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「通言語的観点からみた音声類型論」2022 年度第 2 回研究会（通算第 5 回目）

日時：2022 年 12 月 12 日（土）9:00–18:00

場所：オンライン会議室

使用言語：英語

主催：AA 研基幹研究「アジア・アフリカの言語動態の記述と記録：アジア・アフリカに生きる人々の言語・文化への深い理解を目指して」（DDD Ling）

報告タイトル

1. 品川大輔（AA 研）& 李勝勲（AA 研共同研究員, ICU）

“Fricatives in Bantu languages”

2. 阿部優子（AA 研共同研究員, 蘭州大学）

“Bantu spirantization in zone F”

This presentation observes the fricatives from ten languages of Bantu zone F which is spoken mainly in Tanzania. These fricatives are explained by the history of phonological changes among Bantu; Spirantization, 7-5 vowels merger and *p-lenition. From the data of ten languages in the study, some generalizations were attempted; (1) *β, *ɣ might be reconstructed in PB, (2) many fricatives today in daughter languages have been developed as a result of Spirantization, (3) some fricatives [h] or [f] have been developed as a result of *p-lenition.

3. 山本恭裕（AA 研共同研究員, TUFs）

“The phonetic and phonological status of the interdental approximant in Kagayanen”

4. 全体議論

発表（1）と（3）については、以下のハンドアウトを参照。

Fricatives in Bantu languages

An areal and typological overview

Daisuke Shinagawa (AA-ken)
Seunghun J. Lee (ICU & U of Venda)

Outline

1. Overview

areal and typological variation of fricatives in Bantu

2. Bantu spirantization

as a historical process that brought about fricatives in Bantu

3. Dahl's law

as a common phonotactic restriction on obstruents in Eastern Bantu

2

1. Overview general observation (Maddieson and Sands 2019: 90)

- ❖ General tendency = a simple set of fricatives
“Most of the languages have **relatively limited sets of fricatives** of the cross-linguistically common types, although **lateral fricatives** (and affricates) **have developed in or been borrowed into a number of the southern languages**”
- ❖ Cross-linguistically rare sound: ‘Whistled’ fricatives
“Shona S10 and Kalanga S16 are also marked by the occurrence of a type of labialisation co-produced with alveolar fricatives which have led to these segments being named “whistled,” or “whistling fricatives” (Doke 1931a, Bladon et al. 1987). Unlike “ordinary” labialisation [...] this labialisation involves primarily a vertical narrowing of the lips with little or no protrusion and no accompanying tongue back raising. [...] A detailed study of a weakly “whistled” fricative in Tsonga S53 shows that the narrowed lip posture is accompanied by a retroflex lingual gesture and thus may be transcribed with a retroflex fricative symbol [ʂ], e.g., [ʂĩrã] ‘disasters’ (Lee-Kim et al. 2014).”

3

1. Overview classification and genealogy (Grollemund et al. 2015)

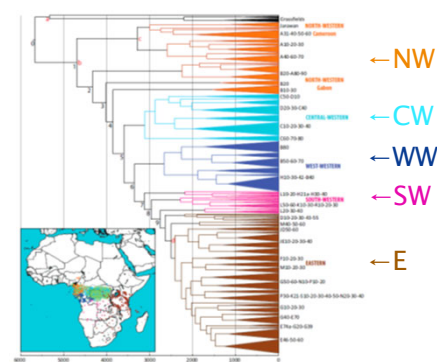


Fig 1. Consensus time tree of n=424 Bantu languages

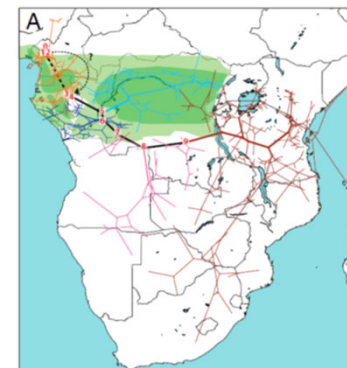


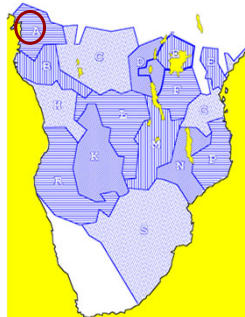
Fig 2. Ancestral migration route reconstructed on the consensus time tree (Fig 1)

1. Overview cross-Bantu variation of phonemic systems of fricatives

NW: Basaá (A43) Hyman (2003: 259)

- ❖ Only two fricative phonemes /s; h/ are attested
- ❖ /h/ appears only in C1 position (i.e., the initial position of the prosodic stem)

| C1 = 22 | | | | | C2 = 12 | | | C3 = 6 | | | C4 = 3 | |
|---------|----|----|----|----|---------|----|----|--------|---|---|--------|---|
| p | t | c | k | kw | p | t | k | p | t | k | | k |
| | s | | h | | | s | | | s | | | s |
| 6 | l | j | | gw | | l | | | l | | | |
| | y | | | w | | y | | | | | | |
| m | n | ny | ŋ | ŋw | m | n | ŋ | | n | | | n |
| mb | nd | nj | ŋg | | mb | nd | ŋg | | | | | |



Map source: Maho (2001)

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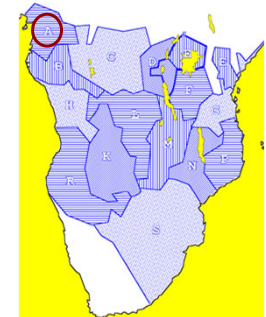
1. Overview cross-Bantu variation of phonemic systems of fricatives

NW: Nen (A44) Mous (2003: 284)

- ❖ /f; s; x; h/ with no voice contrast
- ❖ /x/ does not occur word-initially and is neutralised into /h/ at the intervocalic position

TABLE 16.1: CONSONANT PHONEMES

| | | | |
|-------|----|---------|-----|
| b [p] | t | . | k |
| f | s | . | x h |
| m | n | ny [ɲ] | ŋ |
| mb | nd | nj [ɲj] | ŋg |
| w | | y | |
| | l | | |



Map source: Maho (2001)

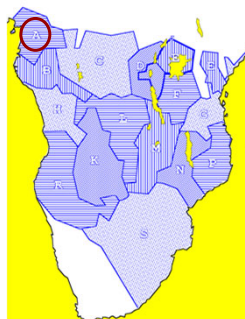
6

1. Overview cross-Bantu variation of phonemic systems of fricatives

NW: Kpā? (A53) Guarisma (2003: 284)

- ❖ /f, v; s, z/ with voice contrast in labial and alveolar
- ❖ ʔ > ɣ /_V [+back]

| | Anterior | | Central | | Posterior | | |
|-------------|----------|--------------|---------|-------------|-----------|-------|-------------|
| ORAL | Bilabial | Labio-dental | Apical | Post-apical | Palatal | Velar | Labio-velar |
| Implosives | 6 | | d' | | | | |
| –voice | p | f | t | s | c | k | kp |
| +voice | b | v | d | z | j | g | gb |
| Continuants | w | | l | r | y | ɣ | |
| NASAL | m | | n | | ɲ | ŋ | |



Map source: Maho (2001)

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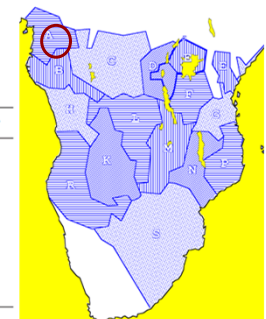
1. Overview cross-Bantu variation of phonemic systems of fricatives

NW: Makaa (A83) Heath (2003: 336)

- ❖ /f, v; s, z; ʃ, ʒ; h/ (with rare occurrence of /h/)

TABLE 18.2: CONSONANTS

| | Labial | Alveolar | Palatal | Velar | Labio-velar |
|--------------------|--------|----------|---------|-------|-------------|
| Stops | | t | c | k | kp |
| | b | d | j | g | |
| Prenasalized stops | mp | nt | nc | ŋk | |
| Nasals | m | nd | nj | ŋg | |
| Fricatives | f | s | sh | h | |
| | v | z | zh | | |
| Lateral | | l | | | |
| Semi-vowels | w | | y | | |



Map source: Maho (2001)

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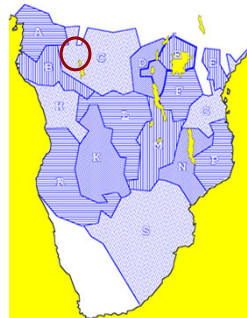
1. Overview cross-Bantu variation of phonemic systems of fricatives

CW: Babole (C101) Leitch (2003: 394)

❖ /s; h/ (as in Basaá)

Babole consonants

| | | | |
|------------------|--------------|--------------|------|
| p ~ h (b ~ φ) | t (d ~ l) | k | |
| | s | | h |
| | | (ts) (dz) | |
| (mp) | (nt) | (nts) | (nk) |
| mb | nd (ns) | (ndz) | ng |
| | l | | |
| m (w) | n | (y) | |



Map source: Maho (2001)

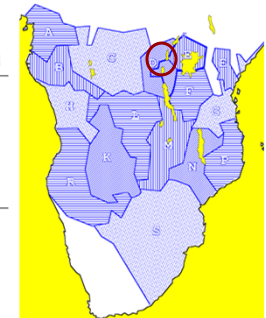
9

1. Overview cross-Bantu variation of phonemic systems of fricatives

CW: Bila (D32) Kutsch Lojenga (2003: 456)

❖ /s; φ~h/

| | Bilabial | Alveolar | Palatal | Velar | Labial-Velar | Glottal |
|----------------|----------|----------|----------|---------|--------------|---------|
| Implosives | ɓ | ɗ | | | | |
| Vl. stops | p | t | ch [tʃ] | k | kp | |
| Vd. stops | — | — | — | — | — | |
| Prenas. stops | mb [ɓ̥] | nd [ɗ̥] | nj [ndʒ] | ng [ŋg] | ngb [ŋ̥gb] | |
| Vl. fricatives | φ | s | | | | h |
| Nasals | m | n | ny [ɲ] | | | |
| Approximants | | l | y | | w | |



Map source: Maho (2001)

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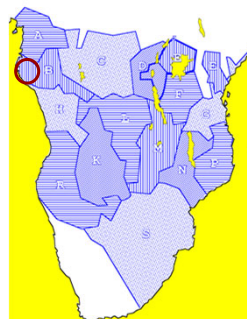
1. Overview cross-Bantu variation of phonemic systems of fricatives

WW: Nsong (B85d) Koni Muluwa and Bostoen (2019: 456)

❖ /f, v; s, z; ʃ, ʒ; h/

TABLE 14.1 NSONG CONSONANT SYSTEM

| | Bilabial | Labio-dental | Alveolar | Palatal | Velar | Glottal |
|-----------------|----------|--------------|----------|---------|-------|---------|
| Plosive | p | b | t | d | k | |
| Nasal | | m | | n | ŋ | |
| Trill | | | | r | | |
| Fricative | | f | v | s | z | h |
| Approximant | | | | l | y | w |
| Lateral approx. | | | | | | |
| Affricate | | pf | bv | ts | dz | (c) |
| Prenasalised | mp | mb | mf | mv | nt | nd |
| | | | mf | mv | nt | nd |
| | | | mpf | mbv | nts | ndz |



Map source: Maho (2001)

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1. Overview cross-Bantu variation of phonemic systems of fricatives

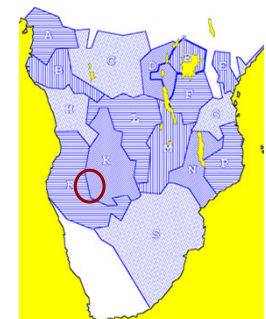
SW: Western Savanna (Zone K and R) Sommer (2003: 568)

❖ Relatively rich systems with /f, v (~β); s; h/ in all languages

❖ Extremely rich system with /f, v; θ, ð; s, z; ʃ, (ʒ); x, ɣ; h/ in Ndonga (R22)

TABLE 28.2: CONSONANT INVENTORIES (EXCLUDING CLICK CONSONANTS)

| | UMB | NDO | YEY | MBU | GCI | KWA | LUY | LUV |
|-----------|------------|------------------|------------|---------------|------------|------------|-----------------|------------|
| Plosive | p, t, c, k | p, t, k, ʔ | p, t, c, k | p, t, k | p, t, k | p, t, k | p, t, c, k | p, t, k |
| | | (b, d, g) | | b, d | b, d, g | (b, d, g) | (b, d, ɗ, ʒ, g) | (b, d, g) |
| Fricative | f, s, h | f, θ, s, ʃ, x, h | f, s, ʃ, h | f, θ, ʃ, h | f, ʃ, h | f, s, ʃ, h | f, s, ʃ | f, s, ʃ, h |
| | v | v, ð, z, (ʒ), y | v, z, ʒ | v, ð, y | β, v, y | β, v | β, z | v, z, ʒ |
| Affricate | | ts | (ts) | tʃ | tʃ | tʃ | | tʃ |
| | | | dz | dʒ | dʒ | dʒ | | dʒ |
| Trill | | r/r | r/r | r | r | r | | |
| Lateral | l | l | l* | l | l | l | l | l |
| Glide | w, y | w, y | w, y | w, y | w, y | w, y | w, y | w, y |
| Nasal | m, n, ɲ, ŋ | m, n, ɲ | m, n, ɲ, ŋ | m, ɲ, n, ɲ, ŋ | m, ɲ, n, ɲ | m, ɲ, n, ɲ | m, n, ɲ, ŋ | m, n, ɲ, ŋ |



Map source: Maho (2001)

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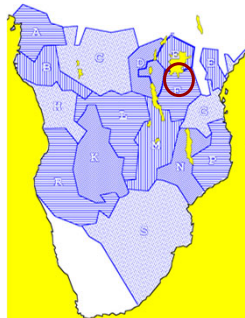
1. Overview cross-Bantu variation of phonemic systems of fricatives

NE: Jita (JE25) Kagaya (2005: ii)

- ❖ /f; s; ʃ/ only appears in loanwords from Swahili

Table 1: Consonants

| | labial | dental | palatal | velar |
|--------------------|------------------------|--------|----------|---------|
| stops | p, b [β ^w] | t, d | | k, g |
| affricates | | | ch, j | |
| prenasalized stops | mb | nd | nj | ng |
| nasals | m | n | ny [ɲ] | ng' [ŋ] |
| fricatives | f | s | (sh [ʃ]) | |
| approximants | w | r (l) | y | |



Map source: Maho (2001)

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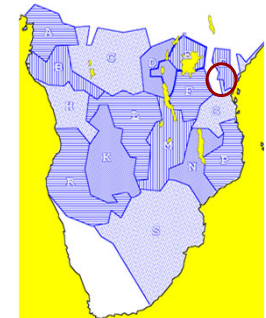
1. Overview cross-Bantu variation of phonemic systems of fricatives

NE: Kilimanjaro Bantu languages (E60+E74) Philippson and Montlahuc (2003: 487)

- ❖ /f, (β~v); s, (z); ʃ; (h)/
- ❖ Voice contrast generally weak

TABLE 24.1: CONSONANT CHART FOR KB LANGUAGES

| | labial | cor [+ant] | cor [-ant] | back |
|--------------|--------|------------|------------|------|
| [-cont] | p | t | | k |
| [+vol] | | | | |
| [-cont] | b | d | dʒ | g |
| [+vol] | | | | |
| implos. | ɓ | ɗ | | |
| affricate | pf | ts | tʃ | |
| prenasalized | mv | ndz | ndʒ | |
| [+cont] | | | | |
| prenasalized | mb | nd | | ŋg |
| [-cont] | | | | |
| [+cont] | β | | ɹ | ɣ |
| [+vol] | | | | |
| [+ant] | v | z | | |
| [+cont] | f | s | ʃ | h |
| [-vol] | | | | |
| liquid | | l / r / ɭ | | |
| nasal | m | n | ɲ | ŋ |
| glide | w | | y | |



Map source: Maho (2001)

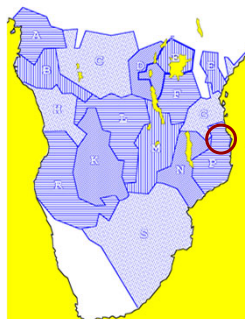
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1. Overview cross-Bantu variation of phonemic systems of fricatives

CE: Zone P languages Odden (2003: 532)

- ❖ Matuumbi (P13): /s/ (only marginally contrasting with /tʃ/)
- ❖ Yao (P21): /ʃ/; s/
- ❖ Makonde (P23): /s; ʃ/; h/

| Matuumbi | Yao | Makonde |
|---------------|-----------------|------------------|
| p t c h k (s) | p t c h k s (f) | p t c h k s (sh) |
| b d j g | b d j g | b d j g |
| m n ŋ n' | m n ny n' | m n ny n' |
| w l y | v w l y | v w l y h |



Map source: Maho (2001)

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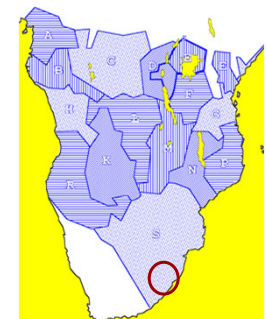
1. Overview cross-Bantu variation of phonemic systems of fricatives

SE: Xhosa (S41) Gowlett (2003: 615)

- ❖ Extremely rich system including **lateral fricatives**: /f, x; ɸ, ɬ; s, z; ʃ; x, ɣ; h, ɦ/

TABLE 30.3: XHOSA

| | | | | | | | | | |
|------|-----|------|------|------|-----|-----|----|----|----|
| p' | t' | ts' | tʃ' | c' | k' | kx' | / | ʃ | h |
| ph | th | tsʰ | tʃʰ | chy | kh | kxʰ | /h | ʃh | h |
| b | d | dʒ | dʒ | ʃ | g | | gʃ | gʃ | gʃ |
| β | | | | | | | | | |
| f | | s | ʃ | | h | x | | | |
| ɸ | ɸ | ɸ | ɸ | ɸ | ɸ | ɸ | | | |
| ɬ | ɬ | ɬ | ɬ | ɬ | ɬ | ɬ | | | |
| m | n | | | y | w | | ɰ | ɰ | ɰ |
| ɱ | ɱ | | | ɱ | ɱ | | | | |
| mp' | nt' | ntl' | nts' | ntʃ' | nc' | nk' | ɰ' | ɰ' | ɰ' |
| mb | nd | ndʒ | ndʒ | ndʒ | ndʒ | ndʒ | ɰ' | ɰ' | ɰ' |
| mpf' | | | | | | | | | |
| mbɸ | | | | | | | | | |



Map source: Maho (2001)

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1. Overview cross-Bantu variation of phonemic systems of fricatives

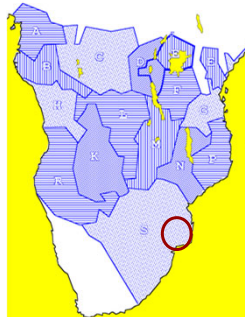
SE: Copi (S61) Gowlett (2003: 615)

- ❖ Relatively complicated system with 'whistled' fricative: /f; s̥w; ɾ; (ɸ); s; (ʃ); ɸ/

TABLE 30.2: COPI

| | Bilabial | Labio-dental | Labio-sibilant | Alveolar | Alveo-lateral | Alveo-sibilant | Alveo-palatal | Velar | Alveo-velar click |
|----------------|----------|--------------|----------------|----------|---------------|----------------|---------------|-------|-------------------|
| Voiceless | p | pf | ps | t | (tʃ) | ts | tʃ | k | ! |
| Aspirated | ph | pfh | psʰ | th | (tʃh) | tsʰ | tʃh | kh | !h |
| Breathy-voiced | b | bʰ | bʰ | d | (dʃ) | dʒ | dʒ | g | gʰ |
| Vd implosive | ɓ | | | | | | | | |
| Fricative | | f | s̥w | ɾ | (ɸ) | s | (ʃ) | ɸ | |
| | w | v | | l | | y | ɣ | ŋ | |
| | m | | | (n) | | | | | |
| | (m) | | | (n) | | | | | |
| | mb | mbv | mbz | nd | (ndʃ) | nz | ndʒ | ng | |
| | m̥ | | | nd̥ | (nd̥ʃ) | | ng̥ | ng̥ | |

Note: 1 /ɾ/ is a breathy-voiced trill, while /ɸ/ is a breathy-voiced glottal fricative.



Map source: Maho (2001)

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1. Overview typological overview of Bantu fricatives

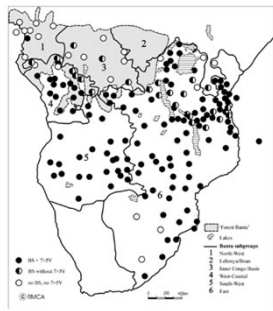
| | GFB | A43 | A44 | A53 | A83 | B30 | C101 | D25 | D32 | E60 | JE17 | JE25 | P13 | P21 | P23 | P31 | R11 | R22 | R41 | K43 | K34b | K33 | K31 | K14 | R31 | S61 | S41 | | | | |
|---------|----------------|--------|-----|-----|------|------|------|--------|-----|--------|------|--------|------|-----|-----|-----|------|----------------|------|------|------|------|------|------|------|-------|---------|-------------|----|--|--|
| labial | bilabial | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | labiodental | f, (v) | | f | f, v | f, v | f | (f, v) | ɸ | f, (v) | f, v | f | | (f) | | v | f, v | f, v | f, v | f, v | f, v | f, v | f, v | f, v | f | f, v | f, v | | 6 | | |
| coronal | dental | | | | | | | | | | | | | | | | | | θ, ð | | β | β | β | | | | | | 25 | | |
| | alveolar | s, (z) | s | s | s | s, z | s, z | s | s | s, z | s | s, (z) | s, z | s | (s) | s | s | s | s, z | s, z | s | s | s, z | s, z | s | s, sw | r, s, z | | 3 | | |
| | palatoalveolar | (f, ʃ) | | | | | | | | | | | | | | | | | θ, ð | | | | | | | | | | 26 | | |
| | lateral | | | | | | | | | | | | | (l) | (f) | (f) | f | f | f, ʃ | f, ʃ | f | f | | s, z | s, z | | (l) | f | 17 | | |
| dorsal | velar | (ɣ) | | x | | | y | | | | | | | | | | | | ɣ, y | y | y | | | | | | | | 7 | | |
| | glottal | | h | h | | h | h | | | h | | | | | h | h | | | h | h | h | h | h | h | h | h | h | h | 15 | | |
| | | | | | | | | | | | | | | | | | | SW (Zones K&R) | | | | | | | | | | SE (Zone S) | | | |

- ❖ Many of the Bantu languages (esp. NW, CW, CE) have a rather simple system of fricatives, typically **labial and coronal fricatives** with or without vowel contrast
- ❖ Glottal and dorsal fricatives tend to be restricted throughout Bantu → Weak implicational hierarchy: [cor] < [lab] << [glot] < [dor]
- ❖ From a geographical viewpoint, **Southern languages tend to develop a rich system** of fricatives

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2. Bantu spirantization

The process: Fricativization triggered by a following 'super high' vowel



Map 3: Distribution of BS and 7V>5V based on the map presented in Schadeberg (1994: 5-74) and completed with data from Jansen (2007) and Labrousse (1999) and with personal data.

Bostoen (2008: 356)

- ❖ Phonemic system of Proto Bantu (Hyman 2019: 128)

| | |
|--------------|---------------------------|
| a consonants | b vowels (long and short) |
| p t c k | i u |
| b d j g | ɪ ʊ |
| m n ɲ | ɛ ɔ |

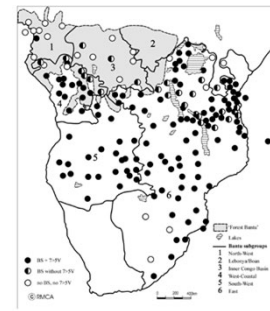
- ❖ Major processes of BS (Schadeberg 1994-95: 75)

| | |
|------------------------|------------------------|
| before i | before u |
| p, b > f, v (or: s, z) | p, b > f, v |
| t, l > s, z | t, l > f, v (or: s, z) |
| k, g > s, z | k, g > f, v |

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2. Bantu spirantization

The process: Fricativization triggered by a following 'super high' vowel



Map 3: Distribution of BS and 7V>5V based on the map presented in Schadeberg (1994: 5-74) and completed with data from Jansen (2007) and Labrousse (1999) and with personal data.

Bostoen (2008: 356)

- ❖ Examples from Swahili (G42)

| | _*i | _*u |
|----|------------------------|--------------------------|
| *p | *pɪc- > -fich- 'hide' | *-dàɪ-p-ù > -refu 'long' |
| *t | *tɪkù > u-siku 'night' | *túm- > -fum- 'stab' |
| *k | *kɪngó > shingo 'neck' | *kúpà > fupa 'bone' |

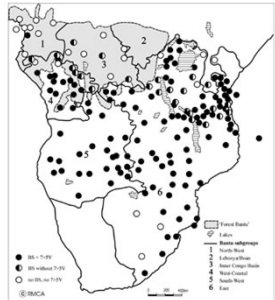
- ❖ Correlation with 7V>5V (Schadeberg 1994-5: 78)

- No language has undergone 7V>5V but not Spirantization
- Relatively few languages have undergone Spirantization but not 7V>5V
- In languages which have undergone both sound shifts, Spirantization must be assumed to have preceded 7V>5V

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2. Bantu spirantization

BS at work in synchrony (cf. Bostoen 2008)



Map 3b: Distribution of BS and 7s-V based on the map presented in Schadeberg (1994:5-74) and completed with data from Jansen (2007) and Labrousse (1999) and with personal data.

Bostoen (2008: 356)

❖ Causative suffix *-i* in Bemba M42 (Kula 2000: 237)

leep-i-a → leefy-a
be_long-CAUS-FV 'cause to be long'
pit-i-a → pish-a
pass-CAUS-FV 'cause to pass'
pook-i-a → poo^h-a
burst-CAUS-FV 'cause to burst'

❖ Adjective derivation suffix *-u* in Nyakyusa M31 (Felberg 1996)

kib-a → kif-ú
be_brave-FV 'brave'
gand-a → gaaf-ú
emaciate-FV 'emaciated'
nyagaluk-a → nyagaluf-ú
get_well-FV 'appetizing (food)'

21

3. Dahl's law as a common phonotactic restriction Obstruents in Eastern Bantu

❖ Definition: "a voiceless **stop** becomes voiced [and sometimes continuant] if the consonant in the next syllable is also voiceless" (Hyman 2019: 144)

❖ Distribution: Zones J, E, F, and G (Bastin 1983: 29)

❖ Examples (Hyman 2019: 144)

■ Stem-initial in Nyamwezi F22

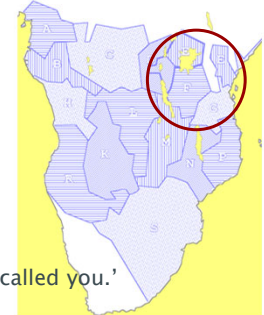
*-kúpi > -gùhí 'short'

■ Prefix in Kuria JE43

/ko=tɛma/ → [ɣo=tɛm-a] 'to beat'

■ Multiple prefixes in Southern Gikuyu E51

/ke-ke-ko=eta/ → [ɣe-ɣe-ɣw=eet-a] 'he (cl. 7) called you.'



Map source: Maho (2001)

22

3. Dahl's law as a common phonotactic restriction Obstruents in Eastern Bantu

❖ 'Long VOT' as a trigger of DL in Rundi JD62 (Lee 2021: 14-15)

"Could it be that the dissimilation is due to a phonetic markedness that does not allow a sequence of laryngealized segments with long vot/frication noise? In Kirundi, this restriction means that **two voiceless obstruents with vot longer than 45 ms do not appear in adjacent syllables across a morpheme boundary.**"

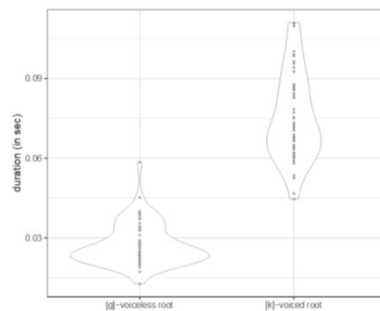


Figure 6. Comparing vot of [g] and [k] resulting from voicing dissimilation

3. Dahl's law as a common phonotactic restriction Obstruents in Eastern Bantu

❖ Target consonants (Kisembe 2010: 114)

"Restrictions on the occurrence of Dahl's Law in different languages are imposed not only by the position [...], but also the range of consonants which may condition or be conditioned"

| language | target | trigger | source |
|------------|-----------|--------------|----------------|
| Gikuyu E51 | /k/ | /k, c, t, θ/ | Benett (1976) |
| Luyia JE32 | /p, t, k/ | /p, t, k/ | Kisembe (2010) |

❖ Reflections in fricatives in Rwa E621

| /v~f/ < *p | /v/ < *b |
|---|--|
| i-visá/i-fisá < *-píc- (BLR2563) 'to hide' | i-veéka < *-bíad- (BLR165) 'to plant' |
| i-visi/i-fisi < ?*-pítí (BLR2586) 'animal' | i-viká < *-bíad- (BLR226) 'to bear fruit' 'give birth to' |

24

Conclusion

[illegible]

- ❖ Many of the Bantu languages have a rather simple system of fricatives, typically **labial** and **coronal fricatives** with or without vowel contrast
→ reflecting the historical process of BS
- ❖ From a geographical viewpoint, **southern languages tend to develop a rich system** of fricatives
→ due to contact? (cf. M&S 2019: 90) or local evolution? (cf. Blench 2006)
- ❖ DL, usually defined as a voicing dissimilation process of **stop** consonants, shows typological variation in terms of target consonants as well as triggers, and fricatives may also be affected by the process

25

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26

The phonetic and phonological status of the interdental approximant in Kagayanen

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1

- Background
 - Kagayanen has the interdental approximant [ɸ], a crosslinguistically rare speech sound with tongue protrusion.
 - Previous research has analyzed the acoustics of the sound focusing only on elicited data (Olson et al. 2010).

2

This study

- examines acoustic properties of the sound in spontaneously occurring speech, and
- describes the phonological status of the sound in Kagayanen.

3

Phonetic status of the interdental approximant

4

Kagayanen

- belongs to the Manobo subgroup of the Austronesian language family.
- is spoken by around 30,000 speakers in the province of Palawan.



5

Phonetic properties of the interdental approximant (Olson et al. 2010: 202)

- Voicing: always voiced
- Shape of the lips: neither round nor spread
- Manner of articulation: there is narrowing but no contact between the tongue and upper teeth.
- Place of articulation: Dental or interdental
- It has a lateral perceptual quality

6

Production of [daŋ] 'raad'



7

Data

- Spontaneously occurring speech recorded on August 28, 2022.
- Two Kagayanen speakers living in the city of Roxas in the Palawan Island.
 - JA (sex: male, age: 62)
 - JF (sex: male, age: 70)
- Language background
 - Native Kagayanen
 - Tagalog (Filipino)

8

F1, F2, and F3

- Olson et al. (2010: 204--205) compare the F1 and F2 of [ɤ] with those of [ɪ].
- They report that:
 - F1 of [ɤ] is slightly higher than that of [ɪ].
 - 550 Hz vs. 450 Hz
 - F2 of [ɤ] is almost the same as that of [ɪ].
 - Around 1900 Hz for both.

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F1, F2, F3 of [ɤ]

- The results partially confirm the observations of Olson et al..
 - [ɤ] has a slightly higher F1 than [ɪ].
 - It has a **lower F2** than [ɪ].
 - F3 is almost the same as F3 of [ɪ].

| JA | F1 | F2 | F3 |
|-----------------------|-----|------|------|
| dental [ɪ] (n=10) | 386 | 1977 | 3110 |
| interdental [ɤ] (n=9) | 441 | 1528 | 2979 |

| JF | F1 | F2 | F3 |
|-----------------------|-----|------|------|
| dental [ɪ] (n=12) | 395 | 1802 | 3044 |
| Interdental [ɤ] (n=9) | 439 | 1545 | 2898 |

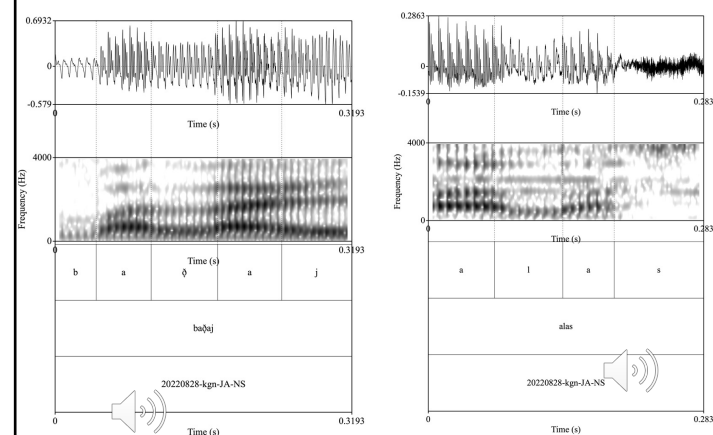
10

Formant transitions

- "In contrast to [ɤ], the formant [F1] transitions into and out of [ɪ] are abrupt" Olson et al. (2010: 205)

11

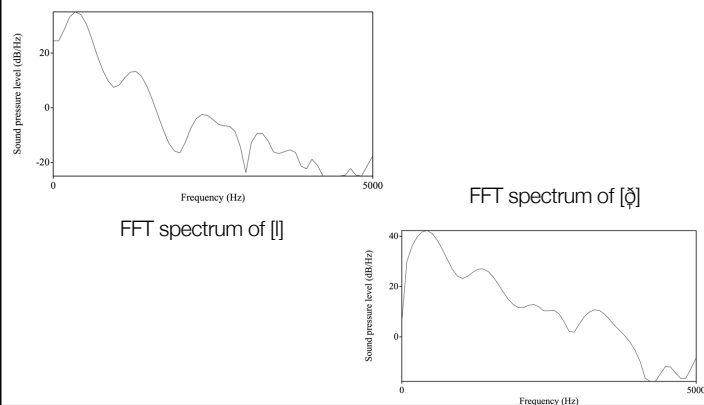
Formant transitions



12

Anti-formant

- There is an anti-formant at around 3,000 Hz for [ɿ].



13

Phonological status of the interdental approximant

14

Phonemic status

- The interdental approximant is a phoneme in Kagayanen (Harmon 1977: 13, Olson et al. 2010: 206)

Word-initial

ɿaɿa 'to weave'

daɿa 'to send'

Intervocalic

bula 'to lie'

buɿa 'to bubble'

15

Phonotactics

- The sound makes a natural class with /j w/, in that they are the only sounds that can occur in C₂ in a complex onset.

/ɿ/

/j/

/w/

bɿaŋaw 'rainbow'

nja 'that'

bwaja 'crocodile'

dɿaŋam 'run'

sjaɿ 'blanket'

pwikan 'turtle'

mɿaʔu 'thirsty'

cf. *dlaŋaw

16

Summary

- There are differences between [ɔ̌] and [ɭ] in the value of F1 and F2.
- In contrast to [ɔ̌], [ɭ] involves an anti-formant at around 3,000 Hz.
- Phonologically, /ɔ̌/ is a semi-vowel rather than a lateral since it makes a natural class with /j w/.

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Tama gid na salamat!!

18