Linguistic variation and adaptation in nominal morphosyntax
Some insights from previous and ongoing research

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24.01.2020
Research interests (broad)

- Linguistic diversity, its distribution in space and time, and its non-linguistic correlates.
Research interests (narrow)

- **Diachronic typology** – using synchronic distributions of language structures to draw inferences about language change.
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- **Sociolinguistic typology** – understanding adaptive responses of language structures to the non-linguistic environment.
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- **Nominal morphosyntax**
  - Grammatical gender
  - Number
  - Evaluative morphology (diminutive and augmentative marking)
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  - Grammatical gender
  - Number
  - Evaluative morphology (diminutive and augmentative marking)
- **Africa**, with focus on Bantu and Cushitic
Research interests (narrow)

- **Dynamic typology** – using synchronic distributions of language structures to formulate inferences about patterns of language change.
- **Sociolinguistic typology** – understanding adaptive responses of language structures to the linguistic and non-linguistic environment.
- **Nominal morphosyntax**
  - Grammatical gender
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  - Evaluative morphology (diminutive and augmentative marking)
- **Africa**, with focus on **Bantu** and **Cushitic**
Three common remarks about grammatical gender systems:

1. They are highly grammaticalized and presuppose inflectional morphology (Corbett 1991; Dahl 2004).

2. They are very stable at the language-family level (Nichols 1992, 2003).

3. They are difficult to master in nonnative acquisition (McWhorter 2007) and break down under the pressure of language contact (Dahl 2019; Trudgill 1999).
Grammatical gender and sociolinguistic typology

Where we are at

Recent attempts to investigate the relationship between gender systems and sociohistorical/environmental factors from a quantitative point of view have only produced negative evidence (Lupyan & Dale 2010; Sinnemäki & Di Garbo 2018; Dahl 2019).
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Why so?

The WALS variables for gender may not be relevant to sociolinguistic typological questions.

Number of genders, Sex-based vs. Non-sex-based gender, Systems of gender assignment

None of these features is directly connected with morphosyntax, which has been shown to change under the influence of sociohistorical factors (Lupyan & Dale 2010; Bentz et al. 2015).

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Suggestion: to study the distribution of patterns of gender marking within genealogically related languages with different sociolinguistic profiles.
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Correlates of restructuring in Bantu gender systems

Ongoing project with Annemarie Verkerk, University of Saarland

Bantu languages are usually described as a conservative block of highly complex gender systems. (1) Gender marking in Chichewa (Kiso 2012: 18)

- `chi-nkhanira`<br>  - `cl7-scorpion`<br>  - `cha-`<br>  - `chi-kazi`<br>  - `ass-cl7-`<br>  - `female`<br>  - `chi-ku-dzi-kanda`<br>  - `cl7.sbj-pres-refl-scratch`<br>  

'The female scorpion is scratching itself'.

Highly reduced systems are attested, but usually described as exceptional. (2) Gender marking in Kinshasa Lingala (Meeuwis 2013: 30)

- `Mw-ana`<br>  - `cl1-child`<br>  - `a-ko-kweya`<br>  - `3sg.anim-fut-fall`<br>  

'The child will fall.'

- `Ndako`<br>  - `cl9.-book`<br>  - `e-ko-kweya`<br>  - `3sg.inan-fut-fall`<br>  

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We want to find out how common these reduced systems are, what characterizes them structurally, and what explains their distribution.
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- We want to find out how common these reduced systems are, what characterizes them structurally, and what explains their distribution.
Hypothesis

▶ Experimental (Vihman et al. 2018) and historical-comparative studies (Igartua & Santazilia 2018; Seifart 2018) show that animacy distinctions in noun class systems may emerge in response to a learning bias, and increase the learnability of such systems.

▶ We test the hypothesis that animacy-based restructuring in Bantu gender systems is an adaptive response to non-linguistic factors related to population history and contact, which pressure them into increased semantic transparency and learnability.
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We test the hypothesis that animacy-based restructuring in Bantu gender systems is an adaptive response to non-linguistic factors related to population history and contact, which pressure them into increased semantic transparency and learnability.

In order to test this hypothesis, we run

1. a study of the processes of language change through which animacy-based restructuring rises and spreads in a subset of Bantu languages (Di Garbo & Verkerk under review).

2. in-depth sociolinguistic and ethnographic analyses which we use as a baseline for statistical variable design (Verkerk & Di Garbo in preparation).
The sample

- 255 languages from zones ABCDH (marked in orange), what we call *Northwestern Bantu* (NWB).
- Data coverage for 174 of them (mostly from descriptive grammars).
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- Data coverage for 174 of them (mostly from descriptive grammars).
- NWB forms a **coherent genealogical unit** (Grollemund et al. 2015).
- We have reasons to suspect that this area might be a **hotbed for reduced/eroded systems** (Maho 1999).
A bottom-up typology of NWB gender systems

From Di Garbo & Verkerk (under review)
Animacy-based restructuring: where and why

- In-depth analyses of **sociolinguistic and ethnographic** sources suggest that radically animacy-based gender marking and/or the erosion of gender marking may be connected with:
  - creolization of trade-languages (Fehderau 1966; Samarin 1991; Bokamba 2009; Meeuwis 2013). This applies e.g. to Kituba and Kinshasa Lingala.
  - early contact with Pygmy populations who later shifted to Bantu, Ubangi and/or Central Sudanic languages (Klieman 2003; G¨ uldemann 2018; Bostoen & Gunnink in preparation). This applies e.g. to the Ababuan languages.
  - more recent contact with languages without (Bantu-like) gender systems as in Ubangi and/or Central Sudanic languages (Bouquiaux & Thomas 1994; Wega 2012). This applies e.g. to Bodo and Homa.

- We use Generalized Linear Mixed-Effects Models to test these tendencies statistically.
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Our predictors

1. Population size, data from Ethnologue (Lewis et al. 2016)
   Hypothesis: Languages of wider communication are more prone to animacy-based gender than smaller languages.

2. Longitude and latitude, data mostly from Glottolog (Hammarström et al. 2019)
   Hypothesis: Languages spoken close to each other (that is, with similar longitude and/or latitude) have similar gender systems. Animacy-based marking spreads areally.

3. Present/past location in the rainforest
   Hypothesis: Languages spoken in the rainforest (now or in the past) have animacy-based gender as a result of contact with early rainforest populations.

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GLMMs using R package `brms` (Bürkner 2017)

- Dependent variable is a **binary variable**: “Languages with only lexically-specified gender” vs. “Anything else (i.e. any amount of animacy-based marking and/or loss of gender)”.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Post mean</th>
<th>Post sd</th>
<th>95% CI l</th>
<th>95% CI u</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-2.40</td>
<td>1.67</td>
<td>-5.64</td>
<td>1.01</td>
</tr>
<tr>
<td>No. of L1 speakers</td>
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<tr>
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</tr>
<tr>
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<td>2.24</td>
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Model 2
GLMMs using R package **brms** (Bürkner 2017)

- Dependent variables are two *count measures*, i.e., “The number of targets that receive lexically-specified gender marking” and “The number of targets that receive animacy-based gender marking” in each language.
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<th>Target counts</th>
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<tr>
<td>Lex.-based Intercept</td>
<td>2.18</td>
<td>0.30</td>
<td>1.56</td>
<td>2.75</td>
</tr>
<tr>
<td><strong>Lex.-based No. of L1 speakers</strong></td>
<td>-0.08</td>
<td>0.04</td>
<td><strong>-0.15</strong></td>
<td><strong>-0.01</strong></td>
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<tr>
<td>Lex.-based Current rainforest overlap</td>
<td>0.05</td>
<td>0.03</td>
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<td>0.12</td>
</tr>
<tr>
<td>Lex.-based Longitude</td>
<td>-0.07</td>
<td>0.05</td>
<td>-0.16</td>
<td>0.03</td>
</tr>
<tr>
<td>Lex.-based Latitude</td>
<td>-0.01</td>
<td>0.04</td>
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<td>0.06</td>
</tr>
<tr>
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<tr>
<td>Ani.-based Intercept</td>
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<td>-3.72</td>
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Summary

- These results confirm that there is an effect of demography and geography on the distribution of our types:

  - Languages with small populations are more likely to have more lexically-based gender marking.
  - Languages with bigger populations are more likely to have at least some kind of animacy-based gender marking or no gender marking at all (Model 1 and 2).
  - Languages with past (but not necessarily present) connections with the rainforest tend to have more animacy-based marking and/or no gender marking (Model 1).
  - Languages to the east fringe of the NWB area are more likely animacy-based marking and/or no gender marking (Model 2).
Summary

▶ These results confirm that there is an effect of **demography** and **geography** on the distribution of our types:

▶ Languages with **small populations** are more likely to have **more lexically-based gender marking**, while languages with **bigger populations** are more likely to have at least some kind of **animacy-based gender marking** or **no gender marking at all** (Model 1 and 2).

▶ Languages with **past (but not necessarily present)** **connections** with the rainforest tend to have more **animacy-based marking and/or no gender marking** (Model 1).

▶ Languages to the **east** fringe of the NWB area are more likely **animacy-based marking and/or no gender marking** (Model 2).
From Verkerk & Di Garbo (in preparation)
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- Beyond NWB: studying restructuring of gender in the **Southern** and **Eastern Bantu** languages
- Possible factors at stake there: contact with ‘Khoisan’ (for Southern Bantu), Swahili expansion (for Eastern Bantu)
Concluding remarks

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▶ In order to arrive at this result, we had to work A LOT on the refinement of the typological variables as well as on grounding the non-linguistic predictors in the social history of the communities under study.

▶ Sociolinguistic typology is possible, but requires long-term investment on variable design...

▶ Which is one of the reasons why I’m so happy to be part of the GramAdapt team!
Thank you very much!
Kiitos paljon!


Di Garbo, Francesca & Annemarie Verkerk. under review. The typology of animacy-based restructuring of Northwestern Bantu gender systems.


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