

## A SKETCH OF NGEN PHONOLOGY

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**Abstract:** The paper provides a preliminary description of the phonology of Ngen, a South Mande language spoken in Ivory Coast. Ngen has a system of oral and nasal vowels. The consonant inventory is characterised by a complementary distribution between [b] and [m], [l] and [n], [y] and [ɲ]. There are 3 level tones. Tone melodies on disyllabic feet exhibit all possible combinations except LH. The majority of non-derived words have CV, CVCV, and CVŋ structures.

**Key words:** Ngen, South Mande, phonology

### 1. Introduction

Ngen (South Mande < South-East Mande < Mande < Niger-Congo) is a minority language of Ivory Coast. The closest relative of Ngen is Beng (Paperno 2014). According to my comparison of vocabulary in the Swadesh list, Beng and Ngen have 27–36% of difference; Gban and Ngen have 50–58% of difference; Mwan and Ngen have 54–55% of difference; Wan and Ngen have 60–64% of difference.

Most of the Ngen ethnic population lives in the village of Djonkrou, which is located in the prefecture of Prikrou towards the east of the center of Ivory Coast. The population of Djonkrou village is close to 1500. However, according to Maloletnjaja (2015), only 765 inhabitants are speakers of Ngen. In the northwest of Djonkrou, there is a village of Mangofla where, according to my consultants, there are approximately 200 Ngen speakers. There is also a Ngen diaspora in Abidjan, which encompasses around 100 people. Thus, the number of Ngen speakers is currently close to 1000.

The present paper is based on materials from the thesis of Anna Maloletnjaja (2015) and my own data recorded during a field trip in 2019, together with Valentin Vydrin. I worked with Kouassi Makaman Koffi (or Sualio Wattara, 41 y.o. at the time of the recording) who is an inhabitant of the Djonkrou village. The present sketch is based on approximately 2000 words and phrases. All the examples provided in this paper have been verified in field trip of 2021 with my second language assistant Kouadio Kouadio Yacouba (43 y.o.), who lived in Djonkrou before his marriage, then moved to Abidjan.

Here are the main typological characteristics of Ngen:

- 3 level tones (tonal rules require further research)
- nasal harmony on the foot (cf. §5.1)
- strict Subject-Auxiliary-Object-Verb-X (other components) word order
- dependent noun precedes head noun in possessive constructions: N<sub>GEN</sub> N
- numerals follow the nouns: N NUM
- no alienability contrast in possessive constructions.

## 2. Vowels

### 2.1. Overview of the vowel system

Ngen vowels are arranged in two series, oral and nasal, as shown in Table 1.

*Table 1*

**Phonological inventory of Ngen vowels**

		Oral			Nasal		
		Front	Middle	Back	Front	Middle	Back
High		i		u	ĩ		ũ
Mid	Upper-mid	e		o	ɛ̃		ɔ̃
	Lower-mid	ɛ		ɔ			
Low			a		ã		

Upper-mid nasal vowel counterparts to oral vowels do not occur: \*/ẽ/, \*/õ/.

Vowels from different series cannot be combined in the same foot (cf. §4.1). For example, feet like *t̄ēē* ‘red’ are allowed, but feet like \**t̄ēē* are disallowed. /i/ in the first syllable of a foot of the type *Cili* is reduced to [ĩ], for example, *gìlì* [gìlì] ‘war’, *bìlì* [bìlì] ‘wooden ceiling’, *bìlì* [bìlì] ~ *mànì* [mànì] ‘head’, *yìrì* [yìrì] ‘tree’, *pìlì* [pìlì] ‘tail’.

Minimal pairs contrasting vowel height (1)–(5) and backness (6)–(8) are shown below.

- (1) *yì* ‘to sleep’ – *yè* ‘to see’ – *yà* ‘2SG.PST+’
- (2) *sé* ‘fire’ – *sí* ‘to call’
- (3) *wélé* ‘bone’ – *wélé* ‘problem’
- (4) *pé* ‘to whistle’ – *pá* ‘to bite’
- (5) *gù* ‘smith’ – *gò* ‘to hide’ – *gò* ‘to pass’ – *gà* ‘death’
- (6) *títí* ‘often’ – *tútú* ‘for a long time’
- (7) *yè* ‘to see’ – *yò* ‘alcohol’
- (8) *sé* ‘fire’ – *só* ‘between’

Minimal pairs contrasting oral and nasal vowels are shown in examples (9)–(12).

- (9) *ká* ‘2PL.BSC+’ – *ká* ‘who’
- (10) *gbílí* ‘dirty’ – *gbílí* ‘manioc/cassava’
- (11) *gbélé* ‘wc’ – *gbélé* ‘to wait (or waiting)’
- (12) *kpóńgbóń* ‘near’ – *kpóńgbóń* ‘fat’

## 2.2. Status of *ŋ*

In addition to oral and nasal vowels, there is a syllabic nasal /ŋ/ or ‘zero aperture vowel’ (Beath 1971: 44), which has been identified in other South Mande languages (Perekhvalskaya 2017; Idiatov & Aplonova 2017) (Aplonova & Vydrin 2017). The status of *ŋ* is controversial.

$\eta$  usually appears at the foot-final position in CV $\eta$ , CIV $\eta$ , CVV $\eta$  structures, e.g.: *gōŋ* ‘man’, *tróŋ* ‘ear’, *fúáŋ* ‘copper’. It can bear a tone different from the tone of the preceding vowel, for example, *yāŋ* ‘how much’, *bōŋ* ‘agama’. Moreover, the form of the first personal pronoun is /ŋ/ [ŋ] 1SG.BSC+ ‘I’.

However,  $\eta$  is realised as [ŋ] before a pause or before another vowel, e.g. *wīŋ àkō* [wīŋ àkō] ‘three languages’.

- (13) *gbóŋ dō* [gbóŋ dō] ‘one baboon’
- (14) *wīŋ tízì* [wīŋ tízì] ‘ten languages’
- (15) *bōŋ sóŋ* [bōŋ sóŋ] ‘six agamas’
- (16) *gbóŋ pālāŋ* [gbóŋ pālāŋ] ‘two baboons’
- (17) *līŋ gó* [līŋ gó] ‘woman’s chest’
- (18) *gōŋ yò* [gōŋ yò] ‘man’s alcohol’
- (19) *ŋ gbō* [ŋ mbō] ‘my honey’
- (20) *ŋ kpíŋ* [ŋ mpíŋ] ‘my reed’

In the data I have at the moment, a word-initial /ŋ/ is attested in the words *ŋsīŋ* [ŋsīŋ] ‘four’, *ŋgè* [ŋgè] ‘Ngen’ and *ŋ* [ŋ] 1SG.BSC+ ‘I’. In word-border contexts /ŋ/ is assimilated by the place of articulation of the following consonant.

On the one hand, dissimilar tones in CV $\eta$ -structures and the existence of *ŋ* ‘1SG.BSC+’ are an argument to treat /ŋ/ as a vowel, but on the other hand, C $\eta$ -syllables are not attested and /ŋ/ is assimilated by the place of articulation of the following consonant, which does not allow to analyze it as a “standard” vowel.

### 3. Consonants

The consonant system distinguishes six places of articulation: labial, dental, palatal, velar, glottal and doubly-articulated labiovelars. Consonant phonemes are represented in Table 2.

Table 2

## Inventory of consonant phonemes

		labial	dental	palatal	velar	labiovelar	glottal
stops	vd	b [b/m]	d	j	g	$\widehat{gb}$	
	vs	p	t		k [c, k]	$\widehat{kp}$	
fricatives	vd	v	z				
	vs	f	s				h
sonorants			l [l/n, r]	j [j/ɲ]		w	

There are several notes about Table 2. First, phonetic realisations of phonemes are given in brackets. Second, allophones contrasted by the feature “oral / nasal” are presented in the same cell, separated by a slash (cf. §5). Third, in what follows, phonemes  $\widehat{kp}$ ,  $\widehat{gb}$  will be written without tie i.e. *kp*, *gb*. Finally, the approximant /j/ is represented as *y* in what follows, and *j* stands for the palatal plosive /j/.

The lateral [l] and the vibrant [r~r] are allophones of the same phoneme /l/. It is realized only as [l] in foot-initial position, but not as [r~r]. In foot-internal position in an oral foot the allophones are distributed as follows: [r~r] after dental and palatal consonants (21)–(26), and [l] otherwise (27)–(29).

- (21) *jālā* [jārā] ‘lion’
- (22) *jèlè* [jèrè] ‘hot’
- (23) *tlóŋ* [tróŋ] ‘ear’
- (24) *dlá* [drá] ‘to fall’
- (25) *sālā* [sārā] ‘to take’
- (26) *zūlūŋ* [zūrūŋ] ‘driver ant’
- (27) *pálá* [pálá] ‘house’
- (28) *gàlà* [gàlà] ‘month’
- (29) *wélé* [wélé] ‘problem’

The glide /w/ is optionally deleted at morpheme boundaries, especially in function words, e.g. *kàlà wō* [kàlà ō] ‘to put down’.

Palatal [c] and velar [k] are allophones representing one phoneme, /k/. [c] appears before front vowels, and [k] before back vowels and middle /a/. For example see (30)–(34).

- (30) *ké* [cÉ] ‘house’
- (31) *kī* [cī] ‘skin, paper’
- (32) *kóŋ* [kóŋ] ‘sorrow’
- (33) *kóŋ* [kóŋ] ‘crotchet’
- (34) *kálí* [kálí] ‘peanut’

On the other hand, palatal /j/ and velar /g/ are not allophones, but phonemes, e.g. : *jò* ‘make noise.PST’ – *gò* ‘basket’.

Glottal [h] is attested in two words, *hā* ‘hundred’, probably borrowed from English ‘hundred’ (Djonkro village has stable commercial relations with Ghana), and *gbàhàlò* ‘heavy’.

#### 4. Syllable features

In my analysis of the Ngen syllable, I follow (Bolli 1976) (as cited by (Vydrin 2008)), who postulates two types of syllables: “minor”, V, and “major”, CV or CCV. A minor syllable can be represented by any vowel (including *ŋ*), while a major syllable can have any vowel but *ŋ*. Any consonant can occupy the initial position in a major syllable, while in the second consonantal position of the CCV syllable, only *l* is possible. /l/ is realised as [r] after initial dental and palatal stops /t/, /d/, see examples in Table 4 and in (21)–(26).

#### 5. Feet

Feet in South Mande languages are defined by Vydrin (2008) as “metric feet”, mono- or polymoraic units which have several properties: vowel harmony, restrictions on the internal structure and on the inventory of intervocalic consonants. Feet also can contain several syllables or only one syllable, and such one-syllable-feet are rather numerous. Grammatical

tones are applied to the metric foot, rather than to a syllable or a mora. Finally, feet exist in languages without stress, for example, Guro (Kuznetsova & Kuznetsova 2017) or Mano (Khachaturyan 2015).

There are several arguments to postulate feet as the main prosodic (rhythmic) unit of Ngen. First, there is a nasal-oral harmony within the limits of a foot. Second, there is a restriction for front vowels after back vowels in CVCV structures. Third, in *Cili* feet, initial /i/ reduces to [i̠]. Fourth, phoneme /l/ is realised only as [l] in the foot-initial position, but not as [r~r]. In the foot-internal position in oral feet, the allophones are distributed: [r~r] after dental and palatal consonants and [l] otherwise. Fifth, a bigger part of CVIV or CVIV $\eta$  words in vocabulary has the same tone on both vowels, i.e. *gbàlà* ‘sponge’, *kálá* ‘to steal’, *kúlú* ‘piece’, *lélēŋ* ‘song’, *pílí* ‘tail’, *póló* ‘food’, etc.

At the present moment, there are not enough data about to check all the criteria of South Mande foot suggested in (Vydrin 2008). Especially tonal data of CVV, CVV $\eta$  feet and the restrictions on the consonants in the intervocalic position for CVCV, C<sub>1</sub>VC<sub>2</sub>V feet.

In what follows, C stands for any consonant except /l/, l stands for the consonant /l/, V is any vowel, and  $\eta$  is a foot-final nasal. Feet in Ngen consist of the prosodic types shown in Table 3.

Table 3

## Foot structures

Foot structures	Examples
V	è ‘3SG.BSC+’, à ‘3SG.POSS’
CV	bà ‘rope’, fē ‘wind’
CVV	gíé ‘good’, pɔ́ɔ ‘field’, gāé ‘corpse’
CV $\eta$	bā $\eta$ ‘ground’, sɔ́ $\eta$ ‘tooth’
CVV $\eta$	píó $\eta$ ‘arrow head’, fúá $\eta$ ‘aluminium’
CIV	tré ‘yams’, zlá ‘spouse’
CIV $\eta$	tró $\eta$ ‘ear’, drú $\eta$ ‘tomorrow’
CVIV $\eta$	lélē $\eta$ ‘song’, pālā $\eta$ ‘two’
CVIV	gɔ́lí ‘cola nut’, kálá ‘to steal’

## 6. Word structure

Most of the words in my dictionary (containing ~850 items) represent CV, CVCV, CVŋ structures. Structures of V, VCV-type<sup>1</sup> are not frequent, in comparison to neighbouring Beng and Gban. CV<sub>1</sub>V<sub>1</sub>ŋ structures are not attested, and vowels in CVVŋ structures are never identical. There are /a/, /e/ in the syllable of the V type, but not /u/, /o/, /ɔ/, /ɛ/, e.g.: *àkɛ̀lɛ̀wā* ‘spider’, *ēbúbú* ‘bright’. CVIV structures often have two similar vowels and tones, e.g.: *gàlà* ‘month’, *pálá* ‘house’, *wúlú* ‘ghost’, *bìlì* ‘parcel of forest’, *mɛ̀lɛ̀* ‘chicken’.

In the data I have at the moment, there is a restriction: back vowels cannot follow front vowels in the same word, i.e. words like *\*bibu* are disallowed. Only 7 lexemes from ~850 contradict this restriction: *pèlō* ‘to jump’, *títóító* ‘scissors’, *bèwō* ‘to dance’, *dèú* ‘wild cat’, *píóŋ* ‘sharp’, *yípú* ‘sun’.

## 7. Nasal harmony

The feature of nasality is associated with all phonemes of a foot, including the consonants, but excluding ŋ which is not subject to nasal harmony (it can combine with nasal and oral elements). Nasal consonants have no phonological status in Ngen, these are allophones of their oral counterparts. This phenomenon is typical of South Mande languages (this interpretation was advanced for the first time by Le Saout (1973)).

As shown in Table 4, three approximants and one stop have nasal and oral allophones. The choice of a nasal or an oral allophone depends on the vowel type in the foot: there are nasal allophones for nasal vowels and oral variants for oral vowels. For example, *bìlì* [bìlì ~ mìnì] ‘head’ has various phonetic realisations; it provides evidence for nasal and oral sonants to be allophones. It is important to stress that a foot, but not a word or syllable is the main domain of nasalization.

<sup>1</sup> These lexemes are likely borrowings from the Ando dialect of Baule.

Feet with oral sonants and nasalized vowels (such as \*[l̥a], \*[b̥a], \*[y̥a], \*[na], \*[ma], \*[ɲa]) are not attested. Oral and nasal allophones are represented in Table 4.

Table 4

### Oral and nasal allophones of consonants

Phoneme	Phonetic realization without nasalisation	Phonetic realization with nasalisation
/b/	[b]	[m]
/l/	[l]	[n]
/y/	[y]	[ɲ]
/w/	[w]	[ŋ]

In the current version of the Ngen-English dictionary, the initial [ŋ] is attested in three words: *ɲsīŋ* [ɲsīŋ] ‘four’, *ɲgāā* [ɲgāā] ‘ring’, *ɲgè* [ɲgè] ‘Ngen’. Moreover, there are words with initial /w/ plus a nasal vowel, for example: *wālāŋ-wālāŋ* [wālāŋ-wālāŋ] ‘worm’. Thus, contrary to expectations, the /w/ phoneme does not have an allophone [ŋ] at the present moment. To sum up, phonemes /b/, /l/, /y/ have two allophones each: nasal and non-nasal. /w/ has no nasal allophone.

## 8. Tone

Ngen has 3 level tones, shown in Table 5. Stress has not been observed.

Table 5

### Examples for tonal contrasts

Tone	Notation	Example	
High	á	<i>dó</i> ‘termite’	<i>báj</i> ‘sheep’
Middle	ā	<i>dō</i> ‘one’	<i>bāj</i> ‘ground’
Low	à	<i>dò</i> ‘cobra’	<i>bàŋ</i> ‘wing’

It is assumed in this paper that the basic tone-bearing unit (TBU) is a single vowel (including  $\eta$ ) or ‘minor syllable’, but a ‘major’ one, because sequences of two vowels CVV in major syllables can bear either similar or dissimilar tones e.g.: *sùà* ‘money’, *tāá* ‘pothole’, *gìè* ‘good’.

Melodies at the word level are diverse. A few observations can be shown here. Tone melodies on disyllabic feet exhibit all possible combinations except LH, as shown in Table 6.

Table 6

**Diversity of tone melodies on CVCV structures**

Melody	Ngen	Gloss
HH	<i>básá</i>	‘other’
MM	<i>gōlī</i>	‘cola nut’
LL	<i>ɲènɛ̀</i>	‘star’
HM	<i>dádā</i>	‘to suck’
HL	<i>jénɛ̀</i>	‘onion’
MH	<i>bōló</i>	‘maize’
ML	<i>kɔ̀nɔ̀</i>	‘crocodile’
LM	<i>kètē</i>	‘mat’

## 9. Conclusion

Ngen is a typical South Mande language. It has 2 series of vowels, oral and nasal. There is a consonant inventory typical to the South Mande group with one special feature, which is the absence of implosive consonant phonemes. The consonant inventory is marked by a complementary distribution between [b] and [m], [l] and [n], [y] and [ɲ]. There is evidence of nasal harmony. There are 3 level tones. Tone melodies on disyllabic feet exhibit all possible combinations except LH. Most of the non-derived words have CV, CVCV, CVɲ structures.

### Abbreviations

+ – affirmative polarity series	PST – past series of pronouns
Aux – auxiliary verb	PL – plural
C – consonant	S – subject
BSC – basic series of pronouns	SG – singular
O – object	TBU – tone-bearing unit
POSS – possessive series of pronouns	V – vowel or verb

### Acknowledgements

The research was conducted in terms of the project supported by Russian Science Foundation, grant No. 17-78-20071 fulfilled in the Institute of Linguistics, Russian Academy of Sciences.

I express my sincere gratitude to my Ngen consultants Kouassi Makaman Koffi (Sualio Wattara) and Kouadio Kouadio Yacouba, as well as to Valentin Vydrin who has supervised my research.

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