

Notes on Nyokon phonology (Bantu A.45, Cameroon)

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1 Introduction

This paper is a preliminary analysis of the phonology of Nyokon based on a wordlist of nearly 1000 words. Nyokon is a Bantu language spoken in the Mbam region of Cameroon. It was classified by Guthrie as A.45 (Guthrie 1971:32). Section 2 provides an overview of the sociolinguistic situation and previous research. Sections 3 through 5 present the phonological building blocks of the language. Section 7 briefly explores morphophonology of the language.

2 Background

Nyokon is a Bantu language of the Mbam region of Cameroon. The autonym is [nìṣṣṣṣ]. There are seven traditional Nyokon villages (or clans): Ambann, Andoumalong, Pouah, Pouloue, Andoumakong, Mbalang, and Ahoung. All of these villages have converged into the town called Nyokon just north of Makenéné and south of Tonga along the road from Yaoundé to Bamenda. Many speakers of the language live outside of the traditional territory in the cities of Douala and Yaoundé. Significant relocation took place during the unrest which troubled the region around the time of independence.

It appears that the majority of Nyokon speakers also use French—the language of education in the region. Certain individuals have also learned English (Cameroon's other official language), Duala (a regional trade language, Bantu A.20 [dua]), or other neighboring languages, depending on their level of exposure. Christianity is the dominant religion. Church services in the area are performed in French, with translation into Nyokon indicating that part of the population may not have a very high level of French comprehension (or at least a strong preference for use of the local language). While Nyokon is still spoken by the youngest generation, some Nyokon speakers expressed their concern

¹ Thanks to several of my colleagues, who patiently listened as I worked out my initial analysis of the data: Dan Duke, Keith Beavon, Robert Hedinger, and especially Ginger Boyd. Special thanks to Daniel Mbel for his hospitality during my research trips.

that code-switching involving French is so common that parts of the language could be lost within a generation.

In his work on the classification of Bantu languages, Guthrie labels Nyokon as A.45 (Guthrie 1971:32). Its reference number in ALCAM is 514 (Breton & Fohtung 1991:39). The language is dubiously classified in the current edition of the Ethnologue (16th) as a dialect of Tunen ([baz], A.44²) (Gordon 2005).³ An early survey of the region makes clear the relationship between Nyokon and Tunen: “Although *Nyɔ̃ʔ* is closely related to *Banɛn* there can be no question of intercomprehension” (Guthrie & Tucker 1956:29). A subsequent publication includes a cursory description of the language citing a few distinguishing features and sketching the class system and some verbal affixes, none of which indicates a particularly close relationship to Tunen (Richardson 1957:29-31). The next field research on Nyokon was a 200-item wordlist (including an example of each item in a phrase) gathered by Daniel Barreteau in the nearby town of Ndikiniméki. These data were used in a comparative study of several A.40, A.50, and A.60 languages (Mous & Breedveld 1986). The conclusion of the study is that the “percentage of resemblance of pairs” between Nyokon and Tunen is only 36 percent—a figure far below what could be considered mutually intelligible speech varieties.⁴ In fact, Nyokon is shown to be closer related to Tuotomb (Bonek, [tʃf]) and Nomaande (Mandi, [lem]), with respective percentages of 52% and 44%. An earlier lexicostatistical study showed similar results (Schadeberg & Voorhoeve 1977:24). A more recent study of Nyokon phonology was attempted by a student of the University of Yaoundé, again affirming its status as a separate language from Tunen (Nga 2000)⁵. The classification of Nyokon as

2 The current edition of the Ethnologue (16th) erroneously labels Tunen an A.60 language. This appears to be the result of a confusion with a note in the Ethnologue entry reading: “May be in Bantu A.60.” This is scheduled to be corrected in the next edition.

3 Personal communication with Chuck Fanning (Managing Editor) indicates that this classification first appeared in the Ethnologue in the 11th edition (1988). This is after many publications presenting Nyokon as a separate language (Guthrie & Tucker 1956:29, Richardson 1957:29, Guthrie 1971:32, Schadeberg & Voorhoeve 1977:24, and Mous & Breedveld 1986). The Ethnologue does not have any documentation to support their classification of Nyokon as a dialect of Tunen. A formal request for a separate ISO code for Nyokon has been submitted.

4 This figure is based on the data gathered by Dugast (1967) in the dialect of Tunen she worked in: Toboany (Tɔ́bɔ́ánye). A comparison of the Alinga (Eling) variety of Tunen in the same study yields a figure of 45%.

5 A rough draft of this thesis was found in the possession of a Nyokon speaker. The advising professor is no longer at the university and current professors were unable to find a final draft of this work.

a language all its own and not as a dialect of another language remains undisputed in the most current literature (Maho 2003:641, Mous 2003:283). My personal interactions with both Tunen speakers and Nyokon speakers clearly indicate that they view themselves as separate ethnolinguistic groups.

The earliest publication on the language cites a subgroup called *funj* who speak a mutually intelligible dialect of Nyokon in a place called Kinding (Guthrie & Tucker 1956:29). This is presumably the *hunj* (or HOUNG) mentioned in the later phonological study which includes a list of ten HOUNG words. One shows no phonological relation to Nyokon, and the others are identical or very similar (Nga 2000:5-6). Though I was told of the existence of this dialect, I was not introduced to any HOUNG speakers during my research in the area.

My research for this paper began March 2011 in Nyokon after I was introduced to the community. Nine research trips to the village were carried out during the course of four months. The short span of time given to this research has by design overlooked many details and undoubtedly led to some oversimplification. I hope that the reader will be able to identify many unanswered questions and areas for future research.

Participants in the research included the village chiefs, NGOUNG Isaac (Ambann) and NGAGNI Amos Jules (AhounG), as well as the following members of the community in Nyokon and Ndikiniméki: AMBANG Maurice, EMBOM Pierre, ENAM Samuel, FOUTH Brice Rodrigue, HEU Emmanuel, HEU Paul, IMBO Hermine Dorothée, KAMANDA Jean Achille, KIARI André Jules, KOUMA Fanny, MBIRNANG Thomas Blaise, MOUOL Catherine, NGAGNI Emmanuel, and YAMBASA André.

3 Phonological segments

This section presents, describes and discusses the phonemes of the language. Transcriptions in this and in subsequent sections follow the Handbook of the International Phonetic Association (1999).

Except where noted in prose or by the slash notation, all transcriptions are an approximation of the phonetic form of the word. The symbol ≠ is used to mark the presumed pre-stem boundary but does not necessarily indicate the phonological or underlying form. Other possible morpheme breaks are marked with a hyphen. Until adequate morphological studies have been carried out, these possible morpheme breaks should be viewed as tentative. Three inconsequential phonetic details have been excluded from the transcriptions: aspiration, phrase-final devoicing, and distinction between the rhotic trill and flap. Nearly all data were solicited using the SIL Comparative African Wordlist, and is glossed in both French and English with a four-digit numerical code corresponding to the item's place on this list (Roberts & Snider 2006). Elicitation was done using the French glosses. Transcriptions of nouns are followed by a number in brackets indicating the noun class (see section 6.1). The English glosses of verbs begin with the preposition “to” in order to avoid any confusion with nouns.

3.1 Consonants

This section presents the twenty phonemic consonants and discusses some of their phonetic variants as well as the issues that arise in determining the phonemic status of some phones.

Table 1: Phonemic Consonants

		Labial	Alveolar	Post-alveolar / Palatal	Velar / Guttural
Stops	Voiceless	p	t	tʃ	k
	Prenasalized	mb	nd	ndʒ	ŋg
Fricatives	Voiceless	f	s		
	Voiced	v	nz		
Resonants	Nasal	m	n	ɲ	ŋ
	Oral	w	r / l	j	ʕ

3.1.1 Stops

As seen in related languages, there is no phonemic voicing opposition for stops (Mous 2003, Boyd forthcoming). The bilabial and velar stops are occasionally pronounced by some speakers as voiced,

especially in an intervocalic position. The bilabial stop also voices before the rhotic, but other stops do not. No voicing variation has been observed for the post-alveolar affricate [tʃ].

At least one word—*laba* 'shoe'—has a voiced bilabial stop intervocalically which speakers insisted cannot be pronounced as a voiceless stop. The speakers did not identify the word as a loan word, but its noun class marking matches that of other loan words. It may be the case that voicing opposition at the bilabial place of articulation is entering the language through loan words.

Voiceless stops are nearly always aspirated even in word-final position. The aspiration tends to be stronger with the velar stop and weaker at other places of articulation. Stops can be aspirated even when followed by an approximant. Since aspiration is not contrastive, it is not included in the data presented here.

Phonemic prenasalized stops are seen in most related languages (Hyman 2003:49, Boyd forthcoming). These phonemes can occur root-initially and even word-initially.

	singular	plural			
1)	mbà [7]	pì ≠ mbà [8] ⁶	shelter	abri	0684
2)	ḡgwájì [7]	pì ≠ ḡgwájì [8]	lion	lion	1025
3)	ki ≠ mbátú [7]	pi ≠ mbátú [8]	banana	banane	1208

Incidentally, there are no signs that either assimilation of place of articulation or voicing takes place at morphological breaks in the language. In other words, there is no requirement in the language that all nasal-stop sequences within a word must be homorganic. This is unusual, since nasal assimilation and post-nasal voicing are widespread among Bantu languages (Hyman 2003:50).

4)	/u ≠ nɔm-k/	[ùnómk]	to throb	lanciner	0232
INF-sting-PLURACTIONAL ⁷					

⁶ See section 6.1 for evidence that the nasal is not a part of the noun class marker.

⁷ The word-final velar stop in example 4 most likely represents a pluractional morpheme. It is not clear whether or not this morpheme is productive in the language (see section 6.2.5). Bantuists may want to suggest that the morpheme is underlyingly /-ik/ and that vowel deletion may play a roll in the preservation of the non-homorganic cluster. More morphological studies may reveal whether or not such a synchronic process exists.

This is also true of loan words and words suspected of being compound words. In all of these cases, non-homorganic nasal clusters are accepted in the language.

5)	σίπəητύ [ʔ]	the tree king	roi des arbres	
6)	τύmkόη [7]	lamp	lampe	0698

The argument for prenasalized phonemes is further supported by restrictions on syllable onsets. Nasals preceding a stop in a word-initial or root-initial position (i.e., unambiguous onsets) must be homorganic, and the stop will always be voiced. The only other combination of sounds to occur in an onset are resonants following the initial consonant.⁸

Some speakers occasionally pronounce the voiceless alveolar affricate with an alveolar [ts] instead of alveopalatal fricative [tʃ].

3.1.2 Fricatives

Unlike stops, fricatives can contrast for voicing. A minimal pair exists to show contrast between the labiodental voiced and voiceless fricatives.

7)	ù ≠ fə	to carve	tailler	0899
	ù ≠ və	to harvest	récolter	0757

8)	ù ≠ fən [3]	thigh	cuisse	0065
	ù ≠ vən	to resemble	ressembler	0426

At the alveolar place of articulation the opposition relates to prenasalization and only coincidentally to voicing, just as seen with the stops. The prenasalized alveolar fricative occurs less than ten times in the lexicon. It is always in a root-initial position, except in one example. Several other closely related languages also have prenasalized fricatives (Boyd forthcoming).

⁸ An argument based on syllable structure could also be made for including palatalized, labialized, rhoticized, and pharyngealized consonants as phonemes. However, since there are no major restrictions on what consonants can be followed by a resonant, such a decision could nearly quadruple the phonemic inventory. It is more economical to treat the resonants and pharyngeal fricative as part of the syllable structure, which is discussed in section 4.

9)	mà ≠ nzás [6] ⁹	urine	urine	0101
10)	ì ≠ nzàŋ [19]	feast	fête	0581
11)	ù ≠ nínzà?	to urinate	uriner	0119

The voiceless (non-prenasalized) alveolar fricative is occasionally voiced in an intervocalic position or when before a nasal, but is always pronounced as voiceless in careful speech. As seen with stops, an alveolar fricative can follow a nasal without any assimilation of place of articulation or voicing processes occurring. The absence of a language-wide assimilation process corroborates the analysis of the prenasalized fricative as a single phoneme rather than the result of a process of nasal place assimilation and post-nasal voicing.

12)	ù ≠ néms [1]	man	homme	0328
13)	nàms [?]	blessing	bénédiction	0913
14)	páms [7]	paddle	pagaye	0852
15)	ù ≠ nùms	to smell ¹⁰	sentir	0136

3.1.3 Nasal resonants

The following morphophonological process has been observed: when the prefix /ni-/ occurs before a vowel, the two segments coalesce into a palatal nasal [ɲ] (section 7.3). This observation raises the question of whether or not all instances of the palatal nasal in the language are the result of an underlying /ni/ or /nj/ sequence. The question is further complicated by the difficulty in distinguishing between the articulation of a nasal-approximant sequence from a palatal nasal. In following with the pattern in analysis of related languages (Maddieson 2003:24, Boyd forthcoming), and in want of further studies investigating the underlying forms, it will be assumed that at least some of the surface palatal nasals are phonemic. In this way the phonemic inventory contains a nasal at the same place of articulation as each stop. This assumption also simplifies the inventory of possible CV structures.

⁹ See section 6.1 for evidence that the nasals are not a part of the noun class markers.

¹⁰ In those cases where verbs end with a nasal followed by an alveolar fricative, the final phone may be a causative suffix, and the non-homorganic surface sequence may be the result of a deleting underlying vowel. However, at this point it is not clear whether or not this morpheme is productive, and there is no evidence of a deleting vowel (section 6.2.4).

3.1.4 Oral resonants

Oral resonants can be functionally defined as those sounds which can occur in the second slot of a complex onset (section 4.1). Nyokon oral resonants include two approximants, a liquid phoneme (two allophones) at the alveolar place of articulation and a guttural phoneme. Following descriptions of related languages, nasals are also labeled resonants in the phoneme chart (Mous 2003, Boyd forthcoming). When the word *resonants* is used on its own in the prose description, it is referring to oral resonants only.

At the alveolar place of articulation, the rhotic [r]¹¹ and the lateral [l] are in complementary distribution. In his field notes, Barreteau noted some type of variation between the two sounds. Comparing my list with Barreteau's wordlist, I noted that every word with a word-final lateral in his transcription was transcribed with a word-final rhotic in my database. In my database, the lateral allophone only occurs in the root-initial position, and the rhotic occurs elsewhere. The lateral allophone never occurs word-finally or in a coda, and is only in an intervocalic position when immediately preceded by a prefix (i.e., root-initial). Anecdotally, there was one instance when a speaker tried to think of a word ending in a lateral, and the word quoted was one that had previously been recorded with a final rhotic. All three speakers present agreed that either pronunciation would be acceptable. Since the language of education (French) includes both sounds as phonemes, it is no surprise that the speakers are conscious of the sounds despite their allophonic relationship.

The palatal and labial-velar approximants, [j] and [w], each have an allophone in the form of a voiced fricative with the same place of articulation, [ʒ] and [ɣ] (see section 7.1). The fricative allophone of the palatal approximant is less common and is only used by some speakers. The velar fricative is much more common. It modifies the approximant only by raising the tongue to create friction. It is pronounced with rounded lips. Both allophones commonly occur when an approximant

¹¹ The rhotic can be pronounced as a trill or a flap, but when carefully articulating, the speakers show a preference for the trill. The rhotic is normally devoiced phrase-finally. Since this change is not phonemic, it is not included in the transcriptions.

(often a desyllabified high vowel; see section 7.1) is word-initial in a monosyllabic word. The velar fricative is also commonly pronounced in the root-initial position.

There are three phones occurring in the language whose place of articulation is in the throat area. They are in an allophonic relationship. This phoneme is most commonly found in an intervocalic position inside a root, in which case it is articulated as a voiced pharyngeal fricative [ʕ]. This relatively uncommon symbol should not be confused with a glottal stop [ʔ], although Barreteau states in his field notes that the fricative is sometimes preceded by a glottal closure. Though the symbol used is officially labeled “fricative”, it is grouped with the resonants here because of how it patterns in the syllable structure. Like other resonants, the pharyngeal fricative can occur in the second position of a complex onset (see section 4.1). In unrelated languages with similar guttural sounds, acoustic studies have shown that guttural sounds that have traditionally been labeled fricatives do not normally involve friction and could be more appropriately labeled approximants or resonants (Edmondson et al. 2005, Laufer 1996, McCarthy 1994:194). Such an analysis corresponds to the phonological pattern observed in this language.

16)	ì ≠ jáʕák [ʕ]	pangolin	pangolin	1008
17)	kì ≠ màʕàr [ʕ]	god	dieu	0907
18)	ù ≠ jɔʕɔr	to loosen	desserrer	0660
19)	ú ≠ kʕə̀n [ʕ]	wrinkle	ride	0187

In the word-final position, the sound is a pharyngeal (or epiglottal) stop [ʔ]. This sound can be followed by an audible release of air, i.e., aspiration.

20)	ù ≠ kə̀ʔ	to crush	écraser	1457
21)	ù ≠ və̀ʔ	to burn	brûler	1498

Alternatively, in the word-final position or before a word-final voiceless vowel, the phone can be devoiced (as with any other word-final sound) and pronounced as a voiceless pharyngeal fricative [ħ].

Table 2: Guttural Allophones

/ʕ/ →	[ʕ]	/ intervocalic
	[ʔ]	/ word-final
	[h]	/ phrase-final

Another related phone is the glottal fricative [h]. One speaker in particular frequently substituted a glottal fricative for the approximants or the pharyngeal fricative. It is unknown whether this allophony is idiolectal or represents a distinct dialect. The same phone can also enter the language through loan words such as *hama* 'hammer' which comes from Cameroon Pidgin.

3.2 Vowels

Evidence has been found for nine phonemic vowels. This analysis differs most significantly from previous descriptions of the language in the addition of the near-close front vowel [ɪ]. This vowel has only been seen in seven words. The status of this marked vowel is discussed below in section 3.2.1.

This analysis also modifies a previous description (Nga 2000) by not considering the close-mid front vowel [e] to be phonemic. This vowel is not seen in the transcriptions of Barreteau or Richardson (1957). Most of my own transcriptions of instances of [e] in Nga's data are instead [ɛ] or [i]. The sound [e] can appear as an allophone of /ɛ/ when following a palatal approximant or word-final. One anecdote may suggest recent language change involving the loss of this vowel. In one isolated case, an elderly speaker consistently pronounced a word with the prefix [e-] but he was later corrected by slightly younger speakers who all pronounced the word with an [i-] prefix (class 19).

The vowel transcribed by other researchers as [o] is here transcribed as a near-close vowel [ʊ] since acoustic measurements show it to be close to—and even sharing acoustic space—with the high back vowel [u]. Barreteau noted that he had observed some type of undefined variation between the back vowels [ɔ] and [ʊ] (which he transcribed as [o]). No complementary distribution

has been found, but the acoustic range of the vowel /ɔ/ is large enough that it overlaps the acoustic space typically covered by the symbol [o]. This may account for the variation heard by Barreteau, in which case his transcriptions of [o] would be divided between /ʊ/ and /ɔ/.

Table 3: Phonemic Vowels

	Front	Central	Back
Close	i	ɨ	u
Near-close	ɪ		ʊ
Mid	ɛ	ə	ɔ
Open		a	

There are several phonetic modifications that are frequent and can occur with any vowel of the language. Any vowel adjacent to a nasal consonant can be pronounced with some degree of nasalization, depending on the speaker. Nasalization does not normally spread across non-nasal consonants except in the case of the pharyngeal fricative. Such spreading is exhibited in the name of the language, which is normally pronounced with nasalized vowels: [nɪ̃pɔ̃ŋɔ̃].

All sounds of the language, including vowels, have a tendency to devoice when phrase-final. This is a very common occurrence in closely related languages (Boyd forthcoming). This phenomenon can cause some difficulties in distinguishing word-final aspiration from devoiced vowels. Even when the final syllable of the word is closed, the final vowel can occasionally devoice, at least partially, if the coda is also voiceless. Since neither nasalized nor voiceless vowels are considered phonemic, neither diacritic marking is used in the transcriptions.

3.2.1 Evidence of opposition: front vowels [i], [ɪ], [ɛ]

The near-close front vowel [ɪ] is very rare in the language. It has only been found in seven words. Another peculiarity of this vowel is that, while it follows the palatal approximant in every instance, it is not in complementary distribution with the close vowel [i] which can also follow the palatal

approximant. Though the vowel is rare and restricted, there are two apparent minimal pairs with the close front vowel.

22)	j ≠ ǰ [4]	wood	bois	0712
	jǰ [?]	mom	maman	

23)	ù ≠ jíṃ	to swing	balancer	1412
	ù ≠ jíṃ	to return, give back	renvoyer	0810

While the near-close front vowel [ɪ] is not in complementary distribution with the close front vowel [i], it does have such a relationship with the close central vowel [ɨ] which never follows a palatal approximant. There is one noun whose vowel alternates between these two vowels in exactly the environment described, suggesting an allophonic relationship.

	SINGULAR	PLURAL			
24)	ɣ ≠ ǰ [3]	j ≠ ǰ [4]	wood	bois	0712

One possible analysis of this pair is that the underlying vowel of the root is the central vowel /ɨ/, which becomes the near-close front vowel [ɪ] before the prefix /i-/, which is desyllabified into a glide (section 7.1). One could then assume that all other instances of the near-close front vowel [ɪ] are surface forms of an underlying central vowel /ɨ/.

25)	/i ≠ ɨ/	[jǰ]	0712
	4-wood		

One unappealing result of this analysis is that the language would then have an asymmetrical vowel system. Such a situation is not unheard of but is marked in Bantu languages (Welmers 1974:20, Hyman 2003). In addition, a similar alternation occurs between the close front vowel [i] and the close central vowel [ɨ], and in those cases the most economical account describes the velar fricative [ɣ] as the environment that triggers the centralization of the vowel—a description that would already account for the alternation seen in the word for 'wood' above (see section 7.2).

Other evidence suggests that the near-close front vowel is a phoneme, but that it is in its last stages of disappearing from the language. For example, in a recording where one speaker pronounced the near-close vowel [ɪ], another clearly pronounced the close vowel [i].

26)

jíkùs	smoke	fumée	1308 (Enam)
jíkùs	smoke	fumée	1308 (Blaise)

This alternation is especially interesting, since it appears to be a combination of the word [jɪ́ɪ] 'wood' and the word [ùkùs] 'fire'. Nonetheless, the speakers view this as one word and were unable to identify a morpheme break in the word. This variation may be evidence of a diachronic change in process: the near-close vowel [ɪ] becoming the close vowel [i].

This hypothesis (that the near-close vowel is merging with the close vowel) is grounded in another change that happened in the language. Every closely related language, and most Bantu languages, are characterized by a phonological process known as ATR harmony (Boyd forthcoming, Mous 1986, see Casali 2008 for an overview of ATR harmony). In similar systems, the vowels [i] and [ɪ], as well as the back vowels [u] and [ʊ], function as a pair distinguished by the binary phonological feature [$\pm$ ATR]. While this system is active in all closely related languages, it does not occur in Nyokon. Evidently, the language once had an ATR harmony system but lost it at some point in the not-so-distant past. The hypothesis regarding the near-close vowel [ɪ] is that once the binary phonological feature separating it from the close vowel [i] stopped being part of an active phonological process, the need to distinguish the binary pair also disappeared. It is suspected that the other near-close back vowel [ʊ] may also be disappearing from the language by merging with the close back vowel [u] (see section 3.2.3). If so, the language is moving from a symmetrical nine-vowel system to a symmetrical seven-vowel system.

The following pair demonstrates contrast between the near-close and the mid front vowels.

27)	pù ≠ jín [14]	debt	dette	0834
	ì ≠ jén [19]	fatigue	sommeil	0184

Other pairs demonstrate contrast between the close and mid front vowels.

28)	ù ≠ níìn	to lose	perdre	0846
	ù ≠ néìn	to plant	planter	0748

29)	ù ≠ tǰém [3]	heart	coeur	0082
	ù ≠ tǰím	to hollow out	creuser	0715

3.2.2 Evidence of opposition: central vowels [ɨ], [ə], [a]

Some of the examples of contrast between the close central vowel [ɨ] and the mid central vowel [ə] seem to suggest a relationship between tone and vowel height. Yet the following pairs, as well as other examples of contrast in similar environments, demonstrate that there is no such relationship.

30)	ù ≠ kár	to pick (fruits)	cueillir	0759
	ù ≠ kər	to act, do	faire	0702

31)	ȳ ≠ ɦ [6a]	markets	marchés	0535
	ȳ ≠ ɦ [3]	wood	bois	0712

The following triplet demonstrates contrast among the central vowels in an identical environment apart from tone.

32)	ì ≠ ƒír [19]	mahogany powder	poudre d'acajou	
	ì ≠ ƒər [19]	type of banana	espèce de banane	
	ì ≠ ƒàr [19]	comb	combe	0568

Other pairs differ only in their prefixes. The roots are, at least in their surface forms, minimal pairs showing contrast between these vowels.

33)	ì ≠ ƒír [19]	mahogany powder	poudre d'acajou	
	mà ≠ ƒír [6]	rainy season	saison des pluies	1343
	ù ≠ ƒər	to blow	souffler	1476
	ì ≠ ƒàr [19]	comb	combe	0568

34)	ù ≠ kər	to pick (fruits)	cueillir	0759
	kì ≠ kír [7]	vine	liane	1191

3.2.3 Evidence of opposition: back vowels [u], [ʊ], [ɔ]

A minimal triplet exists to demonstrate contrast between the three back vowels of the language.

35)	ù ≠ pùr	to stir	remuer, tourner	0597
	ù ≠ pòr	to pierce	percer	1452
	ù ≠ pòr	to begin	commencer	1501

Other minimal pairs provide further evidence of contrast.

36)	ù ≠ púm	to hunt	chasser	0775
	ù ≠ póm	to ripen/ferment	mûrir/fermenter	1248 / 0609

37)	ù ≠ kúp	to capsize	se renverser	0855
	ù ≠ kóp	to barter	échanger	0819

38)	ù ≠ kùs	to gather	ramasser	1465
	ù ≠ kùs [3]	fire	feu	1305

39)	ì ≠ tɔʔ [19]	secret	secret	0927
	ì ≠ tóʔ [19]	first	poing	0057

40)	ù ≠ ndúr [3]	crowd	foule	0391
	ù ≠ ndúr [3]	throat	gorge	0025

Although adult informants produced examples of contrast between the near-close back vowel [ʊ] and the close back vowel [u], in one informal test, a younger speaker (early 20's) was unable to discern the difference between the minimal pair *upur* 'stir' and *upur* 'pierce', hearing both words as 'stir'. It is possible that the confusion stems from a lexical gap, but this incident does raise the suspicion that the near-close back vowel could be disappearing from the language. This is an especially relevant question, since even with older speakers, the near-close front vowel [ɪ] shows signs of losing its place in the language (see section 3.2.1). One can speculate that after losing their

ATR harmony system it is natural that speakers would cease to distinguish vowels that only differ by the feature [$\pm$ ATR]. Further testing is required to show if there is any current language change happening.

The phonemic status of the near-close vowels is further brought into doubt by the lexical free variation in the infinitive prefix between [u-] and [ʊ-] (see section 6.2.1).

3.2.4 Evidence of opposition: close vowels [i], [ɨ], [u]

The close front vowel [i] and the close central vowel [ɨ] contrast in the following minimal pairs:

41)	píí	yesterday	hier	1371
	p ≠ hí [2]	wives	épouses	0363

42)	à ≠ ŋgíí [ʔ]	law	loi	0520
	à ≠ ŋgíí [6a]	tails	queues	1031

43)	ì ≠ sík [19]	hiccup	hoquet	0114
	ù ≠ sík	to accompany	accompagner	0415

Contrast can also be demonstrated between the close central vowel [ɨ] and the close back vowel [u].

44)	ù ≠ kùs [3]	fire	feu	1305
	ù ≠ kùs	to imitate	imiter	0427

45)	ù ≠ tú	to sell	vendre	0821
	ù ≠ tí	to advise	conseiller	0450

3.2.5 Evidence of opposition: low vowels [ɛ], [a], [ɔ]

The following pairs demonstrate contrast between the central and back low vowels.

46)	ù ≠ káp	to buy	acheter	0820
	ù ≠ kóp	to barter	échanger	0819

47)	ù ≠ ndàm	to gossip	faire des commérages	0451
	ù ≠ ndòm	to push	pousser	1436

48)	ù ≠ sám	to move away, migrate	déménager, immigrer	0529
	ù ≠ sóm	to complain	se plaindre	0467

Contrast can also be demonstrated between the front and central low vowels.

49)	ù ≠ nám	to prepare (food)	préparer (la nourriture)	0591
	ù ≠ ném [1]	husband	mari	0362

3.2.6 Evidence of opposition: mid central vowel [ə]

The above sections have already demonstrated contrast between the mid central vowel and the other central vowels. Contrastive pairs are shown here between this vowel and other potential allophones.

50)	ù ≠ nám	to hurt oneself	se blesser	0207
	ù ≠ ném [1]	husband	mari	0362

51)	ù ≠ kár	to pick (fruits)	cueillir	0759
	ù ≠ kór	to crunch	croquer	0142

52)	ù ≠ kábɾ	to blink	cligner de l'oeil	0104
	ù ≠ kúp	to capsize	se renverser	0855

53)	ù ≠ nà	to throw	jeter	1430
	ù ≠ nì	to bury	enterrer	0954

3.2.7 Vowel length

All vowels occur (at least phonetically) in a long form except for the mid vowels: [ɛ], [ə], and [ɔ].

One indicator that vowel length may be phonemic is that the speakers themselves appear to be aware of the differences in vowel duration. However, it is difficult at this stage to determine whether or not vowel length is conditioned by a certain phonological or morphological environment. Only one minimal pair has been recorded where the tone of the two words was also identical (phonetically).

54)	ù ≠ sààr	to chop	fendre	
	ù ≠ sàr	to swim	nager	0160

55)	ú ≠ páà	to hate	haïr	0285
	ù ≠ pá	to ascend	monter	1409

56)	ù ≠ túù	to spit	cracher	0111
	ù ≠ tú	to sell	vendre	0821

Long vowels can carry rising or falling tones. There is no clear evidence of rising or falling tone on short vowels. Falling tones can also occur on syllables where the coda is tone-bearing (see section 5).

57)	ù ≠ jîr	to be drunk	être soûl	0182
	ɣ ≠ ħp [3]	thief	voleur	0388
	ɲ ≠ òú [5]	nose	nez	0011

Monosyllabic nouns with no coda nearly all have long vowels. The few exceptions to this rule are likely loan words.¹² This pattern suggests a possible lengthening of vowels to comply with a bimoraic minimality constraint. It is not known whether this lengthening is a synchronic or diachronic (lexicalized) process. Another possibility yet to be explored is that there is both phonemic and phonetic (non-contrastive) vowel length in the language.

58)	síí [1]	relative	parent	0341
	ɣ ≠ òú [1]	child	enfant	0334

4 CV patterns and distribution

The following six syllable types are widely attested, although vowel-initial and closed syllables are significantly restricted.

¹² The two examples of CV nouns found are [kú] 'ladder' and [tú] 'needle'. Both are of the gender 1/2 though the singular has a null prefix. This noun class marking is common, if not ubiquitous, with loan words.

Table 4: CV patterns

V	à.pún	goat	chèvre	0965
CV	à.mà.nà.mà.nà	thunder	tonnerre	1333
CVC	à.líf	rice	riz	1236
CGV	mà.sjó	marrow	moelle	0075
CGVC	ù.fjàn	to go to bed	se coucher	0152
CVCC	nàms	blessing	bénédiction	0913

The syllable type V is restricted to the word-initial position. It is likely that in all cases these word-initial syllables are prefixes. Syllables with a complex coda are restricted to the word-final position. These complex syllables do not follow the principles of sonority sequencing. Some are clearly the result of a productive phonological process and others may be remnants of previously productive processes.

Approximately one-third of all syllables in the database are closed. With very few exceptions, closed syllables are only found word-finally. Around two-thirds of word-final syllables are closed. Further studies may reveal that this pattern is due to a synchronic phonological process of final vowel reduction, as is the case in Tunen (Mous 2003). However, Barreteau's field notes include examples of words in phrase-medial position with no word-final vowels appearing that are not present when the word is pronounced in isolation.

4.1 Consonant distribution

Any consonant can appear in the onset of a syllable. Since virtually all words in the database are preceded by a prefix, there are lexical restrictions on which sounds occur word-initially. Verbs, however, do not always require a prefix, so further data will likely show that any consonant in the root-initial position of a verb can also be word-initial.

Complex onsets can be formed by including a resonant immediately after the initial consonant of the onset. Only the four resonants (including the voiced pharyngeal fricative) can occupy this position in the syllable. However, a resonant cannot directly follow another resonant.

59)	ù ≠ ŋgǰés [3]	pipe-stem	tuyau	0903
60)	ù ≠ swáñ	to lower	baisser	1428
61)	ù ≠ trùm	to squeak	grincer	1329
62)	nì ≠ kʁá [5]	cattle pen	enclos	0770

As mentioned above, virtually all codas occur word-finally. Among the voiceless stops, only the bilabial [p] and velar [k] occur in codas. The voiceless alveolar stop [t] never occurs in a coda. Prenasalized stops are never in the coda either. The voiceless fricatives [f] and [s] frequently occur in the coda, but their voiced and prenasalized counterparts [v] and [nz] do not. The pharyngeal fricative [ʔ] has a word-final allophone in the form of a pharyngeal stop [ʔ̤] that only occurs in the coda. All of the nasals except for the palatal can occur in the coda. Among the resonants, only the alveolar rhotic [r] occurs in the coda.

Table 5: Distribution of Consonants

Onset		Nucleus	Coda	
C	G		C	C
Any consonant	Any oral resonant		p, k s m, ŋ r	k s m, n r
			ʔ (or /ʔ/) f n	

Only about five percent of the codas in the lexicon are complex codas. There are only five consonants that appear in the second position of a complex coda. The velar stop occurs in this position eight times. In a few of those cases, it may be a verbal extension with a meaning similar to what has been described as “pluractional” (Mous 2003:289, Odden 2003:539), “intensive” (Orwig 1989:301), or “repetitive” (Schadeberg 2003:72) in related languages. It is not known if this morpheme is still productive (see section 6.2.5). The other two instances are nouns which may be derived from verbs with a similar word-final morpheme.

63)	kì ≠ lúnk [7]	old person	vieillard	0340
64)	kì ≠ nárk [7]	elder	ancien	0393

The rhotic occurs in this position seven times. Six of those are after a bilabial stop, in which case the stop becomes voiced. When the rhotic occurs before a velar stop, voicing does not occur.

65)	jábr [ʔ]	gift	cadeau	0829
66)	ù ≠ lób̀r̀	to weed	enlever les mauvaises herbes	0750
67)	ù ≠ tʃób̀r̀	to transplant	transplanter	0749
68)	ù ≠ kúbr	to change	changer	1459
69)	ù ≠ káb̀r̀	to blink	cligner des yeux	0104
70)	ù ≠ púbr	to store	garder, mettre en réserve	0644
71)	ù ≠ pí̀nikr	to move	bouger, se déplacer	1397

The alveolar fricative in the second position of a complex coda normally follows a nasal. In many cases this structure may arise from a causative suffix (see section 6.2). However, with certain nouns the final fricative appears to be a part of the root. The fricative follows a nasal in every case, except in one word, where it follows a voiced velar stop.

72)	ù ≠ né̀ms [1]	man	homme	0328
73)	nàms [ʔ]	blessing	bénédiction	0913
74)	páms [7]	paddle	pagaye	0852
75)	kì ≠ mbígs [7]	cliff	falaise	1264

The bilabial and alveolar nasals are more rare in this position occurring only four times each as the second consonant of a complex coda. In five of the eight occurrences, the nasal follows another nasal with a different place of articulation. The bilabial nasal twice follows the alveolar fricative, which is pronounced with voicing, and once the alveolar nasal follows a velar stop, which is also voiced. All of these examples occur on verbs and are likely come from verbal extensions discussed in section 6.2.

A peculiarity in the distribution of the pharyngeal fricative is that whenever it is in an intervocalic position the vowels on either side are identical. This is especially remarkable since most stems are monosyllabic (section 4.4).

76)	ù ≠ jàɣàr	to scatter	éparpiller, répandre	1467
77)	à ≠ tʃɔ̃ɔ́k [3]	courtyard	cour	0675
78)	ù ≠ ʏéɣèn	to learn	apprendre	0262

4.2 Distribution of vowels

No clear diphthongs have been found except those which can be interpreted as approximants occupying the second position of the onset. In other words, there are no unambiguous examples of two vowels of different qualities adjacent to each other in a syllable or across a syllable boundary. Section 7 discusses some of the hiatus resolution processes observed in the data.

There are no clear patterns regarding restrictions on the co-occurrence of vowels in a stem.

One peculiarity in the distribution of vowels is that all vowels have been seen in a long form except for the mid-close vowels: [ɔ], [ɛ], and [ə].

4.3 Reduplication

There are several words that appear to be the result of a reduplication process. These words can be exceptional in their structure or distribution of consonants. There is no evidence that reduplication is a productive process. Some of the words in this list may be loanwords.

79)	mbàɣàmbàɣà [?]	dawn	aube	
80)	à ≠ màmàmànà [9]	thunder	tonnerre	1333
81)	kì ≠ lìnàlìnà [7]	shadow	ombre	1350
82)	vàsɔ́s [?]	lime, whitewash	chaux	0690
83)	kèŋkèŋ [7]	doorway	seuil	0666
84)	ndùmndùm [7]	mortar	mortier	0619
85)	í ≠ ŋgàńgàńà [19]	story	conte, histoire	0480
86)	kì ≠ kàńákàńà [7]	prostitute	prostituée	0407

87)	mbúmbù [7]	namesake	homonymy	0360
88)	àlóló	naked	nu	0540

4.4 Lexical stem structures

At least eighty percent of nominal stems are monosyllabic. Many of the polysyllabic stems have a noun class marking indicative of loan words. Approximately seventy percent of noun stems end with a closed syllable. The most common lexical stem structure for nouns is CVC (assuming no word-final deletion process; see section 4). Thus, the prototypical disyllabic stem of Bantu languages has been reduced to a monosyllabic stem, which has also been observed in many Grassfields Bantu languages (Watters 2003:234).

Though the CVC structure is strongly preferred for nominal stems, the lexicon contains a wide variety of less common nominal stem structures, as seen in the following table. For those stem structures found less than ten times in the lexicon, the number in parentheses represents the number found. In some cases, questions about the origin of words or morphology make it difficult to discern whether or not the word represents a canonical stem type for nouns. In these cases the symbol ~ indicates that the figure could be larger but that some questionable items were excluded. The notation VV indicates a long vowel and assumes that all long surface vowels are part of the underlying CV structure.

Table 6: Nominal stem structures

C (~ 2)	nú ≠ ŋ	tú ≠ ñ	grinding stone	pierre à moudre	0615
V (~ 6)	kj ≠ ú	pj ≠ ú	bone	os	0074
VV (7)	y ≠ ħ	p ≠ ħ	wife	femme, epouse	0363
CV	kì ≠ fə	pì ≠ fə	shoulder	épaule	0031
CVV (7)	nì ≠ tɦ	à ≠ tɦ	navel	nombril	0037
CGV (5)	nì ≠ kʃá	à ≠ kʃá	cattle pen	enclos	0770
VC	kj ≠ òp	pj ≠ òp	skin	peau	0002
VVC (9)	nj ≠ àár	y ≠ àár	headpad	coussin de tête	0862
CVC	à ≠ pún	ì ≠ pún	goat	chèvre	0965

CGVC (~ 5)	kì ≠ lǝ̀n	pì ≠ lǝ̀n	field	champ	0743
CVVC (~ 9)	ù ≠ píír	ì ≠ píír	palm nut	noix de palme	1240
CVCC (~ 3)	ù ≠ né̀ms	pà ≠ né̀ms	man	homme	0328
VCV (1)	kǝ̀ ≠ úvə̀	pǝ̀ ≠ úvə̀	corpse	cadavre	0953
CVCV	nì ≠ púǝ́ǝ́	à ≠ púǝ́ǝ́	mat	natte	0697
CVCVC (~ 6)	kì ≠ màǝ̀ǝ̀r	pì ≠ màǝ̀ǝ̀r	god, fetish	dieu, fétiche	0907

While Bantu nouns typically involve little morphology besides their noun class prefix, verbs are frequently modified by both prefixes and suffixes. Since many open questions remain about verbal morphology in Nyokon (see section 6.2), it is difficult to comment on verbal stem structures. It can be noted that the verb-final inflectional vowel—common in Bantu—does not exist. The same is true of the neighboring language Tunen (Mous 2003:288). In fact, eighty percent of verbs in the database end in a closed syllable. The most common verbal stem structure is CVC. No verbal stems are vowel-initial.

5 Tone

Transcriptions of tone were all done assuming a two-tone system. All closely related languages and most Bantu languages have two levels of contrastive tone (Boyd forthcoming, Kisseberth & Odden 2003:59). Since no morphological studies were done, little can be said about the tonology of Nyokon, except for a few observations on the patterns seen in the surface tone. Contrasting low and high tone can be shown in the following minimal pairs.

89)	ù ≠ mǝ́	to drink	boire	0149
	ù ≠ mǝ̀	to shave	raser	0565

90)	kì ≠ líǝ [7]	iron	fer	1279
	kì ≠ lìǝ [7]	ditch	fossé, rigole	1266

91)	ú ≠ làr	to live	vivre	0238
	ù ≠ láǝ	to drive away	chasser	0422

92)	kì ≠ pín [7]	darkness	obscurité	1351
	kì ≠ pìn [7]	cocoyam, taro	taro	1228

Rising and falling tone are also contrastive, although most obviously so in environments that can naturally be interpreted as having two tone-bearing units in the syllable, such as long vowels.

93)	ɲ ≠ î [5]	market	marché	0535
	ɲ ≠ ì [5]	name	nom	0354

94)	píí	yesterday	hier	1371
	pì ≠ í [?]	mothers	mères	0345
	ú ≠ pî	to give birth	accoucher	0244

95)	nì ≠ kùú [5]	bundle	paquet	0645
	ù ≠ kúú	to shrivel	ratatiner	1251
	ù ≠ túù	to spit	cracher	0111

A syllable may feature a contour tone when it has a sonorant coda which functions as a tone-bearing unit. Tone on sonorant codas can also be contrastive.

96)	ù ≠ né́m [1]	husband	mari	0362
	ù ≠ né̀m	to plant	planter	0748

97)	ù ≠ ɣ́ər	to sweep	balayer	0735
	ù ≠ ɣ̀ər	to open	ouvrir	0639

98)	ù ≠ jí́m	to swing	balancer	0161
	ù ≠ jí̀m	to return	renvoyer	0810

6 Morphology

As mentioned above, this study did not include an intentional examination of the morphology. The following are observations of possible morphemes seen in the list of words gathered. There is undoubtedly significant research left to be done in order to sketch the morphological system of the language.

6.1 Noun class markers

Nyokon has a system of fifteen noun classes. Both Barreateau and Richardson attempted to sketch out the noun class system in their brief interactions with the language (Barreateau, Richardson 1957:29). Each missed double-class genders cited by the other. Barreateau went as far as to check the secondary concord of the genders he cites, which includes the nine of the twelve listed below, leaving out 3/4, 5/4 and 14/8. Richardson missed 3/6, 6, 11/13, 14/6 and 19/mu-. The noun classes they found combine to form twelve double-class genders. In addition, there are two other possible double-class genders, each of which has only been seen in two examples. Therefore, there may be as many as fourteen double-class genders. Allomorphs of the noun class prefixes created by certain morphophonological environments are discussed below in section 7. Lexical allomorphs are presented in this section.

The double-class gender 7/8 is the most common gender representing approximately 40 percent of the nouns recorded. Gender 5/6 represents about 14 percent and 19/mu- just under 10 percent.

1 (u- or null¹³) / 2 (pa-)

ù ≠ ném	pà ≠ ném	husband	0362
síí	pà ≠ síí	relative	0341

3 (u-) / 4 (i-)

ù ≠ fàn	ì ≠ fàn	thigh	0065
ù ≠ píír	ì ≠ píír	palm nut	1240

3 (u-) / 6a (a-)

ù ≠ kùs	à ≠ kùs	fire	1305
ù ≠ kòr	à ≠ kòr	leg	0063

5 (ni-) / 4 (i-)¹⁴

nì ≠ kèr	ì ≠ kər	trap	0791
nì ≠ ndʒèr	ì ≠ ndʒər	chin	0021

13 Only two examples were found of a null prefix in the 1/2 gender.

14 Only three examples were found of this double-class gender. It has not been tested for secondary concord.

5 (ni-) / 6a (a- or ɣ- before vowels)¹⁵

nì ≠ ɣùn	à ≠ ɣùn	cola nut	1239
nj ≠ àár	ɣ ≠ àár	headpad	0862

6 (ma-)

	mà ≠ ní	water	1284
	mà ≠ pír	milk	0585

7 (ki-¹⁶ or null¹⁷) / 8 (pi-¹⁸)

kì ≠ lèŋ	pì ≠ lèŋ	well	0679
hámà	pì ≠ hámà	hammer (Pidgin)	0707

9 (a-) / 10 (i-)¹⁹

à ≠ kòf	ì ≠ kòf	antelope	1005
à ≠ kín	ì ≠ kín	calabash	0628

11 (nu-, ni-) / 13 (tu-, ti-)²⁰

nú ≠ ñ	tú ≠ ñ	grinding stone	0615
nì ≠ nǎŋ	tì ≠ tǎŋ	knife	0786

14 (pu-) / 6 (ma-)²¹

pù ≠ tú	mà ≠ tú	day (24hrs) / night	1367 / 1384
pù ≠ nó	mà ≠ nó	hook	0804

15 This alternation may be a phonological process. Hyman notes such a variation for Aghem, a Grassfields language (Hyman 1979, quoted in Watters 2003:234). The velar fricative is not a phoneme, but is rather an allomorph of the labio-velar approximant.

16 Richardson claims a pre-vowel variant consisting of a voiced velar fricative, giving the word 'leopard' as an example (1957:30). My informants were unable to come up with a word for 'leopard' in their language. He also claims the variant *i-* for the words 'fruit' and 'neck' (1957:29). In both cases I have *ki-*.

17 The null prefix is most commonly—if not exclusively—used for loan words.

18 Richardson claims the allomorph *ipi-* for the word 'fruit' (1957:29). I have *pi-*.

19 This gender pair is labeled 9/10 by Barreateau in his field notes. Richardson labels it A/B. He claims that 9/10 consists of the same nasal prefix for both classes. He cites the word for 'crocodile', but my informants gave a completely different word for crocodile that belongs to 7/8 and is likely a loan word: *kùbàngàn* / *pìkùbàngàn*.

20 Only four examples of *nu-/tu-* pairs and three examples of *ni-/ti-* pairs have been found. These two prefixes are grouped together in Barreateau's field notes. The alternation may be phonological, but with so few examples it is difficult to describe what process may be occurring. In addition, two of the *ni-/ti-* words involve a change of the first consonant of the stem (see section 6.1.1).

21 Richardson also claims a gender pair 14/4, but the word he cites, 'hook', is categorized by my informants in the gender 14/6.

14 (pu-) / 8 (pi-)²²

pù ≠ tʃónjé	pì ≠ tʃónjé	food	0569
pù ≠ tʃú	pì ≠ píjé	thing	1385

19 (i-) / (mu-)

ì ≠ lán	mù ≠ lán	eggplant	1225
ì ≠ tán	mù ≠ tán	soul	0910

The other two possible double-class gender pairs are 3/8 and 9/8. However, only two or three examples of each gender pairing have been found. Neither of these class markers have been checked for secondary concord.

3 (u-) / 8 (pi-)

ù ≠ mbàŋ	pì ≠ mbàŋ	wall	0664
ù ≠ mbóŋ	pì ≠ mbóŋ	beam, rafter	0669

9 (a-) / 8 (pi-)

à ≠ ŋgíí	pì ≠ ŋgíí	law	0520
à ≠ tʃòŋók	pì ≠ tʃòŋók	courtyard	0675

The following table illustrates the noun class gender pairs described above.

Table 7: Noun Class Gender Pairs

SG		PL
1		2
3		4
5		6a
		6
7		8
9		10
11		13
14		
19		mu-

²² Only four examples were found of this double-class gender. It has not been tested for secondary concord.

6.1.1 Irregular stem changes

There is at least one noun which changes its stem unpredictably in the singular and plural form.

99)	pù ≠ tʃú [14]	pì ≠ píjé [8]	thing	chose	1385
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Nouns considered part of the double-class gender 11/13 exhibit some variation. Four nouns begin with the prefixes *nu-* and *tu-*. Barreteau classified the singular and plural forms for 'water source', *nĩ* and *tĩ*, in the same gender. In addition, there are two other pairs beginning with *ni-* and *ti-*, but they are unique in that the following consonant alternates between the singular and plural.

100)	nì ≠ nùn	tì ≠ tùn	plug	bouchon	0630
101)	nì ≠ náʔ	tì ≠ táʔ	knife	couteau	0786

This alternation could either be interpreted as a stem change or as another alternate form of the prefixes (*nin-/tit-*). In his field notes, Barreteau gives another possible form for the plural of 'knife': [a ≠ tɪf].

6.2 Verbal affixes

No comprehensive studies of verbal morphology were done, but in gathering the wordlist several possible verbal morphemes were identified. The prefixes (infinitive, agentive nominalizing, and reflexive) are likely to be productive while the suffixes (causative and pluractional) showed less signs of productivity.

6.2.1 Infinitive prefix: *u-* / *ʊ-*

The form of the verb with a [u-] prefix, assumed to indicate the infinitive, was taken as the citation form of the verb. Some speakers pronounced the prefix [ʊ-]. Each individual speaker tended to consistently employ one prefix or the other. When directly asked about the discrepancy, some speakers explained it as an idiosyncratic preference. Although the vowel of the stem does not influence the prefix, it is possible that this variation is a remnant of a once fully functional ATR harmony system. The infinitive prefix always has a low tone.

6.2.2 Agentive nominalizing prefix: *mu-* / *pa-*

The *mu-/pa-* set of prefixes attaches to verbs and represents the singular and plural agent of the action respectively. This prefix appears to be highly productive in the language.

102)	ù ≠ tʃígì	to teach	enseigner	0263
	mù ≠ tʃígì	teacher	maître / enseignant	0394
	pà ≠ tʃígì	teachers	maîtres / enseignants	

103)	ù ≠ lúm	to fish	pêcher	0799
	mù ≠ lúm	fisherman	pêcheur	0397
	pà ≠ lúm	fishermen	pêcheurs	

104)	ù ≠ púm	to hunt	chasser	0775
	mù ≠ púm	hunter	chasseur	0398
	pà ≠ púm	hunters	chasseurs	

6.2.3 Reflexive/passive prefix: *pi-*

The prefix *pi-* is a morpheme that carries a reflexive, reciprocal or passive meaning. In its reflexive (or reciprocal) use the subject is both an agent and patient of the action. In its passive use the subject is the patient of the action but not an agent. There are many pairs of verbs with and without this morpheme, suggesting that it is still productive.

105)	ù ≠ m̀̀	to shave (someone)	raser (qqn)	0565
	ù-pí ≠ m̀̀	to shave oneself	se raser	

106)	ù ≠ t́́s	to anoint (someone)	enduire	0562
	ù-pì ≠ t́́s	to anoint oneself	s'enduire	

107)	ù ≠ k̀̀s	to gather	amasser	1465
	ù-pí ≠ k̀̀s	to assemble	se rassembler	0417

108)	ú ≠ p̀̀	to give birth	accoucher	0244
	ù-pí ≠ p̀̀	to be born	naître	0245

6.2.4 Causative extension: -s

Three pairs of verbs were found that differ only in the presence or absence of a word-final alveolar fricative. The difference in meaning between the verbs in these pairs is what one would expect from a causative morpheme where the semantic role of the subject in the intransitive verb becomes that of the object in the transitive verb. Many other verbs ending with an alveolar fricative were tested for a counterpart with the final morpheme and speakers were mostly unable to provide a non-causative form.

109)	ù ≠ ním	to go out (fire)	s'éteindre	
	ù ≠ ním-s	to extinguish	éteindre	

110)	ù ≠ nám	to hurt oneself	se blesser	0207
	ù ≠ nám-s	to wound	blesser	0796

111)	ù ≠ kòm	to grow up	grandir	0247
	ù ≠ kóm-s	to bring up (a child)	élever	0495

6.2.5 Pluractional/intensive extension: -k

There are two pairs of verbs that differ only in the presence or absence of a verb-final velar stop. The difference in meaning is similar to what has been described as “pluractional” (Mous 2003:289, Odden 2003:539), “intensive” (Orwig 1989:301), or “repetitive” (Schadeberg 2003:72) in related languages.

112)	ù ≠ nóm	to bite	mordre	0141
	ù ≠ nóm-k	to throb	lanciner	0232

113)	ù ≠ júr	to flow (blood)	couler (sang)	1480
	ù ≠ júr-k	to leak	s'échapper	1482

In one case the speakers allowed the verb with or without the final stop and were unable to articulate any clear difference in meaning between the two words.

114)	ù ≠ mîs(-k)	to sprinkle	asperger	1483
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In one other case the morpheme appears on a noun derived from a verb. Some speakers (but not all) also accepted the word without the velar stop, in which case it suggests that the person described is not as old as if the final morpheme was still present. However, a similar word (117) cannot lose its word final velar stop.

115)	ù ≠ lùn	to be old	être vieux	0248
116)	kì ≠ lún(-k) [7]	old person	vieillard	0340
117)	kì ≠ nárk [7]	elder	ancien	0393
	*kinar			

Two other similar words have no meaning if they lose their word-final velar stop.

118)	ù ≠ kàpk	to bathe	se laver	0561	*kap
119)	kj ≠ ùr hárk	headache (lit., head hurts)	mal de tête	0235	*har

7 Morphophonology

This section describes some of the morphophonological patterns observed during the collection of the wordlist. The only affixes solicited were the noun class markers and the verbal infinitive prefix. No morphological paradigms were collected so this description is in no sense comprehensive.

One surprise of the morphophonological patterns is that there are no indications of an ATR harmony system like those described for Tunen and other neighboring languages (Mous 1986, 2003, Boyd forthcoming, Hyman 2003). This may be an accidental gap in the data or an oversight in transcriptions by all four researchers who have independently studied the language. A more likely conclusion is that it represents a significant historical change in the phonological system vis-à-vis its closest neighbors.

7.1 Gliding and frication

When a prefix ending in a high front vowel or high back vowel precedes a root beginning with a vowel, the vowel of the prefix is pronounced as an approximant. This phonological alternation is typical of Bantu languages (Hyman 2003:48, 55).

120)	/nu ≠ ɛr/	[nùér]	0560
	11-granary		

121)	/ki ≠ ɔp/	[kjòp]	0002
	7-skin		

122)	/i ≠ ʊʊs/	[jóùs]	0623
	19-spoon		

In the case where the palatal approximant occurs before the high back rounded vowel, the two sounds may amalgamate, forming a high front rounded vowel. This observation was also made by Nga (2000).

123)	/ki ≠ u/	[kỹ:]	0074
	7-bone		

The palatal and labial-velar approximants, [j] and [w], have allomorphs of a voiced fricative at the same place of articulation, [ʒ] and [ɣ]. These allomorphs are only attested in the word-initial and root-initial positions. Both alternations appear to be subject to the discretion of the speaker. This variation is also seen in Barreteau's field notes. Incidentally, here we find an account for Richardson's proposal of a gender C/D consisting of the prefixes *ɣ*- and *ʒ*- (Richardson 1957:30). In his sole example, 'dog', the prefixes are allomorphs of the 3/4 prefixes *u*- and *i*-, which, when before a vowel can be pronounced as glides or fricatives.

124)	/u ≠ ʊʊ/	[wùú] or [ɣùú]	0334
	1-child		

125)	/i ≠ iip/	[jìp] or [ʒìp]	0334
	4-thief		

While the labial-velar approximant is frequently pronounced with frication when in the root-initial position, when the palatal approximant is in this same position, frication only happens idiosyncratically.

126)	/u ≠ wam/	[ùɣám]	0880
	INF-sing		

7.2 Centralizing

There is a set of singular-plural pairs in which the vowel of the stem alternates between a close front vowel [i] and a close central vowel [ɨ]. Each instance of the central vowel is preceded by a voiced velar fricative. The voiced velar fricative is not followed by a close front vowel anywhere in the language. This pattern suggests a productive phonological process in which the close front vowel is centralized when following a velar fricative. A similar alternation—between the near-close front vowel and the close central vowel—is discussed in section 3.2.1.

127)	/ni ≠ ii/	[ɲìí]	/u ≠ ii/	[ɣíí]	0018
	5-tooth		6-tooth		

128)	/ni ≠ iis/	[ɲìís]	/u ≠ iis/	[ɣíís]	0006
	5-eye		6-eye		

129)	/u ≠ iip/	[ɣìp]	/i ≠ iip/	[jìp]	0018
	3-thief		4-theif		

There is one example in which the labial-velar approximant precedes the close front vowel. In this instance, the approximant is in the second position of the onset and the initial consonant is also velar.

130)	ù ≠ kwì	to close	fermer	0640
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7.3 Palatalization of the alveolar nasal

The class 5 nominal prefix has two allomorphs: [ni-] and [ɲ-]. The form with the palatal nasal only occurs in monosyllabic words, suggesting a clear phonological motivation for the alternation. The environment could be equally described as only before vowel-initial stems, since all vowel-initial stems are monosyllabic and vice versa.

131)	nì ≠ fàná [5]	forest	forêt	1258
	nì ≠ kòŋ [5]	plantain	plantain	1209
	ɲ ≠ íí [5]	tooth ²³	dent	0018
	ɲ ≠ ùúr [5]	mouth	bouche	0015

It may be equally possible to transcribe the allomorph of the class 5 prefix as [ɲi-] or [ɲj-]. The assumption here is that what appears in the spectrogram to be a possible glide after the nasal is only the tongue in transition from the palatal nasal to the vowel and should not be transcribed as a glide. If, for example, the word 'mouth' was transcribed as [ɲjúr] (instead of [ɲùúr]) when compared with the plural form (class 6) [yùúr] 'mouths', one would also have to account for the change in vowel length in the stem.

There is a peculiar contrast between the class 5 prefix in the word [ɲíí] 'tooth' and the prefix in the word [nìí] 'water source'. The latter was grouped by Barreteau with the double-class gender 11/13. Its plural form is [tìí]. In the six other examples of this gender, four words begin with *nu-/tu-* and two begin with *ni-/ti-*.²⁴ Since the word for 'water source' is the only one of its kind, it is impossible to give any well motivated account for why the nasal in this case is not palatalized. A possible (ad hoc) explanation could be that in the case where palatalization does not occur, the stem is underlyingly short, so there is no motivation for coalescing the two segments of the prefix. Any

²³ The assumption behind the morpheme break here and in the following word is that the vowel of the stem is underlyingly long, which provides a natural phonological motivation for the coalescence of the two segments of the prefix. The underlying form of a word like [ɲùúr] 'mouth' (class 5) is assumed to be /ni ≠ uúr/ and not /ni ≠ ur/. If the latter underlying form were assumed, one would have to account for either a change in the quality of the vowel of the prefix or in the length of the vowel of the stem.

²⁴ The two words beginning with *ni-/ti-* are accompanied by a change in the stem so that their first syllables are actually *nin/tit*. See section 6.1.1.

formal account of the palatalization process must take into account the contrast between these two words.

7.4 Other hiatus resolution

In the case where the first of two vowels meeting at a morpheme break is a close front or a close back vowel, the unlicensed vowel cluster is normally dealt with by gliding the first vowel (section 7.1). There are four exceptional words where the expected glide does not occur. In two of the cases the vowel of the stem assimilates to the vowel of the prefix.

	SINGULAR		PLURAL		
132)	/pu ≠ is/	[pùús]	/ma ≠ is/	[mìís]	0005
	14-face		6-face		
133)	/pu ≠ Vr/ ²⁵	[pùúr]	/pi ≠ Vr/	[pìír]	0703
	14-work		8-work		

In the other two cases, the vowel of the prefix deletes or assimilates to the vowel of the stem.

	SINGULAR		PLURAL		
134)	/pu ≠ ur/	[pùùr]	/ma ≠ ur/	[mùùr]	1226
	14-mushroom		16-mushroom		
135)	/i ≠ uus/	[jùùs]	/mu ≠ uus/	[mùùs]	0623
	19-spoon		mu-spoon		

For the word 'spoon', it is assumed that the vowel of the stem is long. This is because there is no known motivation for the lengthening of the vowel in the singular form where the noun class prefix desyllabifies. If the stem does contain a long vowel, then in the plural form it is natural that the vowel of the stem would delete to avoid creating an unlicensed super-heavy syllable. One could equally hypothesize that the vowel of the stem is long in the word 'mushroom', which is what causes

²⁵ The V in the underlying form is to show that the underlying vowel is unknown. The simplest hypothesis is that it is either /u/ or /i/. In either case there is assimilation in either the singular or the plural form. Another hypothesis is that there is no underlying vowel in the stem, and the vowel of the prefix lengthens. While vowel lengthening cannot be ruled out, there is not yet any clear attestation of a phonological process which affects vowel length.

the vowel of the prefix to delete.²⁶ Maximal syllable weight is also seen as the motivation for the palatalization of nasals (section 7.3).

There are four cases of a prefix ending in [a] preceding a vowel-initial stem. In three of the four cases the low vowel assimilates or deletes. In the case of the words 'wife' and 'child' it is assumed that the vowel of the stem is underlyingly long, because no process of vowel lengthening has yet been attested.

136)	/u ≠ uu/	[yùú]	/pa ≠ uu/	[pàá]	0334
	1-child		2-child		
137)	/u ≠ ii/	[yíí]	/pa ≠ ii/	[píí]	0363
	1-wife		2-wife		
138)	/pu ≠ is/	[pùús]	/ma ≠ is/	[míís]	0005
	14-face		6-face		
139)	/pu ≠ ur/	[pùùr]	/ma ≠ ur/	[mùùr]	1226
	14-mushroom		16-mushroom		

Analyses of closely related languages explain hiatus resolution in terms of height and roundness of vowels, but they concede a few exceptions to the rule (Mous 2003, Boyd forthcoming). Here more data is needed before one can establish which cases form the rule and which cases are exceptional.

8 Conclusion

Nyokon is perhaps most noteworthy for its lack of an ATR harmony system—a feature present in all closely related languages. This change seems to have also had an impact on the vowel system, leaving us with questions about the status of the very rare vowel sound [ɪ] (section 3.2.1). Is it an allophone of the close central vowel [ɨ]? Or is it becoming the close front vowel [i]? Affirming either of these hypotheses would have a significant impact on any orthographic system proposed. Along the same line, a cross-generational study must take place to determine if the signs of a

²⁶ This hypothesis immediately runs into complications when one considers that in the word 'face' the vowel of the prefix is retained in the singular form but deleted in the plural form. Therefore, it is not simply an underlying characteristic of the stem that determines which vowel dominates.

possible change in the vowel inventory—from nine to seven vowels—can be confirmed or rejected (section 3.2.3). When considering orthographic design, some questions remain concerning the consonants as well. Although the phones [r] and [l] are in an allophonic relationship (section 3.1.4), speakers are aware of the different sounds and may not accept writing both sounds with the same grapheme. This may also be true of [w] and [ɣ] (sections 3.1.4 and 7.1). Another orthographic issue relates to consistency in distinguishing the palatal nasal from palatalized alveolar nasals (sections 3.1.3 and 7.3).

No proper treatment has been given to the morphology of the language. Verbal extensions will likely be of special interest and may give insights into morphophonological issues such as vowel length (section 3.2.7), tone (section 5), and hiatus resolution (section 7.4). Even in the area of noun class markers, a thorough study of secondary concord is needed to confirm or improve our understanding of the gender system.

In addition to the phonological issues raised and all of the morphological, syntactic, and discourse-related issues not yet touched upon, the sociolinguistic questions cannot be neglected. At least one self-identified dialect (Houng) has been reported and should not be ignored. Otherwise, those who wish to develop their language risk designing an orthography that excludes part of their own community.

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