

COMPARISON BETWEEN THE IPALA-NGOYA, KIMBUNDU AND UMBUNDU TONE-CASES SYSTEMS¹

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1. WHEN? WHO? WHERE?

◆ Implementation of a trinational agreement between:

- Federal University of Rondônia, Guajará-Mirim, Brazil
- Agostinho Neto University, Luanda, Angola
- Royal Museum for Midden Africa, Tervuren, Belgium

◆ Purposes of the integrated research project :

- documentation and description of 4 Bantu languages: Songo (H24), Minungu (K110?), Lwimbi (K12a) and Mbwela (K14)
- etymological identification of about 5.000 bantuisms (cf. Angenot & de Lima Angenot, 2009) fossilized in Brazilian Portuguese.
- in 2010: 7 months of fieldwork in Angola
- team of Brazilian researchers and PhD students coordinated by Angenot (UNIR), Maniacky (MRAC), Kukanda (UAN).

◆ Fortuitous "discovery" of the existence of an unknown "Kibala-Ngoya" Angolan language which was recently granted by *Ngola Radio* of Luanda with a half hour space for daily emission. This language, very rarely mentioned, has been *ex officio* considered a Kimbundu dialect for historical reasons but without any linguistic evidence.

◆ Denomination of this language:

- "Kibala" results from a distorted Kimbundu pronunciation:
 - (a) the Ipala PN 7 is not "ki-" but "i:-";
 - (b) the voiced bilabial "b" is absent in the Ipala phonological / phonetic inventory;
- "Ngoya" is a pejorative Umbundu designation with the connotation of *savage, barbarous*.
- the right name is "ipala" [í: p à ! à] with a noun prefix 7.

¹ This article is a revised version on a previous communication presented at the *2011 Berlin Bantu Conference*, Humboldt University, by the two first coauthors.

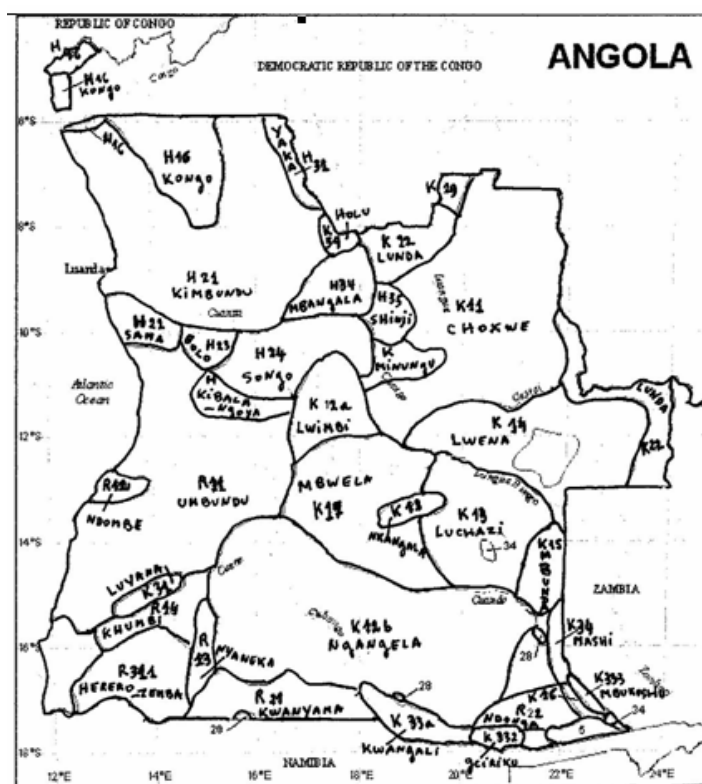
◆ Localization:

- in the north-eastern area of the Angolan province of South Kwanza, bordered by Libolo (H23) and Songo (H24) in the north, Lwimbi in the east and Umbundu (R11) in the west and south.

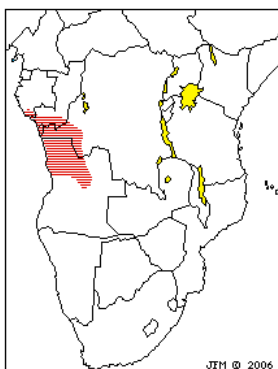
- main localities: Ebo, Kibala, Wako Kungo, Assango, Cabela, Condé, Quilenda and Mussende,

- ◆ About 100.000 users of Ipala (many people living today in the so-called Irak slum of Luanda).

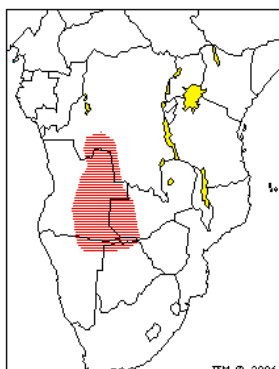
BANTU LANGUAGES OF ANGOLA



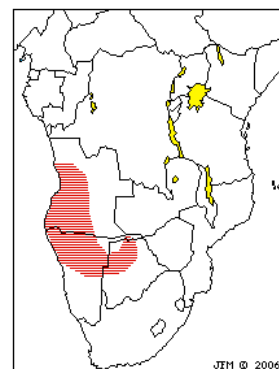
GRUPO KIMBUNDU H20	ÁREA DE TRANSIÇÃO H/R	GRUPO UMBUNDU R10
H21 KIMBUNDU	H/R? IPALA	R11 UMBUNDU
H22 SAMA		R12 NDOMBE
H23 BOLO		R13 NYANEKA
H24 SONGO		R14 KHUMBI



ZONE H



ZONE K



ZONE R

From J. F Maho . (2008). *NUGL Online*.

2. FONTS OF THE DATA

◆ IPALA (HEPO DIALECT)

- fieldwork realized in 2010 by Jean-Pierre Angenot & Geralda de Lima V. Angenot;
- perceptual checkup of their tonal annotations realized by Daniel Mutombo Huta-Mukana from CELTA / Kinshasa;
- instrumental checkup of the vowel durations by Geralda de Lima Angenot, by means of the *SIL Speech Analyzer* system;

◆ KIMBUNDU (MBAKA DIALECT)

- Kukanda, Vatomene (1974). *Esquisse Grammaticale du Kimbundu*. Lubumbashi, R. D. do Congo: Université Nationale du Zaïre (dissertation directed by Jan Daeleman S J).

◆ UMBUNDU (BIÉ DIALECT)

- Schadeberg, Thilo C. (1986). “Tone cases in Umbundu”, *Africana Linguistica 10*, Tervuren: Annales du Musée Royal de l’Afrique Centrale, 423-448 ;
 Schadeberg, Thilo C. (1990). *A Sketch of Umbundu*. Köln, Germany: Rüdiger Köppe Verlag;
- perceptual identification of the vowel duration, realized in 2010 by Jean-Pierre Angenot and three of his Angolan students of Agostinho Neto University of Luanda, in order to complete the Schadeberg's data transcription;
- partial underlying reinterpretation of the Schadeberg's analysis by Jean-Pierre Angenot.

3. DIVERGENCES BETWEEN THE TWO ANALYTICAL PROPOSALS:

ACCORDING TO SCHADEBERG (1986; 1990)	ACCORDING TO ANGENOT (2010)
a) at the underlying level, only one unique tonal case index / # ´ - / with two different morpho-syntactic augments / - ɔ́ - / and / # ɔ̀ - /	a) at the underlying level, two different tonal case index / # ´ - / and / # ` - / with one unique morpho-syntactic augment / - ɔ́ - /
b) statute discrepancy between the high floating tone which is a grammatical morpheme of the underlying structure, whereas the low floating tone is only a little <i>ad hoc</i> derivational temporary trick without any morpho-syntactic function, which serves to explain the emergence of the surface downstepped high tones.	b) unified statute between the high and the low floating tones which are two distinct underlying case index with its specific grammatical functions.
c) paradigmatic interpretation de / # ɔ̀ - / which concentrates two simultaneous valences: "subject case" + "augment".	c) syntagmatic interpretation with two autonomous morphemes / # ` ɔ́ - / and / # ´ ɔ́ - /, meaning successively "case index" and "augment" (with more or less anaphoric function).
d) more restricted analytical proposal which would not be applicable to Ipala and Kimbundu, forasmuch as an underlying augment is absent in the predicative function in these both languages and superficially optative in Kimbundu.	d) more general analytical proposal which is applicable to these three compared languages.
e) absence of systematic vowel duration annotation.	e) preoccupation with a systematic vowel duration annotation.
f) no use of the International Phonetic Alphabet.	f) use of the International Phonetic Alphabet.

UNDERLYING SYNTACTICALLY DEFINED PRETHEMATIC NOMINAL STRUCTURE where 1 = CASE INDEX; 2 = AUGMENT; 3 = (SECONDARY NP) PRIMARY NP									
IPALA – H ou R ? Angenot (2010)			KIMBUNDU – H21 Kukanda (1974)			UMBUNDU – R11 Schadeberg (1986) partially reinterpreted by Angenot (2010)			
	1	2	3	1	2	3	1	2	3
PREDICATIVE CASE	Floating High Tone /	∅	(NP ₂) NP ₁	∅	∅	(NP ₂) NP ₁	Floating High Tone /	ś	(NP ₂) NP ₁
SUBJECT CASE	Floating Low Tone \	ś	(NP ₂) NP ₁	Floating High Tone /	ś	(NP ₂) NP ₁	Floating Low Tone \	ś	(NP ₂) NP ₁
OBJECT CASE	Floating High Tone /	ś	(NP ₂) NP ₁	Floating Low Tone \	ś	(NP ₂) NP ₁	Floating High Tone /	ś	(NP ₂) NP ₁

Comments:

- 1a) an underlying predicative case index is represented by a high floating tone in Ipala and Umbundu but it is absent in Kimbundu;
- 1b) an underlying subject case index is represented by a low floating tone in Ipala and Umbundu and by a high floating tone in Kimbundu;
- 1c) an underlying object case index is represented by a low floating tone in Ipala and Kimbundu and by a high floating tone in Umbundu;
- 2a) an underlying augment / ś -/ is attested in the predicative nominal forms in Umbundu but not in Ipala and Kimbundu;
- 2b) an underlying augment / ś -/ is attested in the subject and object nominal forms of the three languages, its surface realization being optional in Kimbundu;
- 3) the underlying and surface predicative and object nominal forms with augment are identical in Umbundu.

4. COMPARED TONAL RULES

- **IPALA-HEPO** (according to Angenot, 2010)

ANG 1 ♦ PROGRESSIVE HIGH SPREADING $L^n \rightarrow H^n / ' - (H) \text{ ----- } =$
ANG 2 ♦ LOWERING $H \rightarrow L / ` - \text{ ----- } =$
ANG 3 ♦ COALESCENCE OF VOWELS $V_1 C V_2 \rightarrow V_{1/2} / \# \{ ', ` \} - \acute{o} \text{ ----- } (=) C$ Except if CV is the PN 2 or 6 / ma- /
ANG 4 ♦ FLOATING TONE ASSOCIATION $\{ ', ` \} H \rightarrow \{ H, L \}$ with compensatory lengthening if directly followed by a short vowel
ANG 5 ♦ FALLING $L \rightarrow \acute{H}L / H \text{ ----- } \#$
ANG 6 ♦ DOWNSTEPPING $\acute{H}L H \rightarrow [\acute{H}L \downarrow H] \rightarrow [H \downarrow H]$ successively in hyper and hypoarticulated phonostylistic registers
ANG 7 ♦ SANDHI RAISING (post-lexical rule) $\downarrow H \rightarrow H / \text{ ----- } \# H$

- **KIMBUNDU-MBAKA** (according to Kukanda, 1974)

KUK 1 ♦ PROGRESSIVE HIGH SPREADING $L^n \rightarrow H^n / \# ' H \text{ -----}$
KUK 2 ♦ PROGRESSIVE LOW SPREADING $H^n \rightarrow L^n / \# ' H \text{ -----}$
KUK 3 ♦ FLOATING TONE ASSOCIATION $\{ ', ` \} H \rightarrow \{ H, L \}$
KUK 4 ♦ REGRESSIVE LOW SPREADING $H^n \rightarrow L^n / H \text{ ----- } \#$
KUK 5 ♦ FINAL RAISING $H^n \rightarrow L^n / \# ` L^n \text{ -----}$

• UMBUNDU-BIÉ

According to Schadeberg, 1986	According to Angenot, 2010
SCH 1 ♦ FLOATING TONE ASSOCIATION $\acute{H} \rightarrow H$	ANG 1 ♦ FLOATING TONE ASSOCIATION $\{ \acute{\quad}, \grave{\quad} \} H \rightarrow \{ H, L \}$
	ANG 2 ♦ RISING $\langle HL, \widehat{HL} \rangle H \rightarrow \langle HH, H \rangle \widehat{LH}$
SCH 2 ♦ HIGH SPREADING WITH FLOATING LOW EMERGENCE $L^n \rightarrow H^n \grave{\quad} / \# H \text{ ----}$	ANG 3 ♦ PROGRESSIVE HIGH SPREADING $L^n \rightarrow H^n / \# H \text{ ---- } \{ H, L \# \}$
SCH 3 ♦ FINAL LOWERING $H \grave{\quad} \rightarrow L / \text{ ---- } \#$	
SCH 4 ♦ DOWNSTEPPING $\grave{\quad} H \rightarrow \downarrow H / H \text{ ----}$	ANG 4 ♦ DOWNSTEPPING $\widehat{LH} \rightarrow \downarrow H / H \text{ ----}$

5. IPALA EXEMPLIFICATION

IPALA PREDICATIVE CASE

<i>UNDERLYING REPRESENTATION</i>	<i>/´- Ø- m̀ì = k í à / cl.4 Tails</i>
ANG 1 PROGRESSIVE HIGH SPREADING	$\acute{\quad} \emptyset m í c^{\text{e}} í à$
ANG 2 LOWERING	
ANG 3 + ANG 4 VOWEL FUSION, FLOATING TONE ASSOCIATION & COMPENSATORY LENGTHENING	$í: c^{\text{e}} í à$
ANG 4 FALLING	$í: c^{\text{e}} í â$
ANG 5 DOWNSTEPPING	$í: c^{\text{e}} í ā$
ANG 6 SANDHI RAISING	$í: c^{\text{e}} í á$ <i>if followed by #H</i>
<i>PHONETIC REALIZATION</i>	$[í: c^{\text{e}} í ā] (\rightarrow [í: c^{\text{e}} í á])$

IPALA SUBJECT CASE

<i>UNDERLYING REPRESENTATION</i>	/ ˘ - ɔ̃ - m ì = k í ɭ à / cl. 4 <i>Tails</i>
ANG 1 PROGRESSIVE HIGH SPREADING	
ANG 2 LOWERING	ò m ì cʰ í ɭ à
ANG 3 + ANG 4 VOWEL FUSION & FLOATING TONE ASSOCIATION	ì: cʰ í ɭ à
ANG 5 FALLING	ì: cʰ í ɭ â
ANG 6 DOWNSTEPPING	ì: cʰ í ɭ ā
ANG 7 SANDHI RAISING	ì: cʰ í ɭ á <i>if followed by #H</i>
<i>PHONETIC REALIZATION</i>	[ì: cʰ í ɭ ā] (→ [ì: cʰ í ɭ á])

IPALA OBJECT CASE

<i>UNDERLYING REPRESENTATION</i>	/ ˘ - ɔ̃ - m ì = k í ɭ à / cl. 4 <i>Tails</i>
ANG 1 HIGH SPREADING	˘ ɔ̃ m í cʰ í ɭ à
ANG 2 LOWERING	
ANG 3 + ANG 4 VOWEL FUSION & FLOATING TONE ASSOCIATION	í: cʰ í ɭ à
ANG FALLING	í: cʰ í ɭ â
ANG DOWNSTEPPING	í: cʰ í ɭ ā
ANG SANDHI RAISING	í: cʰ í ɭ á <i>if followed by #H</i>
<i>PHONETIC REALIZATION</i>	[í: cʰ í ɭ ā] (→ [í: cʰ í ɭ á])

6. KIMBUNDU EXEMPLIFICATION

KIMBUNDU PREDICATIVE CASE

<i>UNDERLYING REPRESENTATION</i>	<i>/∅-∅- m̀ì = k í ɓ à / cl.4 Tails</i>
ANG 1 PROGRESSIVE HIGH SPREADING	
ANG 2 PROGRESSIVE LOW SPREADING	
ANG 3 FLOATING TONE ASSOCIATION	
ANG 4 REGRESSIVE LOW SPREADING	
ANG 5 FINAL RAISING	
<i>PHONETIC REALIZATION</i>	<i>[m̀ì k í ɓ à]</i>

KIMBUNDU SUBJECT CASE

<i>UNDERLYING REPRESENTATION</i>	<i>/´ - ó- m̀ì = k í ɓ à / cl.4 Tails</i>
ANG 1 PROGRESSIVE HIGH SPREADING	<i>´ ó m̀ì k í ɓ à</i>
ANG 2 PROGRESSIVE LOW SPREADING	
ANG 3 FLOATING TONE ASSOCIATION	<i>ó m̀ì k í ɓ à</i>
ANG 4 REGRESSIVE LOW SPREADING	
ANG 5 FINAL RAISING	<i>ó m í k í ɓ á</i>
<i>PHONETIC REALIZATION</i>	<i>[(ó) m í k í ɓ á]</i>

KIMBUNDU OBJECT CASE

UNDERLYING REPRESENTATION	/ ˈ - ó - m ì = k í ɿ à / cl. 4 <i>Tails</i>
ANG 1 HIGH SPREADING	
ANG 2 PROGRESSIVE LOW SPREADING	ˈ ò m ì k ì ɿ à
ANG 3 FLOATING TONE ASSOCIATION	ò m ì k ì ɿ à
ANG 3 REGRESSIVE LOW SPREADING	
ANG 4 FINAL RAISING	
PHONETIC REALIZATION	[(ò) m ì k ì ɿ à]

7. UMBUNDU EXEMPLIFICATION

	UMBUNDU PREDICATIVE & OBJECT CASE	
	ACCORDING TO SCHADEBERG, 1986	ACCORDING TO ANGENOT, 2010
UNDERLYING REPRESENTATION	<i>nails</i> / ˈ - ó - ɿ ù - ~ = ɿ³ á ˋ ɿ á / cl. 11+9	<i>nails</i> / ˈ - ó - ɿ ù - ~ = ɿ³ â ɿ á / cl. 11+9
SCH 1 / ANG 1 FLOATING ASSOCIATION	ó ɿ ù ˋ ɿ³ á ˋ ɿ á	ó ɿ ù ˋ ɿ³ â ɿ á
ANG 2 RISING (2 times)		ó ɿ ú ˋ ɿ³ ǎ ɿ ǎ
SCH 2 / ANG 3 PROGRESSIVE HIGH SPREADING	ó ɿ ú ˋ ˋ ɿ³ á ˋ ɿ á	----- <i>but rule application in case of a secondary PN presence</i>
SCH 3 FINAL LOWERING		
SCH 4 / ANG 4 DOWNSTEPPING	ó ɿ ú ˋ ˋ ɿ³ ā ɿ ā	ó ɿ ú ˋ ˋ ɿ³ ā ɿ ā
PHONETIC REALIZATION	[ó ɿ ú ˋ ˋ ɿ³ ā ɿ ā]	[ó ɿ ú ˋ ˋ ɿ³ ā ɿ ā]

	<i>UMBUNDU SUBJECT CASE</i>	
	ACCORDING TO SCHADEBERG, 1986	ACCORDING TO ANGENOT, 2010
<i>UNDERLYING REPRESENTATION</i>	<i>nails</i> / ò-ǀù-~ = ǀ ³ á` ǀ á / cl. 11+9	<i>nails</i> / ` - ó-ǀù-~ = ǀ ³ â ǀ á / cl. 11+9
SCH 1 / ANG 1 FLOATING ASSOCIATION	ò ǀ ù ǀ ³ á` ǀ á	ò ǀ ù ǀ ³ â ǀ á
ANG 2 RISING (2 times)		ò ǀ ú ǀ ³ á ǀ ǎ
SCH 2 / ANG 3 PROGRESSIVE HIGH SPREADING		
SCH 3 FINAL LOWERING		
SCH 4 / ANG 4 DOWNSTEPPING	ó ǀ ú ǀ ³ á ǀ ā	ò ǀ ú ǀ ³ ā ǀ ā
<i>PHONETIC REALIZATION</i>	[ò ǀ ù ǀ ³ á ǀ ā]	[ò ǀ ù ǀ ³ á ǀ ā]

8. COMPARED TONE PATTERNS

NOUN TONE PATTERN 1: PREDICATIVE CASE (CITATION AND PREDICATE) Morphological structure: CASE INDEX - AUGMENT - PREFIXE(S) = STEM		
IPALA-HEPO H or R ? <i>ANGENOT, 2010</i>	KIMBUNDU-MBAKA H21 <i>KUKANDA, 1974</i> <i>revisited by ANGENOT, 2010</i>	UMBUNDU-BIÉ R11 <i>SCHADEBERG, 1986; 1990</i> <i>revisited by ANGENOT, 2010</i>
MONOSYLLABIC STEMS	MONOSYLLABIC STEMS	MONOSYLLABIC STEMS
1.1. / ' - Ø - (L-) L = L / → [(H) H ↓H]	1.1. / Ø - Ø - (L-) L = L / → [(L) L L]	1.1. / ' - H - (L-) L = L / → [H (H) H L]
1.2. / ' - Ø - (L-) L = H / → [(H) H̄ H] Hyperarticul. → [(H) H ↓H] Hypoarticul..	1.2. / Ø - Ø - (L-) L = H / → [(L) L H]	1.2. / ' - H - (L-) L = H / → [H (H) H ↓H]
DISYLLABIC STEMS	DISYLLABIC STEMS	DISYLLABIC STEMS
2.1. / ' - Ø - (L-) L = LL / → [(H) H LL]	2.1. / Ø - Ø - (L-) L = LL / → [(L) L LL]	2.1. / ' - H - (L-) L = LL / → [H (H) H HL]
2.2. / ' - Ø - (L) L = HH / → [(H) H HH]	2.2. / Ø - Ø - (L-) L = HH / → [(L) L HH]	2.2. / ' - H - (L-) L = H H / → [H (H) H ↓HH]
2.3. / ' - Ø - (L-) L = LH / → [(H) H LH]		2.3. / ' - H - (L-) L = L H / → [H (H) H H ↓H]
2.4. / ' - Ø - (L-) L = HL / → [(H) H H H̄ L] --#L,## → [(H) H H H] --#H	2.4. / Ø - Ø - (L-) L = HL / → [(L) L HL]	2.4. / ' - H - (L-) L = HL / → [H (H) H ↓HL]
		2.5. / ' - H - (L-) L = H̄L H / → [H (H) H ↓H ↓H]

NOUN TONE PATTERN 2: SUBJECT CASE Morphological structure: CASE INDEX - AUGMENT – PREFIXE(S) = STEM		
IPALA-HEPO H or R ? <i>ANGENOT, 2010</i>	KIMBUNDU-MBAKA H21 <i>KUKANDA, 1974</i> <i>revisited by ANGENOT, 2010</i>	UMBUNDU-BIÉ R11 <i>SCHADEBERG, 1986; 1990</i> <i>revisited by ANGENOT, 2010</i>
MONOSYLLABIC STEMS	MONOSYLLABIC STEMS	MONOSYLLABIC STEMS
1.1. /`-H- (L-) L = L / → [L (L) L L]	1.1. /´-H- (L-) L = L / → [(H) (H) H H]	1.1. /`-H- (L-) L = L / → [L (L) L L]
1.2. /`-H- (L-) L = H / → [L (L) L H]	1.2. /´-H- (L-) L = H / → [(H) (H) H H]	1.2. /`-H- (L-) L = H / → [L (L) L H]
DISYLLABIC STEMS	DISYLLABIC STEMS	DISYLLABIC STEMS
2.1. /`-H- (L-) L = LL / → [L (L) L L L]	2.1. /´-H- (L-) L = LL / → [(H) (H) H HH]	2.1. /`-H- (L-) L = LL / → [L (L) L LL]
2.2. /`-H- (L-) L = HH / → [L (L) L HH]	2.2. /´-H- (L-) L = HH / → [(H) (H) H HH]	2.2. /`-H- (L-) L = HH / → [L (L) L HH]
2.3. /`-H- (L-) L = LH / → [L (L) L L H]		2.3. /`-H- (L-) L = LH / → [L (L) L LH]
2.4. /`-H- (L-) L = HL / → [L (L) L HHL] --#L,## → [L (L) L H H] --#H	2.4. /´-H- (L-) L = HL / → [(H) (H) H HH]	2.4. /`-H- (L-) L = HL / → [L (L) L HL]
		2.5. /`-H- (L-) L = HL H / → [L (L) L H ↓ H]

NOUN TONE PATTERN 3: OBJECT CASE Morphological structure: CASE INDEX - AUGMENT - PREFIXE(S) = STEM		
IPALA-HEPO H or R ? <i>ANGENOT, 2010</i>	KIMBUNDU-MBAKA H21 <i>KUKANDA, 1974</i> <i>revisited by ANGENOT, 2010</i>	UMBUNDU-BIÉ R11 <i>SCHADEBERG, 1986; 1990</i> <i>revisited by ANGENOT, 2010</i>
MONOSYLLABIC STEMS	MONOSYLLABIC STEMS	MONOSYLLABIC STEMS
1.1. /´- H- (L-) L = L / → [H (H) H L]	1.1. /`- H- (L-) L = L / → [(L) (L) L L]	1.1. /´- H- (L-) L = L / → [H (H) H L]
1.2. /´- H- (L-) L = H / → [H (H) H ↓H]	1.2. /`- H- (L-) L = H / → [(L) (L) L L]	1.2. /´- H- (L-) L = H / → [H (H) H ↓H]
DISYLLABIC STEMS	DISYLLABIC STEMS	DISYLLABIC STEMS
2.1. /´- H- (L-) L = LL / → [H (H) H LL]	2.1. /`- H- (L-) L = LL / → [(L) (L) L LL]	2.1. /´- H- (L-) L = LL / → [H (H) H HL]
2.2. /´- H- (L-) L = HH / → [H (H) H HH]	2.2. /`- H- (L-) L = HH / → [(L) (L) L LL]	2.2. /´- H- (L-) L = H H / → [H (H) H ↓HH]
2.3. /´- H- (L-) L = LH / → [H (H) H LH]		2.3. /´- H- (L-) L = L H / → [H (H) H H ↓H]
2.4. /´- H- (L-) L = HL / → [H (H) H H HL] -#L,## → [H (H) H H H] -#H	2.4. /`- H- (L-) L = HL / → [(L) (L) L LL]	2.4. /´- H- (L-) L = HL / → [H (H) H ↓HL]
		2.5. /´- H- (L-) L = HL H / → [H (H) H ↓H ↓H]

9. TONE PATTERN 1: PREDICATIVE CASE EXAMPLES

A. IPALA – H or R?

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/´ - Ø- m ù = ⁿ t ^h ù / cl. 1	[m ú: t ^h ù]
1.2.	= H	<i>To die</i>	/´ - Ø- k ù = f á / cl. 15	[k ú f á] [k ú f ā] Hypoarticulated
2.1.	= LL	<i>Paths</i>	/´ - Ø- ǀ à- ~ = ʒ ì ǀ à / cl. 10+9	[ǀ á ⁿ ʒ ì ǀ à]
2.2.	= HH	<i>Necks</i>	/´ - Ø- ǀ à- ~ = ʃ í: ⁿ g ó / cl. 10+9	[ǀ á ʃ í: ⁿ g ó]
2.3.	= LH	<i>Holes</i>	/´ - Ø- ǀ ù- ~ = k ù: ⁿ g ú / cl. 11+9	[ǀ ú k ù: ⁿ g ú]
2.4.	= H L	<i>Tails</i>	/´ - Ø- m ì = k í ǀ à / cl. 4	[í: c ^ç í ǀ â] --- #L,## [í: c ^ç í ǀ á] --- #H
2.5.	= \overline{HL} H			

B. KIMBUNDU – H21

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/ Ø- Ø- m ù = ⁿ t ^h ù / cl. 1	[m ù: t ^h ù]
1.2.	= H	<i>White</i>	/ Ø- Ø- m ù = f é / cl. 1	[m ù f é]
2.1.	= LL	<i>Banana</i>	/ Ø- Ø- ~ = k ò: ⁿ z ò / cl. 9	[f ò: ⁿ z ò]
2.2.	= HH	<i>Necks</i>	/ Ø- Ø- ʒ ì- ~ = ʃ í: ⁿ g ú / cl. 10+9	[ʒ ì ʃ í: ⁿ g ú]
2.3.	= LH			
2.4.	= H L	<i>Tails</i>	/ Ø- Ø- m ì = k í ǀ à / cl. 4	[m ì k í ǀ à]
2.5.	= \overline{HL} H			

C. UMBUNDU – R11

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/´ - ó- m ù = n ù / cl. 1	[ó m ú n ù]
1.2.	= H	<i>To die</i>	/´ - ó- k ù = f á / cl. 15	[ó k ú f ā]

2.1.	= LL	<i>Paths</i>	/ ˈ - ɔ̃ - ɫ̥ ɔ̃ - ˜ = ɖ̥³ ɪ̥ ɫ̥ à / cl. 10+9	[ɔ̥ ɫ̥ ɔ̥ ⁿ ɖ̥³ ɪ̥ ɫ̥ à]
2.2.	= H H	<i>Tails</i>	/ ˈ - ɔ̃ - v ɪ̥ - ˜ = ʈ̥ ɪ̥ ɫ̥ á / cl. 4	[ɔ̥ v ɪ̥ ʈ̥ ɪ̥ ɫ̥ á]
2.3.	= LH	<i>Crocodiles</i>	/ ˈ - ɔ̃ - ɫ̥ ɔ̃ - ˜ = g àː ⁿ d ú / cl. 10+9	[ɔ̥ ɫ̥ ɔ̥ ⁿ g àː ⁿ d ú]
2.4.	= H L	<i>Mouths</i>	/ ˈ - ɔ̃ - ɫ̥ ɔ̃ - ˜ = m é ɫ̥ à / cl. 10+9	[ɔ̥ ɫ̥ ɔ̥ m é ɫ̥ à]
2.5.	= HL̄ H	<i>Nails</i>	/ ˈ - ɔ̃ - ɫ̥ ɔ̃ - ˜ = ɖ̥³ â ɫ̥ á / cl. 11+9	[ɔ̥ ɫ̥ ú ⁿ ɖ̥³ â ɫ̥ á]

10. TONE PATTERN 2: SUBJECT CASE EXAMPLES

A. IPALA – H or R?

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/ ˈ - ɔ̃ - m ɔ̃ - ˜ = ⁿ t ^h ɔ̃ / cl. 1	[ɔ̃ m ɔ̃ : t ^h ɔ̃]
1.2.	= H	<i>To die</i>	/ ˈ - ɔ̃ - k ɔ̃ - ˜ = h á / cl. 15	[ɔ̃ k ɔ̃ h á]
2.1.	= LL	<i>Paths</i>	/ ˈ - ɔ̃ - ɫ̥ à - ˜ = ʒ ɪ̥ ɫ̥ à / cl. 10+9	[ɔ̃ ɫ̥ à ⁿ ʒ ɪ̥ ɫ̥ à]
2.2.	= HH	<i>Necks</i>	/ ˈ - ɔ̃ - ɫ̥ à - ˜ = ʃ ɪ̥ : ⁿ g ɔ̃ / cl. 10+9	[ɔ̃ ɫ̥ à ʃ ɪ̥ : ⁿ g ɔ̃]
2.3.	= LH	<i>Holes</i>	/ ˈ - ɔ̃ - ɫ̥ ɔ̃ - ˜ = k ɔ̃ : ⁿ g ú / cl. 11+9	[ɔ̃ ɫ̥ ɔ̃ k ɔ̃ : ⁿ g ú]
2.4.	= H L	<i>Tails</i>	/ ˈ - ɔ̃ - m ɪ̥ = k ɪ̥ ɫ̥ à / cl. 4	[ɪ̥ : c ^ɛ ɪ̥ ɫ̥ â] --- #L,## [ɪ̥ : c ^ɛ ɪ̥ ɫ̥ á] --- #H
2.5.	= HL̄ H			

B. KIMBUNDU – H21

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/ ´ - ɔ- m ù = ⁿ t ^h ù / cl. 1	[(ó) m ú t ^h ú]
1.2.	= H	<i>White</i>	/ ´ - ɔ- m ù = φ é / cl. 1	[(ó) m ú φ é]
2.1.	= LL	<i>Banana</i>	/ ´ - ɔ- ~ = k ò: ⁿ z ò / cl. 9	[(ó) f í ɔ ⁿ z ó]
2.2.	= HH	<i>Necks</i>	/ ´ - ɔ- ʒ ì- ~ = ʃ í: ⁿ g ú / cl. 10+9	[(ó) ʒ í ʃ í: ŋ ú]
2.3.	= LH			
2.4.	= H L	<i>Tails</i>	/ ´ - ɔ- m ì = k í l à / cl. 4	[(ó) m í k í l á]
2.5.	= HL̄ H			

C. UMBUNDU – R11

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/ ` - ɔ- m ù = n ù / cl. 1	[ò m ù n ù]
1.2.	= H	<i>To die</i>	/ ` - ɔ- k ù = f á / cl. 15	[ò k ù f á]
2.1.	= LL	<i>Paths</i>	/ ` - ɔ- l ò- ~ = ɖ ³ ì l à / cl. 10+9	[ò l ò ⁿ ɖ ³ ì l à]
2.2.	= H H	<i>Tails</i>	/ ` - ɔ- v ì- ~ = t ^ʃ í l à / cl. 4	[ò v ì t ^ʃ í l á]
2.3.	= LH	<i>Crocodiles</i>	/ ` - ɔ- l ò- ~ = g à: ⁿ d ú / cl. 10+9	[ò l ò ⁿ g à: ⁿ d ú]
2.4.	= H L	<i>Mouths</i>	/ ` - ɔ- l ò- ~ = m é l à / cl. 10+9	[ò l ò m é l à]
2.5.	= HL̄ H	<i>Nails</i>	/ ` - ɔ- l ù- ~ = ɖ ³ â l á / cl. 11+9	[ò l ù ⁿ ɖ ³ á l ā]

11. TONE PATTERN 3: OBJECT CASE EXAMPLES

A. IPALA – H or R?

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/´ - ɔ- m ù = ⁿ t ^h ù / cl. 1	[ɔ m ú: t ^h ù]
1.2.	= H	<i>To die</i>	/´ - ɔ- k ù = h á / cl. 15	[ɔ k ú h á] [ɔ k ú h ā] Hypoarticul.
2.1.	= LL	<i>Paths</i>	/´ - ɔ- ɿ à- ~ = ʒ ì ɿ à / cl. 10+9	[ɔ ɿ á ⁿ ʒ ì ɿ à]
2.2.	= HH	<i>Necks</i>	/´ - ɔ- ɿ à- ~ = ʃ í: ⁿ g ɔ / cl. 10+9	[ɔ ɿ á ʃ í: ⁿ g ɔ]
2.3.	= LH	<i>Holes</i>	/´ - ɔ- ɿ ù- ~ = k ù: ⁿ g ú / cl. 11+9	[ɔ ɿ ú k ù: ⁿ g ú]
2.4.	= H L	<i>Tails</i>	/´ - ɔ- m ì = k í ɿ à / cl. 4	[í: c ^ɛ í ɿ â] --- #L,## [í: c ^ɛ í ɿ á] --- #H
2.5.	= HL̄ H			

B. KIMBUNDU – H21

TONE TYPES		GLOSSES	UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS
1.1.	= L	<i>Person</i>	/` - ɔ- m ù = ⁿ t ^h ù / cl. 1	[(ò) m ù t ^h ù]
1.2.	= H	<i>White</i>	/` - ɔ- m ù = φ é / cl. 1	[(ò) m ù φ é]
2.1.	= LL	<i>Banana</i>	/` - ɔ- ~ = k ò: ⁿ z ò / cl. 9	[(ò) h ò ⁿ z ò]
2.2.	= HH	<i>Necks</i>	/` - ɔ- ʒ ì- ~ = ʃ í: ⁿ g ú / cl. 10+9	[(ò) ʒ ì ʃ í: ⁿ g ú]
2.3.	= LH			
2.4.	= H L	<i>Tails</i>	/` - ɔ- m ì = k í ɿ à / cl. 4	[(ò) m ì k í ɿ à]
2.5.	= HL̄ H			

C. UMBUNDU – R11

1.	2.	3.	4.
1.1.	1.2.	2.1.	2.2.
2.3.	2.4.	2.5.	
= L	= H	= LL	= H H
<i>Person</i>	<i>To die</i>	<i>Paths</i>	<i>Tails</i>
/ ' - ó- m ù = n ù / cl. 1	/ ' - ó- k ù = f á / cl. 15	/ ' - ó- ǀ ò- ~ = ɖ ³ í ǀ à / cl. 10+9	/ ' - ó- v ì- ~ = ɖ ^ɰ í ǀ á / cl. 4
[ó m ú n ù]	[ó k ú f á]	[ó ǀ ó ^ɰ ɖ ³ í ǀ à]	[ó v í ɖ ^ɰ í ǀ á]
= LH	= H L	= HL̄ H	
<i>Crocodiles</i>	<i>Mouths</i>	<i>Nails</i>	
/ ' - ó- ǀ ò- ~ = g à: ⁿ d ú / cl. 10+9	/ ' - ó- ǀ ò- ~ = m é ǀ à / cl. 10+9	/ ' - ó- ǀ ù- ~ = ɖ ³ â ǀ á / cl. 11+9	
[ó ǀ ó ^ɰ g à: ⁿ d ú]	[ó ǀ ó m é ǀ à]	[ó ǀ ú ^ɰ ɖ ³ â ǀ á]	

12. IPALA NOMINAL PREFIXES

IPALA NOMINAL PREFIXES WITHOUT PREPREFIXAL MORHEMES AND TONAL NOTATION				
CL	DEEP UNDERLYING REPRESENTATIONS	SURFACE REALIZATIONS	EXAMPLES	
1+9	/ - m u - ~ - /	[m u] --- = ^N CV#	/ ' - Ø- m ù- ~ = ⁿ t ^h ù / [m ú: t ^h ù]	<i>person</i>
		[u: ^N] --- = C	/ ' - Ø- m ù- ~ = p ì k à / [ú ^m b ì k à]	<i>slave</i>
		[m] --- = V	/ ' - Ø- m ù- ~ = á n à / [m ó: n â]	<i>child</i>
1a	Ø	Ø	/ ' - Ø- Ø = p ^h á ^ɰ j ^ɰ à / [p ^h á ^ɰ j ^ɰ â]	<i>relative</i>
2	/ - m a - /	[m a] --- = C	/ ' - Ø- m à = p ì k à / [m á p ì k à]	<i>slaves</i>
		[m] --- = V	/ ' - Ø- m à = á n à / [m á: n â]	<i>children</i>
2a	/ - a: - /	[a:]	/ ' - Ø- à: = p ^h á ^ɰ j ^ɰ à / [á: p ^h á ^ɰ j ^ɰ â]	<i>relatives</i>
3+9	/ - m u - ~ - /	[u: ^N] --- = CV#	/ ' - Ø- m ù- ~ = t ^w é / [ú: ⁿ d ^w é]	<i>head</i>
		--- = C _[voiced]	/ ' - Ø- m ù- ~ = ʒ ì: ^m b ò /	<i>lip</i>

			[ú: ⁿ ʒ ì: ^m b ò]	
		[u:] --- = C _[voiceless] [fricative or lateral]	/ ' - Ø- m ù- ~ = ʃ i: t ú / [ú: ʃ í t ú]	<i>bush</i>
		[m ^w] --- = V{ i, ε, a }	/ ' - Ø- m ù- ~ = à: ⁿ g ù / [m ^w â: ⁿ g ù]	<i>herb</i>
		[m] --- = V{ u, o }	no example	-----
4	/ - j i - /	[j i] --- = CV#	/ ' - Ø- j ì = t ^w é / [j í: t ^w ē]	<i>heads</i>
		[i:] --- = C...	/ ' - Ø- j ì- ~ = ʒ ì: ^m b ò / [í: ʒ ì: ^m b ò]	<i>lips</i>
		[j] --- = V	/ ' - Ø- j ì = à: ⁿ g ù / [j â: ⁿ g ù]	<i>herbs</i>
5	/ (o -) _o i - /	[o:] --- = CV#	/ ' - Ø- ò- _o ì = j é / [ó: j ē]	<i>egg</i>
		Ø --- = C...	/ ' - Ø- _o ì = p à: p á / [p â: p á]	<i>wing</i>
		[p _o] --- = V	/ ' - Ø- _o ì = é s ò / [p _o é s ô]	<i>eye</i>
5+15	/ (o -) _o i -k u- /	[k ^w] --- = V	/ ' - Ø- _o ì- k ù = á k ò / [k ^w á: k ò]	<i>arm</i>
6	/ - m a - /	[m a] --- = C	/ ' - Ø- m à = p à: p á / [m á p à: p á]	<i>wings</i>
		[m] --- = V	/ ' - Ø- m à = é s ò / [m é: s ô]	<i>eyes</i>
6+14	/ - m a - w u /	[m a w] ---- = V	/ ' - Ø- m à- w ù = à ⁿ d á / [m á w à: ⁿ d á]	<i>fishing net</i>
6+15	/ - m a - k u /	[m a k ^w] ---- = V	/ ' - Ø- m à- k ù = á k ò / [m á k ^w á: k ò]	<i>arms</i>
7+7	/ - k i - k i - PN ₁ /	[i: c ^s i: PN ₁] --- = CV#	/ ' - Ø- k ì- k ì- ~ = b ^w à / [í: c ^s í: ^m b ^w à]	<i>big dog</i>
		[i:] --- = CV...	/ ' - Ø- k ì- k ì- ~ = t í m à / [í: t í m â]	<i>heart</i>
		[c ^{sj}] --- = V...	/ ' - Ø- k ì- k ì- ~ = à m à / [c ^{sj} á: m à]	<i>animal</i>
8+8	/ - j i - j i - PN ₁ /	[i: ? i: PN ₁] --- = CV#	/ ' - Ø- j ì- j ì- ~ = b ^w à / [í: ? í: ^m b ^w à]	<i>big dogs</i>
		[i:] --- = C	/ ' - Ø- j ì- j ì- ~ = t í m à / [í: t í m â]	<i>hearts</i>

		[j] --- = V	/ ' - Ø- j i- j i = à m à / [j á: m à]	<i>animals</i>
9	/ - (ɔ -) ~ - /	[ɔ: ^N] --- = CV#	/ ' - Ø- ɔ - ~ = z ú / [ɔ: ⁿ z ú]	<i>house</i>
		[^N] --- = C _[voiced]	/ ' - Ø- ~ = g ɔ ^m b è / [ⁿ g ɔ: ^m b è]	<i>cow</i>
		Ø --- = C _[voiceless]	/ ' - Ø- ~ = k ɔ: ^m b ó / [f i ɔ: ^m b ó]	<i>goat</i>
10+9	/ ɔ̃ a - (ɔ -) ~ - /	[ɔ̃ ɔ ^N] --- = CV#	/ ' - Ø- ɔ̃ a- ɔ - ~ = z ú / [ɔ̃ ɔ: ⁿ z ú]	<i>houses</i>
		[ɔ̃ a ^N] --- = C _[voiced]	/ ' - Ø- ɔ̃ a- ~ = g ɔ ^m b è / [ɔ̃ a ⁿ g ɔ: ^m b è]	<i>cows</i>
		[ɔ̃ a] --- = C _[voiceless]	/ ' - Ø- ɔ̃ a- ~ = k ɔ: ^m b ó / [ɔ̃ a f i ɔ: ^m b ó]	<i>goats</i>
11+9	/ - ɔ̃ u - ~ - /	[ɔ̃ u ^N] --- = C _[voiced]	/ ' - Ø- ɔ̃ u- ~ = g ɔ ʒ í / [ɔ̃ u ⁿ g ɔ ʒ í]	<i>rope</i>
		[ɔ̃ u] --- = C _[voiceless]	/ ' - Ø- ɔ̃ u- ~ = t ^h á m à / [ɔ̃ u t ^h á m â]	<i>cheek</i>
		[ɔ̃ ^w] --- = V{i, ε, a}	no example	-----
		[ɔ̃] --- = V{u, ɔ}	no example	-----
12	/ - k a - /	[ɔ:] --- = C	/ ' - Ø- k à = ɔ̃ á: s à / [ɔ: ɔ̃ á: s â]	<i>prayer</i> <i>port. oração</i>
			/ ' - Ø- k à = p à: n à / [ɔ: p à n à]	<i>hut</i> <i>port. choupana</i>
12+9	/ - k a - PN ₁ /	[k a ^N] --- V = CV#	/ ' - Ø- k à- ɔ - ~ = b ^w à / [k ɔ: ^m b ^w à]	<i>little dog</i>
		[ɔ: ^N] --- = C _[voiced]	/ ' - Ø- k à- ~ = ɔ: ^m b ò n ê: ʒ í / [ɔ: ^m b ò n ê: ʒ í]	<i>farmer</i>
		[ɔ:] --- = C _[voiceless]	/ ' - Ø- k à- ~ = k ɔ: ^m b ó / [ɔ: f i ɔ: ^m b ó]	<i>little goat</i>
13	/ - t u- t u- /	[t i] --- = C ^j V#	/ ' - Ø- t ù- t ù = p ^j à / [t í p ^j à]	<i>fire</i>
		[u:] --- = C	/ ' - Ø- t ù- t ù = ɔ̃ á: s à / [ú: ɔ̃ á: s â]	<i>prayers</i> <i>port. oração</i>
			/ ' - Ø- t ù- t ù = p à: n à / [ú: p à n à]	<i>huts</i> <i>port. choupana</i>
13+13	/ - t u- t u- PN ₁ /	[u: ? u PN ₁] --- = CV#	/ ' - Ø- t ù- t ù- ɔ - ~ = b ^w à / [ú: ? ú: ^m b ^w à]	<i>little dogs</i>
		[u:] --- = C...	/ ' - Ø- t ù- t ù- ~ = k ɔ: ^m b ó /	<i>little goats</i>

			[ú: h̃ ó: ^m b ó]	
14	/ - w u - /	[u:] --- = C	/ ' - Ø- w ù = w ú / [ú: w ũ /	<i>ground</i>
		[w] --- = V	/ ' - Ø- w ù = á t ò / [w á: t ò]	<i>canoe</i>
14+9	/ - w u - ~ - /	[w u ^N] --- = C	/ ' - Ø- w ù- ~ = g à: ^g g à /	<i>fetish</i>
15	/ - k u - /	[k u] --- = C	/ ' - Ø- k ù = t í / [k ú t í]	<i>ear</i>
		[k ^w] --- = V	/ ' - Ø- k ù = é: ⁿ d à / [k ^w é: ⁿ d a]	<i>to go</i>
16	/ - p a ≠ PN ₁ /	[p a] --- PN ₁	/ ' - Ø- p à ≠ k ì = t ^w è / [p í: t ^w è]	<i>from the nest</i>
17	/ - k u ≠ PN ₁ /	[k u] --- PN ₁	/ ' - Ø- k ù ≠ k ù = á k ò / [k ú k ^w á: k ò]	<i>on the arm</i>
18	/ - m u ≠ PN ₁ /	[m u] --- PN ₁	/ ' - Ø- m ù ≠ ~ = s è: ^g g è / [m ù s è: ^g g è]	<i>in the jungle</i>

13. COMPARARISON BETWEEN THE IPALA, KIMBUNDU AND UMBUNDU NOUN PREFIXES

COMPARATIVE TABLE OF THE NP WITHOUT AUGMENT INDICATION									
IPALA			KIMBUNDU			UMBUNDU			
1+9	m u	[m u] --- ^N CV# [m] --- V	1	mu	[m u] --- C [m ^w] --- V{i,ε,a} [m] --- V{ɔ,u}	1	m u	[m u] --- NV# [u] --- C [m] --- V	
1a	Ø	Ø	1a	Ø	Ø	1a	Ø	Ø	
2	m a	[m a] --- C [m] --- V	2	a	[a] --- C	2	m a	[m a] --- NV# [(v) a] --- CV# [a] --- C [m] --- V{ã} [v] --- V{other}	
2a	a:	[a:]	?			2a			
3+9	m u - ~	[u: ^N] --- CV# --- C _[voiced] [u:] -- C _[voiceless] [fricative or lateral] [m ^w] --- V{i, ε, a} [m] --- V{u, ɔ}	3	mu	[m u] --- C [m ^w] --- V{i,ε,a} [m] --- V{ɔ,u}	3	m u	[u] --- C [m ^w] --- V{i, ε, a} [m] --- V{u, ɔ}	
4	j i	[j i] --- CV#	4	mi		4	v i	[(v) i] --- C	

		$[i:]$ --- C...			$[mi]$ --- C			$[v^j]$ --- V
		$[j]$ --- V			$[m^j]$ --- V			
5	(o-) i	$[o:]$ --- CV#	5	di	$[di]$ --- C	5	ε	$[ε]$ --- C
		∅ --- C...						
		$[p]$ --- V			$[d^j]$ --- V			∅ --- V
6	ma	$[ma]$ --- C	6	ma	$[ma]$ --- C	6	va	$[(v)a]$ --- CV#
								$[a]$ --- C
		$[m]$ --- V			$[ma]$ --- V{u}			$[v]$ --- V
					$[m]$ --- V{i, ε, a, o}			
7+7	ki -ki	$[i: c^o i:]$ --- CV#	7	ki		7	t ^j i	$[t^j i]$ --- C
		$[i:]$ --- CV...			$[ki]$ --- C			$[i]$ --- C var.
		$[c^o]$ --- V...			$[k^j]$ --- V			$[t^j]$ --- V
8+8	ji -ji	$[i: ?i:]$ --- CV#	8	i	$[i]$ --- C	8	vi	$[vi]$ --- C
		$[i:]$ --- C						
		$[j]$ --- V			$[j]$ --- V			$[v^j]$ --- V
9	o -~	$[o: ^N]$ --- CV#	9	ji -~	$[o: ^N]$ --- CV#	9	~	
		$[^N]$ --- C _[voiced]			$[^N]$ --- C _[voiced]			$[^N]$ --- C _[voiced]
		∅ --- C _[voiceless]			∅ --- C _[voiceless]			∅ --- C _[voiceless]
10+9	la (-o) ~	$[l o: ^N]$ --- CV#	10+9	zi -~		10+9	la -~	$[l o: ^N]$ --- C _[voiced]
		$[l a ^N]$ --- C _[voiced]			$[z i ^N]$ --- C _[voiced]			
		$[l a]$ --- C _[voiceless]			$[z i ^N]$ --- C _[voiceless]			$[l o]$ --- C _[voiceless]
11+9	lu -~	$[l u ^N]$ --- C _[voiced]	11	lu	$[lu]$ --- C	11	lu	$[lu]$ --- C
		$[l u]$ --- C _[voiceless]						
		$[l^w]$ --- V{i, ε, a}			$[l^w]$ --- V			$[l^w]$ --- V
		$[l]$ --- V{u, o}						
12+9	ka -~	$[k a ^N]$ --- CV#	12	ka	$[ka]$ --- C	12	ka	$[ka]$ --- C
		$[o:]$ --- C...						
		$[k]$ --- V			$[k]$ --- V			
13+1	tu -tu	$[ti]$ --- C ^j V#	13	tu	$[tu]$ --- C	13	tu	$[tu]$ --- C
		$[u: ?u]$ --- CV#						
		$[u:]$ --- C...						
					$[t^w]$ --- V			$[t^w]$ --- V
14	wu	$[u:]$ --- C	14	wu	$[u:]$ --- C	14	wu	$[u]$ --- C
		$[w]$ --- V			$[w]$ --- V			$[w]$ --- V
15	ku	$[ku]$ --- C	15	ku	$[ku]$ --- C	15	ku	$[ku]$ --- C
		$[k^w]$ --- V{i, ε, a}			$[k^w]$ --- V{i, ε, a}			$[k^w]$ --- V{i, ε, a}
		$[k]$ --- V{u, o}			$[k]$ --- V{u, o}			$[k]$ --- V{u, o}
16+NP	pa≠NP	$[pa]$ --- C	16+NP	pa≠NP	$[pa]$ --- C	16+NP	pa≠NP	$[pa]$ --- C
		$[p]$ --- V			$[p]$ --- V			$[p]$ --- V
17+NP	ku≠NP	$[ku]$ --- C	17+NP	ku≠NP	$[ku]$ --- C	17+NP	ku≠NP	$[ku]$ --- C
		$[k^w]$ --- V{i, ε, a}			$[k^w]$ --- V{i, ε, a}			$[k^w]$ --- V{i, ε, a}

	[k] --- V{u, ɔ}		[k] --- V{u, ɔ}		[k] --- V{u, ɔ}
18+N	m u≠NP [m u] --- C	18+NP	m u≠NP [m u] --- C	18+NP	m u≠NP [m u] --- C
	[m ^w] --- V{i, ε, a}		[m ^w] --- V{i, ε, a}		[m ^w] --- V{i, ε, a}
	[m] --- V{u, ɔ}		[m] --- V{u, ɔ}		[m] --- V{u, ɔ}

14. COMPENSATORY LENGTHENING IN IPALA (BUT NOT IN UMBUNDU)

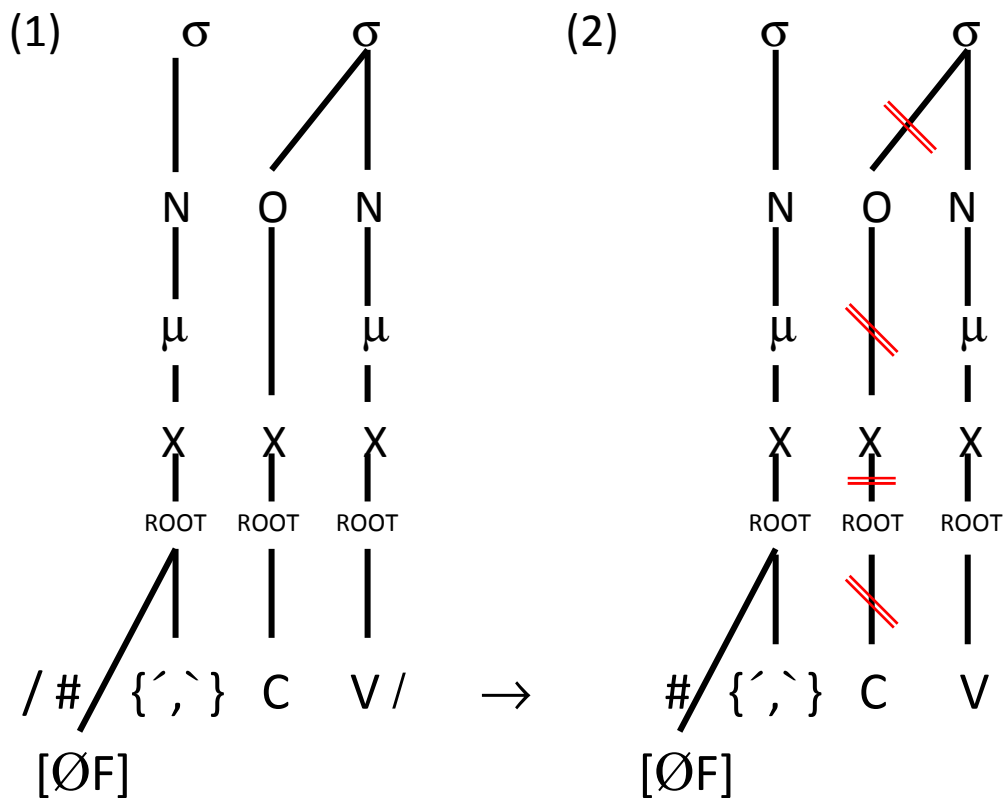
In Ipala the surface initial vowel of a noun which is always long is originated from a compensatory lengthening caused by the re-association of the mora of a preceding case index floating tone or augment. The situation is different in Umbundu, where this lengthening is absent, according our phonetic checking realized in 2010 with our three UAN Ovimbundu students Brito Epalanga Niuca, José Valentim Nunes and Joaquim António dos Santos.

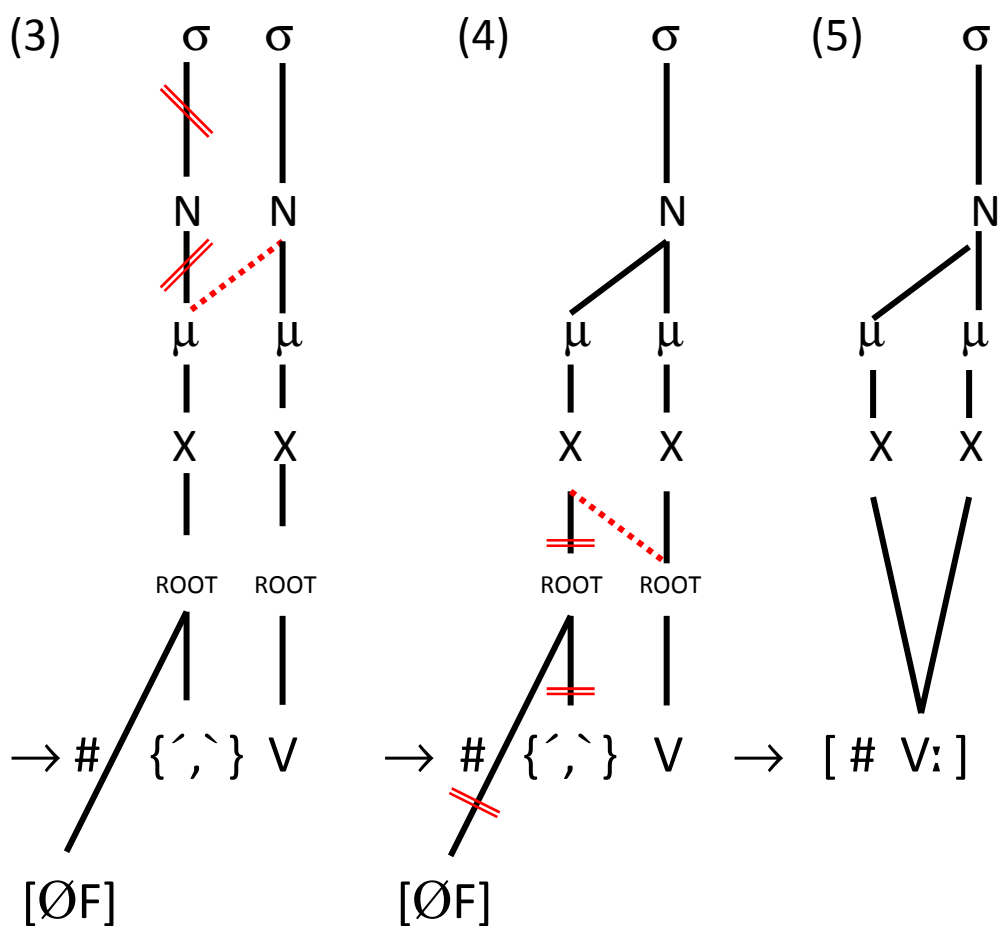
VOCALIC INITIAL PN FOLLOWED BY CONSONANTAL INITIAL STEM					
Cl. 1+9	/ m u - ~ - /	[u: (^N)]	Cl. 8+8	/ j i - j i - /	[i: ? i]
Cl. 3+9	/ m u - ~ - /	[u: (^N)]	Cl. 9	/ ɔ - ~ - /	[ɔ: (^N)]
Cl. 4	/ j i - /	[i:]	Cl. 12	/ k a - /	[ɔ:]
Cl. 5	/ ɔ - j i - /	[ɔ:]	Cl. 13:13	/ t u t u - /	[u: ? u]
Cl. 7+7	/ k i - k i - /	[i: c ^{gl} i]	Cl. 14	/ w u - /	[u:]

	PRESENCE OF VOWEL LENGTHENING IN IPALA			ABSENCE OF VOWEL LENGTHENING IN UMBUNDU	
	PREDICATE CASE	SUBJECT CASE	OBJECT CASE	PREDICATE & OBJECT CASES	SUBJECT CASE
	/ # ' - Ø - C V̂ /	/ # ` - ɔ́ - C V̂ /	/ # ' - ɔ́ - C V̂ /	/ # ' - ɔ́ - C V̂ /	/ # ` - ɔ́ - C V̂ /
BONE	[í: h í: p â]	[ì: h í: p â]	[í: h í: p â]	[é k é: p á]	[è k é: p á]
NIGHT	[ú: ʃ í k î]	[ù: ʃ í k î]	[ú: ʃ í k î]	[ú t é k é]	[ù t é k é]
SAND	[í: s é k é l é]	[ì: s é k é l é]	[í: s é k é l é]	[é s ē k é]	[è s é k é]
DOG	[ɔ: ^m b ^w à]	[ɔ: ^m b ^w à]	[ɔ: ^m b ^w à]	[ɔ ^m b ^w ā]	[ɔ ^m b ^w á]
TAIL TAILS	[ú: ^ŋ g í l â] [í: c ^s í l â]	[ù: ^ŋ g í l â] [ì: c ^s í l â]	[ú: ^ŋ g í l â] [í: c ^s í l â]	[ú t̚ í l á] [ɔ v í t̚ í l á]	[ù t̚ í l á] [ɔ v ì t̚ í l á]

15. DERIVATION:

FLOATING INDEX WITHOUT AUGMENT IN THE PREDICATIVE CASE





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