<i>impakamo</i> 'act of being conceited'	<i>uphakamo</i> 'state of being conceited'	
<i>thula</i> 'quiet'	<i>umthuli</i> 'quiet person'			<i>isithuli</i> 'extremely quiet person'	<i>izithuli</i> 'extremely quiet people'	<i>intulo</i> 'act of being quiet'	<i>uthulo</i> 'state of being quiet'	

(Mletshe 2017)

Diminutives & augmentatives: multiple NUM

- The denominal structure is also redundant in that it has multiple Number projections. Is this desirable? We can test for each NumP individually.
- If NumP₁ were not present as in (34), then the lower *n* would never be adjacent to a number feature.
→ **Prediction:** the inner class prefix in a diminutive/augmentative could never be plural (recall our VI rules for noun class prefixes).

(34) *



- This is counter the evidence in (35):

(35) *Shona, Dechaine et al. 2014*

- a. ka-**mu**-kómáná
12-1-boy
'tiny boy'
- b. tu-**va**-kómáná
13-2-boy
'tiny boys'

- The variation in (35) between Class 12 and Class 13 for the outer prefix also suggests that NumP₂ is present.

Locatives: complement size

- Crucially, not all languages allow the complement of n_{loc} to be DP, in contrast to proposals of “double DP structure” for locatives (pace Bresnan & Mchombo 1995; Carstens 1997, 2008).
- Some languages has a special nominal prefix known as the augment, that is often analyzed as located in D (De Dreu 2008, Visser 2008).

(36) *Kwanyama, Halme 2004: 162*

- a. **o**-mu-ti
AUG-3-tree
'a/the tree'
- b. m-**o**-mu-ti
18-AUG-3-tree
'in the tree'

- Languages like Lugwere do not allow augment to intervene between inner noun class prefix and locative prefix, suggesting complement of n_{loc} cannot be as big as DP.

(37) *Lugwere*

a. a-ka-tale

AUG-12-market

'market'

b. ó-mú-(*a-)ka-tále

AUG-18-(*AUG-)12-market

'on the market'

Lovatives: *-ni*

- In some languages, although there is no overt noun class prefixes, it appears locatives are derived by the suffix *-(i)ni*, especially in Bantu zones E and (south) G (Gregoire 1975).

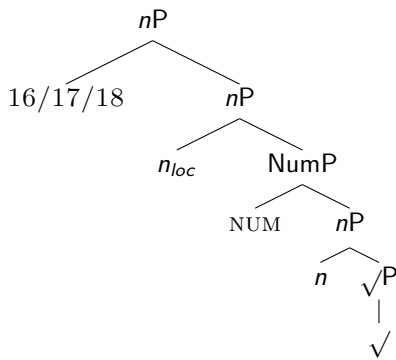
(38) *Gikuyu, Mugane 1997: 33*

- a. mu-twe-**ini**
3-head-loc
'by/on the head'
- b. ma-nyumba-**ini**
6-9.house-loc
'by/on/in the houses (collective)'

- In brief: some languages have locative nouns that show (a) no noun class prefix, but do have Class 16/17/18 features as evidenced by subject/object marking, and (b) a common locative suffix.

- We apply a **stacked-*n* analysis** (following Kramer's (2015) very similar derivation of Ger. nominalizations like *Lerherin* 'fem. teacher'):
 - ▶ We argue that Bantu locatives have a similar stacked-*n* structure.
 - ▶ The lower *n* derives a **locative noun with no further specification**.
 - ▶ The higher *n* provides the **interpretable gender features** of locative 'on, near' (class 16), 'at, to' (class 17), or 'in' (class 18).

(39)



Lovatives: *-ni*

- Languages in which locative nouns take the suffix *-(i)ni* may have a class of inherently/semantically locative nouns that do not need the *-(i)ni* marker but show locative behavior otherwise.

(40) *Kivunjo-Chaga, Moshi 1995: 131*

- a. **Mesa-nyi** ha-wozre shitapu na ma-karitasi.
9.table-LOC 16SM-have 8.books and 6-papers
'On the table, there are books and papers.'
- b. **Sangazra** ha/ku-wozre soko na malruwu.
9.market 16SM/17SM-have 9.beans and 6.bananas
lit. 'At the market has beans and bananas.'

- The existence of such (semantically as well as functionally) locative nouns without *-(i)ni* suggests that the function of the suffix is merely to derive an underspecified locative noun.
- Further, there are languages in which locatives have both the noun class prefix and the suffix.