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A Phonological Sketch of Bafanji (Chufie')

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Abbreviations

C	Consonant
V	Vowel
N	Homorganic nasal
S	Semivowel
σ	Syllable
μ	Mora
PG	Proto-Grassfields
-	Morpheme boundary
→	‘becomes’ (in phonological rules)
1.sg	First person singular pronoun
2.pl	Second person plural pronoun
3.sg	Third person singular pronoun
PROG	Progressive aspect
SVP	Serial verb prefix
PST	Past tense
FUT	Future tense
*	Non-occurring example or proto-form
(n.)	Noun
(v.)	Verb

Phonetic Tone Diacritics:

ˊ	High
ˉ	Mid
ˋ	Low
ˊˋ	Rising
ˋˋ	Falling
ˊˋˊ	Rising-Falling
ˋˋˋ	Low-falling
!	Downstep

Phonetic Tone Numbers:

1	Lowest tone
9	Highest tone

A Phonological Sketch of Bafanji

1. Introduction

This paper presents a phonology sketch of the language spoken in the village of Bafanji (Balikumbat Subdivision of Ngo-Ketunjia Division, North West Province, Republic of Cameroon).

1.1 The Bafanji language

The name that the Bafanji people give their language is Chufie' [tʃúfiʔɛ̃] or Chyefie' [tʃjěfiʔɛ̃]. According to the Ethnologue (Gordon 2005:56), there were 8,500 speakers of Bafanji in 1982. This figure could be extrapolated to a current figure by taking the national population growth rate of 2.9% per year until 2007. This gives a population of about 17,300. Another estimate is that there are about 21,000 people living within the village (Presbyterian Health Centre, Bafanji). There are probably more than 1000 proficient speakers resident outside the village (and perhaps several thousand more ethnic Bafanji who have lower levels of proficiency speaking Chufie' for a variety of reasons).

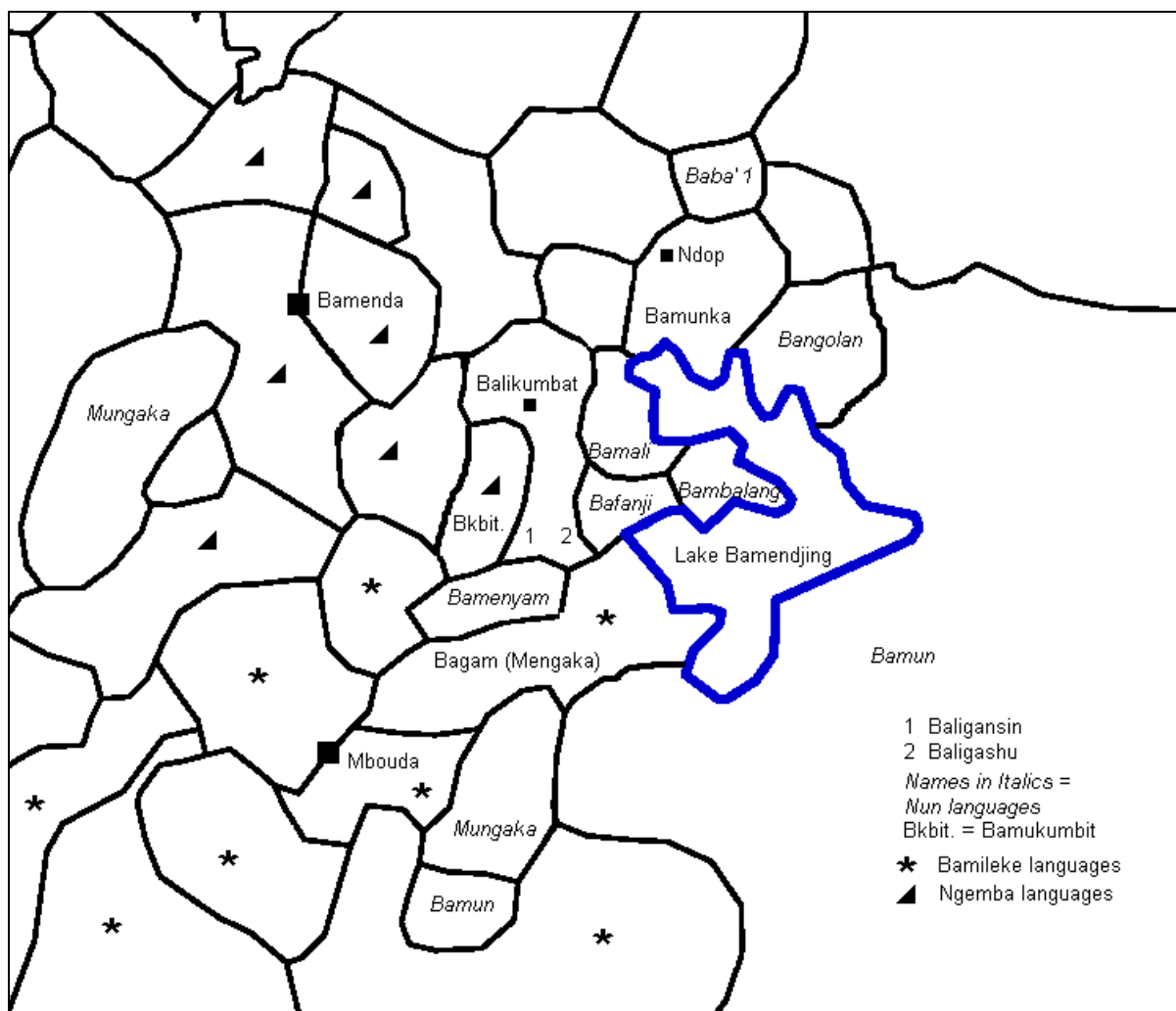
Bafanji is classified as a Grassfields Bantu language and its three letter ISO-689-3 code is (bfj). Its full linguistic classification as given in the Ethnologue is the following (Gordon 2005:56):

NIGER-CONGO: ATLANTIC-CONGO: VOLTA-CONGO: BENUE-CONGO: BANTOID: SOUTHERN: WIDE GRASSFIELDS: NARROW GRASSFIELDS: MBAM-NKAM: NUN : Bafanji

ALCAM (Dieu and Renaud 1983 and Breton and Fohtung 1991) considers Bafanji to be part of 'Məngambo' (908), which also includes the speech forms spoken in Bamenyam and Bamali. However, a sociolinguistic survey of the languages of the Ndop Plain was undertaken in the 1990's (Seguin and Mbongue 1994) and made it clear that Bafanji and all of the non-Bali villages¹ of the Ndop Plain were distinct enough to be considered languages in their own right, needing separate written materials.

The closest related languages to Bafanji are those belonging to the Nun subgroup: Bangolan, Bambalang, Bamali, Baba' (sometimes seen as a dialect of Mungaka), Bamenyam, Bamun, and Mungaka (Bali-Nyonga). Bamileke and Ngemba languages are also quite closely related to Bafanji, all being equal subgroups within Mbam-Nkam; Bamileke and Ngemba languages are also the closest geographical neighbours to the Nun languages.

¹ There are three 'Bali' villages on the Ndop Plain that speak an Adamawa language called Nyong or Mubako: Balikumbat, Baligashu, and Baligangsin.



Linguistic map of the area surrounding Bafanji (adapted from Gordon 2005)

Bafanji is surrounded by several languages belonging to different linguistic sub-groups which are indicated in parentheses in what follows. To the northwest is the village of Balikumbat whose residents speak the Nyong or Mubako language (Adamawa) who came to the region several generations ago and speak a language quite unrelated to the rest of those in the North West Province. Baligashu and Baligansin, located southwest of Bafanji, also speak the same Mubako language. To the northeast is Bambalang (Nun), to the south is Bagam, speaking the Mengaka language (Bamileke), and Bamenyam (Nun), and finally to the west is Bamukumbit (Ngemba). In addition to these languages, Cameroon Pidgin English is in widespread use among the Bafanji as well as most of the rest of the people of the North West Province, as it is a language of wider communication, used primarily when dealing with people of other languages. However, most children learn Pidgin at some point during their primary or secondary education years. English is also spoken by many educated Bafanji, but Pidgin English is used more commonly.

The first work on Bafanji was done by Emmi Kähler-Meyer who collected linguistic information from many Grassfields Bantu languages in the 1930's. Her work on Bafanji (1937) consists of three pages of nominal paradigms.

The only other accessible work on Bafanji known to the authors is a series of articles on different aspects of the grammar of Bafanji (Koopman and Mural 1994). That work presents

three articles of relevance to the phonology of Bafanji, but no in-depth phonological investigation was undertaken by the authors of that collection.

As concerns comparative work, a dialectometrical study of Ndop Plain languages was produced as a “Maîtrise” thesis (Nashipuh 1989). Kiessling (2007) has also written on the relationship between Mungaka and Bati.

Among phonological works on languages related to Bafanji, there are two recent phonology sketches, one on Bangolan (Njeck 2003) and another on Bamukumbit (Simpson 2006)². There is also linguistic research taking place in Bambalang. Some phonological study has been undertaken in Baba’ and Bamali, resulting in orthographies for the languages (Achotia 2005 and Njeck 2005). In addition to these, two “Maîtrise” theses have been produced on the phonology of the speech forms in the villages of Bapi (Ngueffo 1979) and Bati (Nusi 1986). These have been classified as dialects of Bamun and Mungaka respectively. As for the standard forms of Bamun and Mungaka, very little published linguistic research exists. Kiessling states, “In spite of detailed descriptions of the Bamun script, there is no reliable linguistic description, apart from Hombert’s (1980) sketch of the noun class system, Ward’s (1937/39) preliminary phonetic observations and Matateyou’s 2002 reader which contains many internal contradictions.” (Kiessling 2007:1). As for Mungaka, only three published works are available (Stöckle and Tischhauser 1993, Stöckle 1994, Vielhauer 1915), none of which focus on phonology.

There are no reported dialect differences in the village of Bafanji. When asked, everyone asserts that there is only one way of speaking Bafanji. The authors also have not observed any variation in the language with the exception of a few phonetic pronunciations of words that differentiate the elderly from the younger generation.

In the rural areas, no language shift away from Bafanji as mother tongue can be observed. Among those resident outside the village, there seem to be children who do not learn Bafanji from their parents, especially where only one of the parents is Bafanji. This seems to be a phenomenon limited to those residing outside the village.

The word order of Bafanji is typically SVO. Morphological features of verbs include tense and aspect marking by using verbal auxiliaries and grammatical tone. There is no agreement between the verb and its subject or object. Bafanji nouns can be divided into six noun classes which attest themselves in the different combinations of concord tone and concord consonant prefixes attached to noun phrase elements, as well as noun class prefixes attached to the head noun, many of which are homorganic nasal consonants. As attested in other Nun languages, the noun class system in Bafanji is quite reduced.

Core Bafanji words are typically monosyllabic (plural nouns are usually bisyllabic, most of which carry the class 6 /m̀- prefix). Partial and fully reduplicated words feature among both verbs and nouns. Tone carries a heavy functional load. Lexical tonal contrasts are commonplace among both nouns and verbs. Verbs fall into two classes based on their tone patterns and grammatical tone is used to express tense-mood-aspect differences. Compound

² Bamukumbit is a Ngemba language, but shows many similarities with Nun languages, and the village is located on the Ndop Plain, sharing a boundary with Bafanji. It is closely related culturally and claims to be part of the group of five villages descending from one mother, Mangieh.

words consisting of two or more noun/verb roots are common. New vocabulary is borrowed directly from English or indirectly from English or other languages through Pidgin English.

1.2 The Bafanji people

The Bafanji people are said to have migrated to their present village from a place called Ndobu which is located in present-day Tikar-speaking territory. In the folk history, there is a close relationship between the Bafanji and four other villages, namely Bamunka, Bamblang, Bamali and Bamukumbit. These five villages are said to have come from one mother, called “Mangieh”. All five of these villages still claim this close relationship and is evidenced by the Mangieh Family Union, a cultural association of these five villages.³

The rural Bafanji people are typically farmers, although there are also fishermen and palm wine tappers. The agriculture is mainly subsistence farming with the addition of a few cash crops, such as rice, plantains, peanuts, tomatoes, and coffee. As in many areas in the North-West of Cameroon, the oil palms and the raffia palms with their multiple usages are important to the livelihood of the Bafanji. Today, most Bafanji children go to school and receive at least primary education. Many continue on to secondary school and beyond. The language of education is English.

The Bafanji people have the *Fon* as their traditional ruler. The palace with its governmental and religious functions is central to the Bafanji culture. The palace vocabulary appears to be a separate domain in the Bafanji language. Things in the palace, or related to the *Fon*, are called with different names from those found elsewhere. No palace vocabulary have been included in this study.

1.3 Methodology and Acknowledgements

The presentation of data in this paper has been highly influenced by the generative phonological approach as exemplified by Kenstowicz 1994. The methodology for arriving at underlying forms for Bafanji is as follows. The SIL Comparative African Word List (Snider and Roberts 2004) was elicited (1,700 items) from a variety of speakers of the language. From this list, we removed all compound words, loan words, and reduplicated words. We then elicited other words deemed not to be loan words or compound words. The final basis of our phonological study of Bafanji is 1100 words, the majority of these being nouns and verbs. These words were recorded as mp3 files. Our goal was first to describe the phonology of the most basic words of the language. Sections 7 and 8 deal with aspects of the morphophonology of Bafanji, where the words eliminated from our corpus of data were reintroduced into our database.

The authors have lived in the village of Bafanji for a cumulative period of two years during the years 2004 to 2007. In the course of this work, many people have helped to make this research a success. We gratefully acknowledge the support of the Divisional Officer, the *Fon* of Bafanji, His Royal Highness Ngwefuni II, and the Fanji Development and Cultural Association (FADCA). Mention must be given especially to the following people who provided the majority of the data and, with great patience, repeated lists of words in the course of our work:

Celestine Ngwana, age 33

Clifford Africa Tiemindeng, age 30

³ Of interest is that Bamunka is classified as a South Ring language, falling outside of Mbam-Nkam or Eastern Grassfields.

Musi Vincent, age 43
Daniel Zippoh, age 60
Gladys Nwotambu, age 36

The authors also want to thank all the Bafanji people that have helped them to learn the language. The ability to speak and understand Chufie' acquired by the authors during the two years' stay has helped greatly in making reliable conclusions about the phonology of the language. Finally, the supervision, comments, and suggestions by Dr. Robert Hedinger during the research have been greatly appreciated.

1.4 Notation

All the data was transcribed using the International Phonetic Alphabet (IPA) and all phonetic data presented in this paper is shown between square brackets [...]. Phonemic data, on the other hand, is between forward slashes /.../. Occasionally there are examples of data which can be pronounced in more than one way. In these cases, a tilde is used between sets of phonetic data [...] ~ [...] to show free variation.

A significant lacuna to our analysis is that, as yet, there has been no phonemic analysis of tone. Therefore it should be noted that all tone shown in transcriptions is phonetic tone.

2. Consonants

Bafanji has a fairly symmetrical system of 13 underlying consonants, which can be seen to have three distinctive places of articulation. There is a full set of coronal consonants with gaps in both labial and post-palatal sets. It seems to be a rather sparse consonantal system, with no great complexity⁴. The vowel system makes up for the straightforward nature of the consonant system. The semivowels have been treated in a separate section (3).

2.1 Table of Contrastive Consonants

	Labial	Coronal	Post-Palatal
Plosives	p	t	k
Affricate		tʃ	
Vl Fricatives	f	s	h
Vd Fricatives		z	ɣ
Nasals	m	n	ŋ
Liquids		l	

What is of most interest in Bafanji consonants concerns what is missing from what one might expect. The voiced set of plosives is not present, and in its place is a disparate set of consonants that function as a group (which will be discussed in detail in the 'plosive-like' section below). Also, the palatal place of articulation is missing (the prototypical African language consonant system (Clements 2000:125) includes a full set of palatal consonants). However, the Bafanji consonant chart is not far from Anderson's (2001) presentation of the typical consonants of an

⁴ There is a three-way contrast in semivowels, and as such we have treated them apart from both consonants and vowels in its own section.

Eastern Grassfields language. Anderson expects two affricates where Bafanji has only one, Bafanji has no phonemic voiced labial fricative /v/, and Bafanji includes /h/ in the velar inventory (however it is quite marginal as a phoneme). The glottal stop is not seen to be a consonant phoneme, but rather a contrastive vowel quality (laryngealization or creaky-voice phonation) and is treated in the vowel section.

2.2 Table of Consonantal Distinctive Features

The following is a table showing the minimal distinctive features for consonants used in representing phonological rules in this paper.

	Anterior	Coronal	Continuant	Voiced	Lateral
t	+	+	-	-	-
tʃ	-	+	-	-	-
k	-	-	-	-	-
p	+	-	-	-	-
l	+	+	+	+	+
y	-	-	+	+	-
f	+	-	+	-	-
s	+	+	+	-	-
z	+	+	+	+	-
h	-	-	+	-	-
m	+	-	-	+	-
n	+	+	-	+	-
ŋ	-	-	-	+	-

2.3 Natural classes

2.3.1 Plosives and Affricate

/t, tʃ, k/

This group of consonants functions together as the main group of plosives in Bafanji. The affricate functions as an integral member of the plosives, while the labial plosive functions together with a different set of consonants, discussed below.

- (1) [tî] ‘place (v.)’
[tʃĩ] ‘relative by marriage’
[kí] ‘fish dam’

Allophonic variation

Only the affricate /tʃ/ has an allophone, which freely varies between postalveolar and alveolar [ts] places. Some people consistently pronounce this phoneme as alveolar, while others vary freely between them.

- (2) [tsəʔù] ~ [tʃəʔù] ‘hat’

Another variation that occurs freely is when the affricate is labialized, this time, varying between the affricate and the alveolar plosive [t]. (The numbers here indicate phonetic tone, 3 being a low tone and 7 being a high tone. All other numbers are relative to these.)

- (3) 3 7 464 3 7 464
 [ɑ tʃmoʷ ɲgəʷ] ~ [ɑ tmoʷ ɲgəʷ] ‘he/she is going’
 3.sg PROG SVP.go

Mostly younger people use the variant with the alveolar plosive, while the older generation prefer the affricate for the progressive aspect marker.

Distribution

These plosives can precede any vowel.

2.3.2 Plosive-like

/p, l, ɣ/

Allophonic variation

This set of consonants functions as a group in that their allophones are [b, d, g] respectively. These allophones only surface following a (homorganic) nasal consonant, a common phenomenon in many Grassfields Bantu languages.

- (4) [pí] ‘give birth’ [mbí] ‘I give birth’
 [lí] ‘jump’ [ndí] ‘I jump’
 [ɣ̃] ‘skin of fruit’ [ɲg̃] ‘skin of man or animal’

One might question the choice of /p, l, ɣ/ as the underlying set of consonants rather than the natural set (b, d, g). We have followed the analyses of Bird for Yemba (1996:6) and Satre for Ngomba (1997:19-21) in that all the rules for deriving the prenasalized forms are assimilation rules, while Anderson 1977 (for Ngiemboon) and Hyman 1972 (for Fe’fe’) propose the set of voiced stops as the underlying forms for the languages they describe because they form a far more natural set of consonants. Bafanji does not have word-final or intervocalic consonants as these Bamileke languages have, so the choice of underlying forms is only word-initial, either with or without the nasal prefix. Since the non-prenasalized forms are the monomorphemic forms, we have chosen to accept /p, l, ɣ/ as the underlying set. It could be equally valid to choose [b, d, g] as the underlying set, but the kind of rules to account for the non-prenasalized forms would hardly be phonologically motivated. Therefore we have chosen the unnatural set as the underlying forms with the following assimilation rules:

$$\begin{array}{lcl}
 (5) & \text{Voicing Assimilation Rule} & \\
 & C \rightarrow [+ \text{ voice}] / N_ & \\
 & \left[\begin{array}{l} - \text{cont} \\ - \text{coronal} \\ - \text{voice} \\ + \text{anterior} \end{array} \right] &
 \end{array}$$

$$\begin{array}{lcl}
 (6) & \text{Continuant Hardening Rule} & \\
 & C \rightarrow [- \text{continuant}] / N_ & \\
 & \left[\begin{array}{l} + \text{cont} \\ + \text{voice} \end{array} \right] &
 \end{array}$$

The rule in (5) shows that /p/ becomes voiced following a homorganic nasal consonant. The rule formalized in (6) shows that /l/ and /y/ lose their continuant status and become plosives following homorganic nasal consonants⁵.

Distribution

This set of consonants can precede any vowel.

2.3.3 Fricatives

/f, s, z, h/

The fricatives in Bafanji are a disparate set of consonants. The sibilants /s/ and /z/ pattern together, while the labiodental fricative /f/ is alone and the glottal fricative /h/ is very restricted in its distribution.

- (7) [fɛ̃] ‘give (v.)’
 [sɛ̃ɛ̃] ‘change (v.)’
 [zɛ̃] ‘(be) heavy’
 [hóʷ] ‘exist’

Allophonic variation

Only the sibilants have allophones. Both sibilants tend to become palatal fricatives before high vowels, though not always.⁶ The voiceless sibilant /s/ tends to become palatal [ʃ], and the voiced sibilant /z/ tends to become palatal [ʒ].

⁵ This rule also includes the hardening of /z/ which will be discussed below.

⁶ Any time we have written [ʃ] in our data, it is because it is usually said that way, though not always. Every example of [ʃ] in our data is before a high vowel, but there are many examples of words that are usually said with [s] that are also before high vowels. Some people insist on the alveolar pronunciation in isolation.

- (8) [sáû] ‘smooth’ [ʃú] ~ [sú] ‘fish’
 [zâ] ‘heavy’ [ʒúʔé] ~ [zuʔé] ‘wait’
 [sî] ‘hunting net’
 [zɪʔè] ‘palm kernel’

(9) Sibilant Palatalization Rule

$$/s, z/ \rightarrow [+high] / \begin{matrix} _V \\ [+high] \\ [+back] \end{matrix}$$

The rule formalized in (9) shows how the sibilants /s, z/ become palatal when preceded by a high back vowel.

In addition to the above, the voiced fricative /z/ undergoes the continuant hardening rule in (6) and is repeated here in (10).

(10) Continuant Hardening Rule

$$C \rightarrow [-continuant] / \begin{matrix} N_ \\ [+cont] \\ [+voice] \end{matrix}$$

The rule formalized in (10) shows that /z/ loses its continuant status and become an affricate [dʒ] following homorganic nasal consonants.

- (11) [zɪ] ‘know’ [ɛ̃dʒɪ] ‘I know’
 [zɔʔú] ‘hear’ [ɛ̃dʒɔʔú] ‘I hear’
 [zâ] ‘steal’ [ɛ̃dʒâ] ‘I steal’

Distribution

The labiodental fricative can occur before any vowel, while the sibilants have one restriction. They do not occur before the low front vowel /a/, although this gap may be filled when the database is larger.

The most significant distribution issue among fricatives is the glottal fricative /h/. It is so severely restricted that its phonemic status could be questioned. It has only been found in two words, both of which have similar vowel quality.

- (12) [hóʷ] ‘exist’
 [hò] ‘name of a god’

In considering the distribution of /h/, there is no complementary distribution with another sound of which it could be a part, so we must consider it a phoneme.⁷

2.3.4 Nasals

/m, n, ŋ/

Bafanji has the typical set of three nasal consonants common to Grassfields Bantu languages.

- (13) [mà] ‘I’
[nǎʔ] ‘cow’
[ŋâʔ] ‘open (a door)’

We do have, however, a few examples of what could be considered to be a palatal nasal [ɲ] but since there are very few, we have preferred to treat them as the coronal nasal followed by the palatal semivowel.

- (14) [ɲjíʔà] ‘hot pepper’
[ɲjǎ] ‘it’

Distribution

Only the velar nasal is restricted and only in that it cannot precede the high front vowel /i/. The other nasals can occur before any vowel.

3. Semivowels

The semivowel inventory in Bafanji is one of the more complete ones found in Grassfields Bantu languages with four phonetic variants, three of which have phonemic status. The following table summarizes the phonemic distinctions between the semivowels and presents the distinctive features used in this paper. Since they are related to vowels, vocalic features have been used to characterize semivowels.

- (15) Table of Bafanji semivowels

	[+round]	[-round]
[-back]	/ɥ/	/j/
[+back]	/w/	

- (16) [kɥê] ‘love’
[kɯǎ] ‘four’
[kjǎ] ‘crunch (in the mouth)’

There are several ways of treating semivowels, and we have chosen to analyze them as separate consonants in their own right (in contrast to prosodic elements like Anderson (1977) and Satre

⁷ One informant told us that [hò] is the name of a former Fon of Bafanji ([fũǎ] is the current pronunciation of ‘fon, chief’). Given that some related languages employ [h] where Bafanji employs [f], this is very possible, but it does not explain the other example in our data.

(1997) have done for Ngiemboon and Ngomba, respectively). In addition to being the second member of a consonant cluster, each can stand alone as a root-initial consonant. All semivowels can occur as the second consonant in the onset of a syllable (where the syllable shape is either CSV or CSVV; this is discussed further in section 6.2).

3.1 Table of Semivowel Distinctive Features

The following is a table showing the minimal distinctive features for semivowels used in representing phonological rules in this paper.

	Round	Back
ɥ	+	-
j	-	-
w	+	+

3.2 Semivowels in simple onsets

Each of the semivowels can serve as the initial consonant in a syllable with a simple onset (that is, CV or CVV syllable, as opposed to CSV or CSVV syllables). These will be treated separately from the occurrences of semivowels as the second member of a consonant cluster (complex onset).

There are a relatively small number of words that display root-initial semivowels, and all of these undergo the process of continuant hardening following nasals, as we have seen for the other voiced continuants (sections 2.3.2 and 2.3.3). As such, all of the semivowels are specified as [+continuant].

- (17) There are 13 examples of root-initial /w/

[wàǎ] ‘trap (n)’
[wě̃] ‘(be) guilty’
[wǎ] ‘type of tree’

- (18) There are 4 examples of root-initial /j/

[jũʔ] ‘place’
[jíʔè] ‘say (that)’
[n-jǝ̃] ‘thing’

- (19) There is 1 example of root-initial /ɥ/

[ɥá] ‘harvest (plantains)’

When the rounded semivowels /ɥ/ and /w/ are in root-initial environment, it is often difficult to judge whether there is a phonetic velar fricative that precedes it or not. This may explain the small number of examples shown above.

The back rounded semivowel /w/ has one allophone [v]. It dissimilates from its post-palatal articulation and becomes the labial fricative [v] when the following segments are VgV (a vowel followed by [g] followed by another vowel). If the second consonant in this word is post-palatal, then the first consonant cannot be post-palatal. That is, there is a constraint against cooccurring post-palatal consonants within the word. The following examples illustrate this.

- 12

3.3 Semivowels in complex onsets

Semivowels may also be the second consonant in complex onsets. That is, a consonant may be followed by a semivowel before the nucleus of the syllable. This is a very common phenomenon in Grassfields Bantu languages.

In addition to having three contrastive semivowels in complex onsets, two semivowel-vowel sequences contrast with vowel-vowel sequences when the semivowel occurs as the second member of a consonant cluster.

- (24) [pìá] ‘two’
 [pjǎ] ‘wing’
 [púá] ‘fear (v.)’
 [pᵐá] ‘(be) lazy’

The difference between these pairs of words is the number of moras. The words with semivowels have one mora, and the words with two vowels have two moras. This is discussed in greater detail in Section 6.1.

Allophonic variation

The front rounded semivowel /ɥ/ is in complementary distribution with the back unrounded semivowel [ɯ]. The back unrounded semivowel always occurs before the back unrounded vowel [ə], while the front rounded semivowel is never found to cooccur with this vowel. This allows us to formulate the following rule.

- (25) Semivowel Assimilation Rule
- $$\text{/}\mathfrak{y}\text{/} \rightarrow \left[\begin{array}{c} + \text{ back} \\ - \text{ round} \end{array} \right] / \quad _V \left[\begin{array}{c} + \text{ back} \\ - \text{ round} \end{array} \right]$$

The rule formalized in (25) states that the front rounded semivowel /ɥ/ becomes back unrounded [ɯ] preceding the back unrounded vowel /ə/.

- (26) [ɲkɯə] ‘bush country, rural area’
 [kɯí] ‘feed (animals)’

Another case of allophonic variation which applies to all semivowels is that semivowels in complex onsets devoice after voiceless consonants.

- (27) [tʃɥèê] ‘do, act’
 [sɥâ] ‘undress’
 [fᵐǎ] ‘leaf’
 [pjê] ‘corn fufu’

[tʷə] ‘sew’

This can be expressed in the following rule:

(28) Semivowel Devoicing Rule

$$C \rightarrow [-\text{voice}] \quad / \quad C_ \\ \left[\begin{array}{l} - \text{syllabic} \\ - \text{consonantal} \\ + \text{voice} \end{array} \right] \quad \quad \quad [-\text{voice}]$$

The rule formalized in (28) states that semivowels lose their voicing following voiceless consonants.

Distribution

Anderson (2001:47) suggests that in languages that have a large vowel inventory (more than seven phonemic vowels), there could be a fusion of semivowels and vowels which surface as back unrounded vowels and front rounded vowels. This is seen to be the case in Ngiemboon (Anderson 1977). The fact that this is not true in Bafanji is demonstrated below.

(29) Semivowel – Vowel Cooccurrence Chart

	i	ɛ	a	ə	ɑ	ɔ	u	ʊ
C (no semivowel)	x	x	x	x	x	x	x	x
Cw	x	x	x	x	x	x	x	x
Cɥ	x	x	x					
Cj		x	x	x				
Cʷ				x				

Here it is clear that only the back rounded semivowel /w/ can be followed by any vowel, while all the others must precede non-rounded vowels. It also demonstrates the complementary distribution between the front rounded and back unrounded semivowels, so that the four phonetic semivowels are really three underlying phonemes.

(30) Semivowel – Root-initial Consonant Cooccurrence Chart

	p	l	ɣ	t	tʃ	k	f	s	z	h	m	n	ŋ
w	x	x	x	x	x	x	x	x	x		x	x	x
ɥ		x	x	x	x	x		x	x			x	
j	x	x	x	x	x	x	x	x	x			x	
ʷ	x	x	x	x	x	x							

When we look at which semivowels can follow which consonants, we see that the front rounded semivowel /ɥ/ cannot cooccur with labial consonants, though its allophone, the back

unrounded semivowel [ɥ] can occur before the labial plosive /p/. Also of note is that its allophone, the back unrounded semivowel [ɯ], cannot cooccur after any fricatives or nasals.

Phonetic peculiarities

Sometimes the back rounded semivowel /w/ can be pronounced with an accompanying velar fricative. This is usually found in words with rounded vowels.

- (31) [ɥ^wõ] ~ [wõ] ‘(be) sick’
 [ɥ^wû] ~ [wû] ‘ten’

4. Vowels

The vowel system in Bafanji is very complex due to several factors. All coda consonants of Proto-Grassfields roots have been eroded with two possible exceptions, the glottal stop and the velar nasal. These two, however, we have preferred to treat as properties of the vowel that precedes them, meaning there is a total erosion of coda consonants. This gives rise to phonemic vowel length, vowel sequences, diphthongs, nasalization and laryngealization which will be discussed in detail below.

4.1 Vowel Phonemes

Bafanji has an eight-vowel rectangular system. Because the syllable structure does not allow coda consonants, the role of maintaining sufficient lexical contrasts for communication is given to vowels, semivowels, and vowel modifications.

The contrastive vowels in Bafanji are as follows.

- (32) Table of Contrastive Bafanji Vowels

	[-back] [-round]	[+back] [-round]	[+back] [+round]
[+high] [-low]	i	ɯ	u
[-high] [-low]	ɛ	ə	ɔ
[-high] [+low]	a	ɑ	

- (33) [pí] ‘give birth’
 [pě] ‘flock’
 [pá] ‘flat’
 [pû] ‘danger’
 [pð] ‘blister’
 [pà] ‘carry child on back’
 [pû] ‘ashes’

[pɔ̃] ‘your (pl., noun class 2)’

Koopman (1994:3) suggests ten phonemic vowels, adding [e] and [o] to the inventory. We have consistently perceived tongue raising at the end of these two vowels and thus have treated them along with the other diphthongs (see section 4.6).

Both Watters (2003) and Anderson (2001) suggest that the typical vowel inventory for a Grassfields Bantu language is a symmetrical set of seven vowels. The following chart is reproduced from Anderson (2001).

(34) Typical (Eastern) Grassfields Bantu Vowel System (Anderson 2001:47)

	[-back] [-round]	[+back] [-round]	[+back] [+round]
[+high] [-low]	i		u
[-high] [-low]	e		o
[-high] [+low]	ɛ	a	ɔ

Our analysis of Bafanji vowels differs from the typical inventory in the following ways. First, there are two low vowels instead of three. Second, there are three back unrounded vowels instead of one. Third, there are two back rounded vowels instead of three.

4.2 Vowel Modifications

Bafanji vowels can be modified in four contrastive ways. Each of these characteristics is binary. Vowels can be either monomoraic (creating light syllables) or bimoraic (creating heavy syllables). They can be of uniform vowel quality (short and long vowels), or non-uniform vowel quality (diphthongs and vowel-vowel sequences). They can be nasalized or oral. And, they can be laryngealized (creaky-voiced) or non-laryngealized. These four vowel modifications account for all the possible forms of Bafanji vowels. Each of these modifications is now discussed in turn.

4.2.1 Vowel Quality

Four vowel features, high, low, back, and round, distinguish the eight simple oral vowels in Bafanji. The distinctive features in the chart are the ones used in this paper for describing classes of vowels in phonological rules.

(35) Table of Distinctive Vowel Features

	Back	Round	High	Low
i	-	-	+	-
ɛ	-	-	-	-
a	-	-	-	+
ɯ	+	-	+	-
ə	+	-	-	-
ɑ	+	-	-	+
u	+	+	+	-
ɔ	+	+	-	-

Among the high vowels, the high back unrounded vowel /ɯ/ is noteworthy. It is slightly fronted but not reaching the frontedness of [i], therefore we have preferred to transcribe it as [ɯ]. Either way, it patterns phonologically as a high back vowel in triggering the sibilant palatalization rule seen in (9).

The non-high, non-low vowels (hereafter mid vowels) allow the most variance in height in their pronunciation, the front unrounded /ɛ/ and back rounded /ɔ/ vowels being conditioned variation (see section 4.6), while the back unrounded /ə/ is in free variation with [ɪ].

There are two low vowels in Bafanji. The low back unrounded vowel /ɑ/ contrasts with the low non-back vowel /a/. The contrast between mid front and the low front vowels is weaker than most, only contrasting in short, oral, non-laryngealized vowels and in laryngealized vowel sequences. In all other places it could be seen as an allophone of the mid front vowel /ɛ/, however there are minimal pairs in short oral vowels as shown below.

(36) Contrast between /ɛ/ and /a/

- [kɛ̀] ‘or’
- [kâ] ‘arrow’
- [m̀bɛ̀] ‘excrement’
- [m̀bá] ‘mountain’
- [zɪʔɛ̀] ‘jump over (something)’
- [zɪʔà] ‘escape’

When we refer to vowel quality, we speak of having the distinctive vowel features remain the same for the duration of the nucleus, or involving some feature change within the nucleus. An example of differing vowel quality is the diphthong /əʷ/ where the vowel height starts as a mid vowel and within the duration of its pronunciation, becomes high.

Uniformity of vowel quality is best understood as no significant change in height, backness, or in rounding across the duration of the vowel. This applies to both short and long vowels where the height, backness, and rounding of the vowel remains constant. Non-uniform vowel quality means that there is a change in either height, backness, rounding, or some combination of these. This is the case with diphthongs and vowel sequences. The characteristic of uniformity in Bafanji vowels is important in distinguishing the four basic vowel patterns that will be used as the outline for the next section.

4.2.2 *Moraic Weight*

Moraic weight is the other important characteristic in distinguishing the four basic vowel patterns. Bafanji syllables can be either monomoraic or bimoraic. Monomoraic syllables are pronounced more quickly and with less emphasis than bimoraic syllables. In vowel sequences, bimoraic syllables emphasize the difference in vowel quality. As long vowels, we consider them to be bimoraic since they have a longer duration than short vowels. Short vowels and diphthongs are considered monomoraic.

(37) Examples of short vowels and diphthongs

- [fâ] ‘meat’
- [fú] ‘(be) white’
- [fê^j] ‘valley’
- [zô^w] ‘follow’

Long vowels and vowel sequences are considered bimoraic.

(38) Examples of long vowels and vowel sequences

- [kââ] ‘escape!’
- [ŋkùúú] ‘rope’
- [sîâ] ‘long’
- [púú] ‘fear (v.)’

Moraic weight is discussed more in section 6.1 on the syllable.

4.2.3 *Nasalization*

In contrast to Narrow Bantu languages, Bafanji has contrastive nasalized vowels. All vowels may be nasalized with the exception of the low front vowel /a/. There seems to be neutralization of contrast between nasalized /a/ and nasalized /ε/.

There is no contrast between nasalized vowels and syllables with a final velar nasal consonant [ŋ]. The nasalized vowels /ã/, /ũ/, and /õ/ can also be pronounced with a word-final [ŋ] but there doesn’t seem to be contrast. In fact, we have found it difficult to perceive the difference between the two.

- (39) [pâ] ~ [pâŋ] ‘hunt (v.)’
- [pê] ~ [pêŋ] ‘people’

[tʃ̃] ~ [tʃ̃̃] ‘cease (as in rain)’

We have, however, observed a distinction between the following sets of words:

- (40) [k̃] ‘raffia fruit’
[k̃̃] ‘enter’
[k̃̃̃] ‘touch’
[s̃] ‘leech’
[s̃̃] ‘elephant’
[s̃̃̃] ‘friend’

It is unclear whether this is a case of contrastive nasalization in addition to an underlying nasal coda consonant or some other phonemic distinction such as aspiration or tonal contrast. What is clear is that native speakers firmly make a distinction between these words. Further research is needed to be certain of the underlying contrasts present in the words above.

4.2.4 Laryngealization

All Bafanji vowels can be laryngealized, pronounced with creaky voicing. Throughout this paper, we have employed glottal stops in our examples, but we are considering vowels followed by glottal stops to be laryngealized. While this is open to the more traditional interpretation of glottal consonants, we follow the laryngealization analysis for three reasons.

First, the glottal stop freely varies in its position within vowel sequences and diphthongs.

- (41) [sɪ̃ʔà] ~ [sɪ̃àʔ] ‘needle’
[sɔ̃ʔù] ~ [sɔ̃ùʔ] ‘termite’

The examples above can be pronounced with the glottal stop either intervocalically or word-finally, whether they be sequences of non-uniform vowels (heavy syllables) or diphthongs (light syllables)⁸. If the glottal stop were restricted to one of these positions in the syllable, then it might be better to consider them consonants in their own right.

Second, viewing the glottal stops as laryngealization maintains the syllable template, allowing only open syllables. If we chose the glottal consonant analysis, it would mean adding a CVC syllable with the severe restriction that only the glottal consonant could fill the coda position.

Third, a spectrographic analysis was undertaken (Koopman and Mural 1994:3) in which it was concluded that what was thought to be glottal stops in a Bafanji informant’s speech, were in fact vowels produced with creaky-voice phonation (laryngealization). This was in contrast to glottal stops produced by a speaker of Nweh (a related Bamileke language). No spectrographic charts are included in the publication, but we agree that words that we have transcribed with glottal stops can be pronounced with laryngealized vowels. Further phonetic research could document this phenomenon with greater precision.

⁸ Uniform heavy syllables (long vowels) are never laryngealized.

4.3 Combinations of Vowel Characteristics

The table below illustrates the possible combinations of the first two vowel characteristics.

(42) Combinations of Vowel Quality and Moraic Weight Characteristics

	Uniform Vowel Quality	Non-uniform Vowel Quality
Monomoraic	Short Vowel	Diphthong
Bimoraic	Long Vowel	Vowel Sequence

We will continue by handling each of these four vowel patterns individually, discussing allophonic variation, distribution, and the effects of nasalization and laryngealization.

4.4 Short Vowels

Short vowels have been described above in section 4.2.1.

4.4.1 Distribution

Prefixes display only the back vowels /ə/, /ɑ/, and /u/. Any vowel can be the root vowel. The back high vowels /u/ and /ʊ/ do not follow nasals or the lateral consonant in their short, non-nasalized form.

4.4.2 Nasalized short vowels

All eight vowels can be nasalized in their short form except the front low vowel /a/.

(43) Examples of Nasalized Short Vowels

[pî] ~ [pîŋ]	‘agree’
[zê] ~ [zêŋ]	‘many’
[nũ] ~ [nũŋ]	‘defecate’
[lǎ] ~ [lǎŋ]	‘tongue’
[ŋkú] ~ [ŋkúŋ]	‘noble’
[zô] ~ [zôŋ]	‘buy’
[lâ] ~ [lâŋ]	‘horse’

4.4.3 Laryngealized short vowels

All eight vowels can be laryngealized in their short form, except the front mid vowel /ɛ/.

(44) Examples of Laryngealized Short Vowels

[lîʔ]	‘poison’
[lâʔ]	‘compound’
[fũʔ]	‘measure’
[mêʔ]	‘stutter’
[fũʔ]	‘weevil’
[yôʔ]	‘file (n.)’

[fũʔ] ‘work (n.)’

Only four short vowels can be both nasalized and laryngealized as seen in (45). This pattern is quite productive yet restricted to the three mid vowels and the rounded high back vowel.

(45) Examples of Nasalized and Laryngealized Short Vowels

[zɛ̃ʔ] ‘sweat (n.)’

[nɛ̃ʔ] ‘shelter (n.)’

[wũ̃ʔ] ‘respect (v.)’

[lĩ̃ʔ] ‘fill (v.)’

It is unclear what historical precedent has given rise to both nasalized and laryngealized vowels in Bafanji today. One clue could be the Proto-Grassfields *dú(n)-si ‘to fill’ (Hyman 1979). It is possible that the verbal extension was a plosive which was reduced to a glottal stop, while the final root nasal shifted to become a nasalized vowel. This, however, does not explain the above examples of nouns.

4.5 Long Vowels

All Bafanji vowels can be long with the exception the low front vowel /a/. Long vowels are characterized by having two moras and uniform vowel quality.

The following is a table of the long vowels in Bafanji.

(46) Long Vowel Chart

	[-back] [-round]	[+back] [-round]	[+back] [+round]
[+high] [-low]	ii	uuu	uu
[-high] [-low]	ee	əə	oo
[-high] [+low]	ɛɛ	ɑɑ	ɔɔ

Worth noting from the above chart is that in addition to lacking the lengthened low front vowel /a/, there are also two vowels that are present here which have no contrastive short vowel counterparts, /ee/ and /oo/. The universal tendency is for contrastive vowels to be the same in number or fewer in number than the short vowels. Therefore this contrast is surprising. In our data, we find only two examples of [oo], one of which forms a minimal pair with the much more common long [ɔɔ].

(47) The only example of contrast with [oo]

[m̀bóó] ‘hole’

[m̀bòó] ‘type of tree’

(48) The only examples of long [oo]

[m̀bòó] ‘type of tree’

[tóò] ‘ear’

The problem with the contrast in two levels of the mid front vowels [ee] and [ɛɛ] is quite different. Both of these long vowels are very common. Additionally, the long vowel [ɛɛ] often surfaces as a special kind of vowel sequence which ends in a more central mid vowel. (See the discussion on allophonic variation in 4.5.1.) The complete absence of the non-back low lengthened vowel [aa] makes it a possible candidate for the underlying form of the long [ɛɛ], especially since the mid vowels tend to be raised when they are lengthened. But, this does not account for the additional contrast in long mid back vowels.

Perhaps one could see the upper mid lengthened vowels [ee] and [oo] as lengthened counterparts of the diphthongs [e^j] and [o^w].

Vowel length is contrastive in Bafanji vowels as can be seen in the following examples.

(49) Vowel Length Contrast

/i/	[lí]	‘fly’ (v.)	[lí]	‘eye’
/ɛ/	[kwé]	‘throw away’	[kwéə]	‘help’
	[fɛ ^j]	‘open a bundle’	[fèè]	‘shell groundnut’
/u/	[ntú]	‘walking stick’	[ntúú]	‘advise’
/ə/	[pə]	‘be able’	[pəə]	‘pour’
/u/	[fú]	‘white’	[fúú]	‘co-wife’
/ɔ/	[kɔ]	‘color’	[kɔɔ]	‘leg’
	[mbô ^w]	‘poor man’	[mbòó]	‘type of tree’
/a/	[ná]	‘leave (something)’	[náà]	‘stop up’

As we see above, there are more contrastive long vowels than short vowels. The vowels /ee/ and /oo/ do not have phonemic short counterparts. Their short counterparts are treated as diphthongs because there is a consistent raising of tongue height at the end of the vowel. We have included examples of these diphthongs in the above examples to demonstrate the contrast between them (which are considered short) and their long counterparts.

4.5.1 Allophonic variation

The long front open-mid vowel [ɛɛ] is usually pronounced as a vowel sequence [ɛə] though it can also be pronounced [ɛɛ]. Since it does not fit the pattern of height change of other vowel sequences and has two possible pronunciations, we consider it a long vowel rather than a vowel sequence.

- (50) [kwéè] ~ [kwéə] ‘to help’
 [pèè] ~ [pèə] ‘to belch’

4.5.2 Distribution

Because of the syllable structure of both prefixes and roots, and the tendency for Bafanji words to be monosyllabic, long vowels only occur word finally. The exceptions are in loan words and compound words.

4.5.3 Nasalized long vowels

The set of long vowels that can be nasalized is more restricted and three levels of height distinction are reduced to two. Only the mid front (unrounded) and mid back rounded vowels are common in their long nasalized form.

(51) Nasalized Long Vowel Chart

	Front Unrounded	Back Unrounded	Back Rounded
High			ũũ
Non-High Non-Low	ẽẽ	ãã	õõ
Low			

- (52) [kේẽ] ‘squeeze’
 [ऐẽ] ‘yes’
 [̀̀̀̀̀ũũ] ‘buffalo’
 [ꞑꞑꞑ] ‘mortar’

The nasalized long mid front vowel [ẽẽ] is always raised from its underlying height.

4.5.4 Laryngealized long vowels

Long vowels do not undergo laryngealization, or if they do, it is not contrastive with laryngealized short vowels. There is optional lengthening of laryngealized vowels which we have transcribed as a vowel following a glottal stop, [fũʔũ] ‘work’, but it neither acts as an echo vowel, nor is it contrastive as it is in some other related languages (Anderson 2001:44).

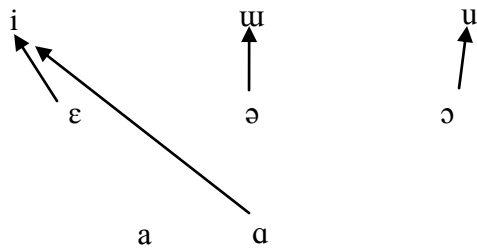
- (53) [fũʔũ] ~ [fũʔ] ‘work’

We conclude, then, that laryngealization is not an important characteristic of long vowels.

4.6 Diphthongs

Diphthongs are a kind of vowel sequence interpreted to be a single vowel, one of the vowels being high (Burquest 1998:160). In Bafanji, diphthongs are monomoraic vowels of non-uniform quality which always end in a high vowel position. The inventory of diphthongs is shown below, arrows representing direction of tongue movement during articulation.

(54) Chart of Diphthongs



There are 92 examples of diphthongs in our data. Three of these diphthongs start with mid vowels while the fourth starts with a low vowel.

- (55) [fě^j] ‘open (a book)’
 [zə̃^ɯ] ‘see’
 [zə̃^ʷ] ‘follow’
 [zǣ̃^j] ‘(possessive pronoun, class 9)’

4.6.1 Allophonic variation

The front and back diphthongs /ε^j/ and /ɔ^ʷ/ surface with the first vowel quality raised from its underlying value when they are not laryngealized.

- (56) [zē̃^j] ‘face’
 [hó^ʷ] ‘exist’

4.6.2 Distribution

Diphthongs are only found as root vowels. There are no diphthongs in prefixes. One “prefix” that seems like an exception, /mbỗ^ʷ-, is really grammaticalized from ‘child.’ See section 7.1.4 for further discussion on this. Diphthongs also are not found to cooccur with nasal consonants in verb and noun roots.

4.6.3 Nasalized diphthongs

The three mid diphthongs are always oral vowels while the fourth diphthong [ǣ̃] is always nasalized.

- (57) [mətǣ̃^j] ‘market’
 [lǣ̃^j] ‘succeed’

4.6.4 Laryngealized diphthongs

The three mid diphthongs can all be laryngealized. Instead of always raising the first vowel quality as the modal (non-laryngealized) set does, the laryngealized diphthongs can surface with underlying forms.

- (58) [pɛʔɪ] ‘load, burden’
 [mbɔʔù] ‘bundle’

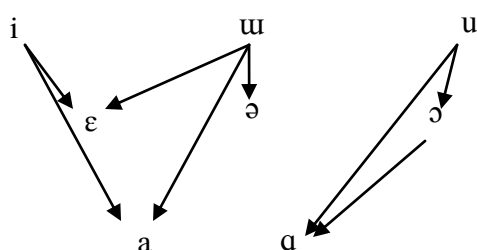
The back rounded diphthong can be said with either the underlying vowel or with the vowel raised as seen below.

- (59) [mɛlɔʔù] ~ [mɛlòʔù] ‘palm wine’
 [kɔʔú] ~ [kòʔú] ‘achu’
 [lɔʔù] ~ [lòʔù] ‘(be) happy’

4.7 Vowel Sequences

Vowel sequences in Bafanji differ from diphthongs in that they are bimoraic (heavy syllables) and that all of the sequences result in a lowering of the tongue height during the articulation of the vowel.

- (60) Chart of Vowel Sequences



There are eight vowel sequences in Bafanji. Two of these contrast with semivowel + vowel sequences as seen in the section on semivowels (3.3). All but one of the vowel sequences start with high vowels. Only four of the eight sequences are found orally.

- (61) [ia] [kíà] ~ [kíê] ‘coil (v.)’
 [uə] [kúə] ‘metal dish’
 [uɔ] [múndʒũɔ̃] ‘peanut’
 [ua] [púá] ‘fear’

4.7.1 Allophonic variation

The vowel sequence [ia] is in free variation with [iɛ]. This is in contrast with the laryngealized diphthongs which are distinct phonemic units (see below).

4.7.2 Distribution

Vowel sequences are found in noun and verb roots, but never in prefixes or grammatical words such as prepositions, pronouns, demonstratives, etc, though they are found in numerals. Vowel sequences are not found in words that have semivowels.

4.7.3 Nasalized vowel sequences

Three vowel sequences can be nasalized. Nasalization always occurs on both vowels.

- (62) [ũ̃] [m̀bũ̃] ‘bless’
 [ĩ̃] [tĩ̃] ‘horn (musical instrument)’
 [õ̃] [nõ̃] ‘bite’

This last nasalized vowel sequence can have an intrusive velar nasal consonant between the two vowels.

- (63) [nõ̃] ~ [ñõ̃] ‘bite’

4.7.4 Laryngealized vowel sequences

It is when the vowel sequences are laryngealized that all of the contrasts can be shown. All eight vowel sequences can be laryngealized.

- (64) [ḭ] [sḭ] ‘cross (river) on a bridge’
 [ḭa] [sḭa] ‘announce’
 [ṵ] [pṵ] ‘buttock’
 [ṵe] [zṵe] ‘wait’
 [ṵa] [tṵa] ‘lift up’
 [ṵo] [zṵo] ‘pain (n.)’
 [ṵa] [zṵa] ‘marry’
 [o̰a] [no̰a] ‘build (house)’

Two sequences can be both laryngealized and nasalized as seen below.

- (65) Nasalized and Laryngealized
 [ḭ̃] [tḭ̃] ‘lead, guide’
 [pḭ̃] [pḭ̃] ‘we (inclusive)’
 [fḭ̃] [fḭ̃] ‘soon’
 [õ̰] [nõ̰] ‘custom’

5. Tone

Grassfields Bantu languages are known by researchers to have some of the most complex tonal systems in Africa. Given this complexity, careful consideration should be made of tonal phenomena in the context of phrases. This paper will only present surface tonal phenomena. A thorough study of tone is necessary before beginning to posit underlying tone.

On the surface, Bafanji seems to have three level tones: High (´), Mid (ˉ), and Low (˘). In this section, a hyphen (-) is used to show morpheme boundaries.

- (66) [féé] ‘python’
 [pṁá] ‘(be) lazy’
 [mú-nwĩ] ‘knife’

[mú-tĩ]	‘cricket’
[mbì]	‘seed’
[fû]	‘(be) weak’

However, the phonetic Mid tone is suspected of being a downstepped High tone because it only appears as a level tone on a root after the prefix High tone from a certain noun class (see section 5.1.2 for more discussion).

In addition to level tones, contour tones are commonly found on single syllables. There are three contour tones: Rising (ˊ) from low to high, Falling (ˋ) from high to low, and Low-falling (ˊˋ) which starts low and falls lower.

(67)	[fᵐǎ]	‘leaf’
	[kǎ]	‘touch (v.)’
	[kû]	‘heap (n.)’
	[fĩ]	‘apply (ointment)’
	[ndǎ]	‘time’
	[pǎ]	‘meet, encounter’

5.1 Nouns

Nouns in Bafanji have an optional noun class prefix followed by the root. The structure of nouns is covered more fully in section 7.1.2.

5.1.1 Noun roots

Each of the six surface tones in Bafanji are found to be surface tonal melodies in noun roots. That is, all three level tones as well as all three contour tones are found in noun roots. Because of the monosyllabic nature of Bafanji roots, one does not find more than these six melodies:

(68) Surface Tonal Melodies on various vowel types

Vowel type:	Short	Long	Nasalized	Laryngealized
High:	[ntú] ‘cane’	[ntáá] ‘waist’	[ṅkú] ‘noble’	[lúʔ] ‘chin’
(H-)Mid:	[mú-tĩ] ‘cricket’	[mú-kēē] ‘crab’	[mú-nwĩ] ‘knife’	[mú-ʒuĩʔ] ‘midge’
Falling:	[kâ] ‘arrow’	[záà] ‘odour’	[tâ] ‘palm tree’	[ṅkâʔ] ‘fence’
Low:	[ndì] ‘senior’	[yì] ‘claw’	[kwǎ] ‘thought’	[tʃəʔù] ‘hat’
Low falling:	[ndǎ] ‘time’	[ntʃǎ] ‘mouth’	[lǎ] ‘year’	[mbìʔà] ‘fishhook’
Rising:	[mbǎ] ‘pus’	[ṅkùú] ‘rope’	[mbjě] ‘enemy’	[pùʔá] ‘mushroom’

5.1.2 Noun prefixes

As is common in Eastern Grassfields languages, all noun class prefixes have Low tone (Watters 2003:240).

(69)	[mè-tâ]	‘shoes’
	[pà-mbàá]	‘fathers’

[wù-kǔ́]	‘nobles’
[m̄-bâ]	‘metal pot’
[n̄-djé]	‘neck’
[ŋ̄-gû]	‘mother-in-law’

There appears, however, to be an exception in three cases. One of the class 1 prefixes, mu- has High tone in some cases and Falling tone in other cases. Its plural, mbó^w- (class 2), has High tone.

- (70) [mú-kyìʔà] ‘antelope’
[mû-mbî] ‘goat’
[mbó^w-mbî] ‘goats’

These prefixes are not historical noun class markers, but they fill the slot of noun class markers (one set of prefixes of the gender 1/2). The most likely explanation is that they descend from the words for ‘child’ and ‘children’ and have been lexicalized in Bafanji as prefixes on nouns that refer to animals.

5.2 Verbs

There are two classes of verbs that are distinguished solely by tone. This can be seen in the following examples, all of which are shown with the first person singular pronoun [mà]⁹ and the verbal auxiliary [ŋgũ] which indicates a future time very close in time to the present. The tone on these two grammatical words remains invariably Rising for both verb classes. The tone represented in the following examples is the surface tone on the verb. The numbers here indicate phonetic tone, 3 being a low tone and 7 being a high tone. All other numbers are relative to these.

(71) Tonal Verb classes

37 37 5		37 37 27	
[ma ŋgu ndʒaa]	‘I will cry’	[ma ŋgu ntʃja]	‘I will speak’
37 37 5 5		37 37 2 7	
[ma ŋgu nʒoʔu]	‘I will hear’	[ma ŋgu miʔi]	‘I will throw away’
37 37 5		37 37 27	
[ma ŋgu ntʃã]	‘I will arrive’	[ma ŋgu nẽẽ]	‘I will light (fire)’
37 37 5 5		37 37 2 7	
[ma ŋgu ntəge]	‘I will call’	[ma ŋgu sugu]	‘I will pull’

We see from the above examples that phonetic Mid tone on the verb distinguishes the first class of verbs from the second, which displays phonetic Rising tone (and in the case of a laryngealized word, a sequence of Low and High, which is presumably the same underlying unit as Rising tone). For each tense there are two tonal melodies that are possible, maintaining the distinction between the two classes of verbs.

⁹ The tone in isolation for this word is Low. In this particular tense, a Rising tone surfaces.

In addition to the tonal verb classes, there are two tenses in Bafanji that are distinguished solely by tone: one that refers to actions or events that happened yesterday, and another that refers to actions or events that will happen later in the day.

(72) Contrastive tone on two verb tenses

37 26 4 1
[ma ɲgə^w ntuʔa] ‘I went to the palace (yesterday)’
1sg.PST go palace
37 37 7 3
[ma ɲgə^w ntuʔa] ‘I will go to the palace (later today)’
1sg.FUT go palace

The ‘yesterday’ past tense seems to be marked by a difference of tone on the verb ‘go’. There appears to be a downstep of the tone on the verb in the ‘yesterday’ past tense, while the future tense shows no downstep.

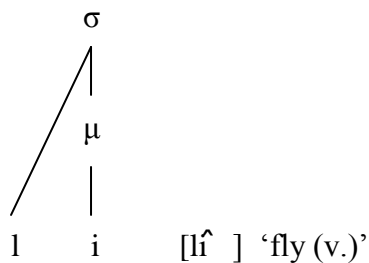
Further grammatical study will certainly give much attention to tone.

6. The Syllable

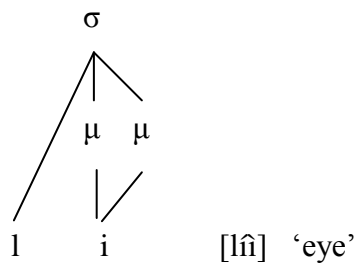
6.1 Basic Syllable Structure

Syllable structure is described in terms of weight by the number of moras (μ) in the syllable (σ). Bafanji syllables can either be monomoraic or bimoraic, which can also be described as light or heavy syllables, respectively. This structure helps elucidate the description of vowels as we have seen above. The following represents the basic syllable structure in Bafanji for the four basic vowel modifications.

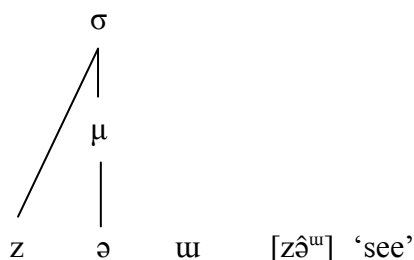
(73) Light Syllable – Short Vowel



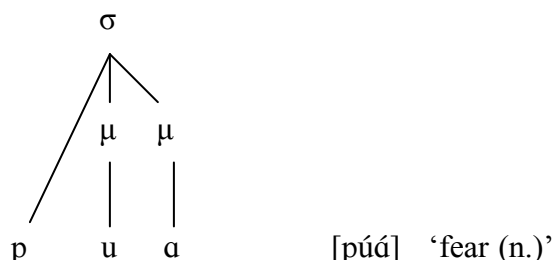
Heavy Syllable – Long Vowel



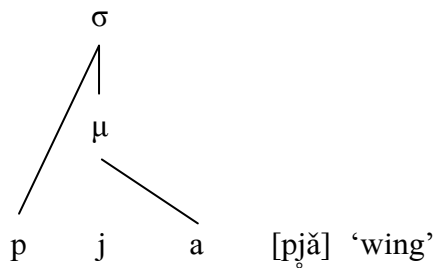
(74) Light Syllable – Diphthong



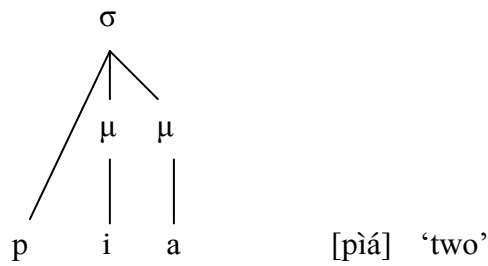
Heavy Syllable – Vowel Sequence



(75) Light Syllable – Semivowel



Heavy Syllable – Vowel Sequence



As we can see from the above representations, light syllables are those with short vowels or diphthongs, regardless of the presence of a semivowel. These are characterized by having one mora. Heavy syllables are those that have long vowels or sequences. These are characterized by having two moras. Bimoraic syllables in Bafanji seem to correlate with CVC syllables in Proto-Grassfields, which have descended from Proto-Bantu CVCV roots.

It should be mentioned here that semivowels could be analyzed as underlying vowels that function together with non-high vowels in a falling diphthong. In other words, one could see both the monomoraic and the bimoraic structures in (75) as containing the same exact string of segments, only differing in the number of moras. We have chosen not to follow this analysis for the reason of economy of phonemes. Analyzing the semivowels as vowels, we would then need to add a new vowel (the high front rounded vowel [y]), which is the vowel counterpart to the front rounded semivowel. This would increase the vowel inventory to nine, to accommodate what we have called the front rounded semivowel. In addition, this new vowel would only surface preceding another vowel and it would never carry a mora of its own.

6.2 Syllable Template

Unlike many other Grassfields Bantu languages, Bafanji syllables, under our analysis, do not allow coda consonants. Most related languages have eroded the final vowel from the Proto-Bantu CVCV noun and verb roots to leave CVC syllables. Bafanji is an example of a language that has further eroded the coda to leave only open syllables. This has given rise to the complex vowel system of Bafanji. vowel length, diphthongization, and vowel sequences can all be derived from the loss of the second consonant.

All syllables can be analyzed to fit this template:

(76) C (S) V (V)

C = Consonant
S = Semivowel
V = Vowel

The template states that the Bafanji syllable consists of an obligatory onset consonant, followed by an optional semivowel, and an obligatory vowel which is optionally followed by another vowel.

6.3 Basic Syllable Types

The following are examples of all of the possible combinations of the syllable template:

(77)	CV	[lí]	‘jump’
		[tâ ^j]	‘carry’
		[kǔʔ]	‘gather’
		[lîʔ]	‘full’
	CSV	[tɛâ]	‘(be) dirty’
		[pǰê]	‘corn fufu’
		[kɛê]	‘ankle ring’
		[kɛêʔ]	‘knee’
	CVV	[liá]	‘retrieve’
		[kíê]	‘turn round’
	CSVV	[ɣɔìʔà]	‘shrimp, crayfish’

If prenasalization (symbolized here as N) is seen as part of the template, then these additional combinations would arise:

NCV	[m̀bì]	‘seed’
NCSV	[ɲgɔ̀è]	‘leopard’
NCVV	[ɲgùʔà]	‘rock, stone’
NCSVV	[ɲgwéé]	‘locust’

6.4 Minor Syllable Types

In pronouns we also have words consisting of both a single vowel or a single nasal consonant:

V	[à]	‘he, she, it’
	[ð]	‘you’
VV	[ââ]	‘yes’
N	[ɲ.gâ ^w]	‘I go’

The first person singular pronoun is a homorganic nasal prefix on verbs.

6.5 Phonotactics

6.5.1 Onset

There is only one restriction for onsets in Bafanji. The only consonant that can directly precede the root-initial consonant is a nasal consonant. That is, noun and verb roots can be prenasalized. These nasal segments function as noun class prefixes in nouns, and serial verb prefixes and the first person singular pronoun in verbs.

(78)	[púʔà]	‘buttock’	[m̀.búʔà]	‘buttocks’
	[lì]	‘older siblings’	[n̄.dì]	‘older sibling’
	[tâ ^j]	‘carry’	[n̄.tâ ^j]	‘I carry’

[ɣɥíʔá] ‘grind’ [ŋ.ɣɥíʔá] ‘I grind’

The nasal is always homorganic, assimilating to the place of articulation of the root consonant. In verbs, the first person singular pronoun appears to be a syllabic nasal consonant. In nouns it is less clear if the noun class prefix is syllabic or not. There are no homorganic nasal noun class prefixes with contrastive tone (all are low tone phonetically). Further research is needed to ascertain the syllabic nature of homorganic nasal prefixes in Bafanji.

6.5.2 *Nucleus*

Only vowels and the homorganic nasal prefix (first person singular pronoun) can be in the nucleus of a syllable. All vowels and nasal consonants can fill this position.

6.5.3 *Coda*

There is no coda allowed in Bafanji. Nasalized vowels can sometimes be pronounced with a velar nasal in coda position of the syllable, but it is not an underlying coda. In the same way, one can view the laryngealization of the vowel to be a glottal stop in the coda position, but its variable position within the vowel sequence shows that it is not a coda consonant but rather a property of the vowels themselves.

(79) [tìʔà] ~ [tìàʔ] ‘snail’

For more discussion on laryngealization versus glottal stop in coda position, see section 4.2.4.

The phonological structure of loan words also confirms that no coda is allowed in Bafanji. The word for duck is [ɛ̀ndùfááwè] (from ‘duck-fowl’). The velar coda is dropped from ‘duck’ and the final [l] is reanalyzed as a vowel. The word for cut wood is [plǎ] (from ‘plank’). Here also, the velar plosive coda is dropped and the ‘n’ becomes nasalization on the vowel.

6.6 Co-occurrence restrictions

6.6.1 *Within the syllable*

There are two restrictions found within the syllable. The first is that the glottal fricative /h/ (found only in two words) can only be followed by with the vowel [o]. It is possible that the labial fricative /f/ has been reduced in these two words and now they surface as /h/. It is possible that with a larger database, one might find more examples of /h/.

The second restriction presents an analytical problem to the syllable template. There is a group of words which on the surface look like bisyllabic words. However, the only consonant to fill the second consonant position must be a velar plosive. The first vowel position is also restricted to non-low back vowels.

(80) [tʃ́ə́gá] ‘tail’
 [fúúgú] ‘wound’
 [pə̀gə̀] ‘(be) beautiful’
 [sùgù] ‘pull’

These are examples where both vowels are the same. There are other examples where the second vowel is not the same as the first vowel.

- (81) [tʃ́əgì] ‘push’
 [fùgâ] ‘borrow’
 [lègà] ‘bridge’
 [sə́gè] ‘count’
 [sùgó] ‘tooth’

We are calling this type of syllable a ‘CVgV’ syllable. What is curious is that these words seem to be monosyllabic. The [g] is often reduced to a fricative, and occasionally it is not even pronounced. When native speakers are asked to write this type of word using the English alphabet, most omit writing a ‘g’. They do not fit the pattern of reduplication (discussed in section 7.2), so we cannot treat them as such. If we interpret partially or fully reduplicated words as a copy of the root rather than bisyllabic roots, then these CVgV roots would be the only bisyllabic roots in the language. All these observations seem to point to some other underlying reality.

Koopman has chosen to analyze this type of syllable as an underlying CwV syllable. We first present her arguments (Koopman 1994:5-11) before discussing another alternative.

Koopman relates three arguments to support this analysis. First, there is complementary distribution between wV and VgV syllables. Velar consonants must precede wV syllables while VgV syllables can only be preceded by non-velar consonants. The second argument is that when their language resource person was asked to supply words similar to [puii], she volunteered words like [zuugu]. The third argument comes from the form of the first person possessive pronoun as shown below.

- (82) [wə] [jə] [pəgə] [məŋə] ‘my’ (in the different noun classes)

Not taking tone into account, there are four forms of the possessive pronoun in the first person singular ‘my’. The first two forms are used with singular nouns whereas the last two are used with plural nouns. The assumption is that the initial consonant is a concord element attached to the possessive pronoun. Establishing the lexical stem of the pronoun is not apparent since one cannot simply remove the concord consonant to reveal the root as one can in the other possessive pronouns.

Koopman proposes that the CVgV words fit into the syllable template and the underlying form for these pronouns have the CwV form as follows.

- (83) /wuə/ /juə/ /puə/ /muə/

None of these underlying forms surface. Koopman assumes a rule that simplifies diphthongs so that the first vowel is deleted in the singular pronouns and does not affect the plural pronouns, while another rule devocalizes the first vowel and becomes [g], while an epenthetic vowel is inserted to separate the initial consonant from the [g]. Lastly, there is a process of nasal

spreading that targets the [g] so that it surfaces as a velar nasal.¹⁰ The derivation is shown below.

(84)	/wuə/	/juə/	/puə/	/muə/
simplify diphthong	wə	jə	-----	-----
devocalization	-----	-----	pgə	mgə
vowel insertion	-----	-----	pəgə	məgə
nasal spreading	-----	-----	-----	məŋə
output	[wə]	[jə]	[pəgə]	[məŋə]

Her proposal explains the forms in (82), but there are a number of things that her proposal does not satisfactorily explain. First, there is an exception to the complementary distribution she claims above, namely that uV syllables will only have velar consonants preceding it. We have found a word that has a non-velar consonant that ends in uV.

(85) [ɲdʒùə] ‘date palm’

A second problem for Koopman’s analysis lies in the surfacing of the underlying form for some of the CVgV words. Koopman states that the underlying form for the first person plural exclusive possessive pronoun is /uuu/. Consider the following.

(86) [vùgú] /uuu/ first person plural (exclusive) possessive pronoun (class 1)
[fúgú] /fuu/ ‘wound (n.)’
[fùú] */fuu/ ‘deceive’

Koopman further states that Simplify Diphthong does not apply in the case of the exclusive pronoun. If that is the case, we can assume that she would propose a similar underlying form for ‘wound (n.)’ as we see in (86). The question is then what is the underlying form for ‘deceive’? Why has it not undergone the same processes of devocalization and vowel insertion like the first two examples? It is possible that the vowel length we are showing for ‘deceive’ is due to some part of the verbal morphology that we are unaware of. For the moment, the answer is unclear.

We have seen evidence that Koopman’s analysis has some merit, though contradictions still remain. We have observed two semantically related words where one is a CVgV words and the other a CuV word. There is a roofing material that is made from the leaves of the date palm. When assembled, these mats are called [zəgə].

(87) [ɲdʒùə] ‘date palm’
[zəgə] ‘roofing mat made from date palm leaves’
[ɲdʒəgə] ‘balafon’

¹⁰ None of the rules Koopman proposes are formalized in her paper.

One might suspect that the nasal noun class prefix for the date palm might be affecting its realization, but we see from the last example in (87) that this is not the case.

When we look at other related languages and the reconstructed forms from Proto-Grassfields (PG) (Hyman 1979), we see an interesting pattern that may help to explain CVgV words.

(88)	Gloss	PG	Baba'	Bati	Bangolan	Bamali	Bafanji
	'bird'	*sín´	[misiŋ]	[miʃiŋ]	[məʃiŋ]	[məʃĩ]	[músũgũ]
	'count'	*tán	[ʃaŋtə]	[tã]	[sã]	[ʃẽ]	[sə́gè]
	'horn'	*ndón	[ndəŋ]	[ndiõ]	[ndoŋ]	[ndwẽ]	[̀ndúgò]
	'navel'	*tòn´	[taŋ]	[tiõ]	[tõ]	[nə́tõ]	[tùgó]
	'pull'	*sù ɲ	[ʃɔŋə]	[ʃuŋu]	[sũ]	[ʃũũ]	[sùgú]
	'rain (n.)'	*bìn`	[mbəŋ]	[mbĩ]	[mbiŋ]	[mbə]	[̀mbùgũ]
	'tail'	*sán`	[ʃjaŋ]	[siã]	[sã]	[ndun]	[tʃə́gə]
	'tooth'	*sòn´	[saŋ]	[siõ]	[sɔŋ]	[nə́ʃõ]	[sùgó]
	'wash'	*sùg	[ʃuʔu]	[suʔ]	[suyu]	[ʃo]	[sòò]

From the words in the above list, we see that CVgV syllables in Bafanji have been reconstructed to be CVŋ syllables in PG. Also, in the languages of Baba', Bati, Bangolan, and Bamali, the final velar nasal of PG either remains a velar nasal or is realized as nasalization on the final vowel. In addition to this we see from the word 'wash' that *g is not realized in Bafanji, but rather there is compensatory lengthening. Therefore, there is good historical and comparative evidence to say that the CVgV syllables in Bafanji are historically derived from *CVŋ syllables, and not underlyingly CuV syllables.

Even if one has an idea of the historical precedents, the question remains, what is the underlying form of present day CVgV syllables in Bafanji? We are unable to answer the question at present.

What we do know is that the [g] is not phonemic in these words. It does not fit into the allophonic pattern where [g] is always preceded by a homorganic nasal. We also know that there is some relationship between CVgV words and CuV words. In addition we have seen that CVgV words descend from *CVŋ in Proto-Grassfields. The exact underlying structure is a question that is left for further studies.

A last note about CVgV words is that when the first vowel is rounded and the second vowel is unrounded, a transition semivowel [w] can be heard.

(89)	[sógwà]	'hoe'
	[fùgwâ]	'borrow'
	[lùgwî]	'pluck (a chicken)'

6.6.2 Across syllables

Since Bafanji has very few, if any, polysyllabic roots, restrictions across syllables are fairly rare. However, if we consider prenasalized segments to be syllabic, then there is one restriction across syllables found among verbs.

Normally when verbs are marked for certain features of the tense-aspect-mood system, the verb is prefixed by a homorganic nasal. The voiceless fricatives, however, reject prenasalization. Sometimes the vowel in the preceding word can surface with some nasalization as a result of this restriction.

- (90) 37 36 2 5 7 3 7 5 3
 [ma ɲgə^u laʔa son wə mbigile]
 I.will N.go compound friend my day.after.tomorrow
 ‘I will go to my friend’s house the day after tomorrow.’

- (91) 37 26 2 7 7 3 35 5
 [mã sɔɔ mɛndʒɪ mɛŋə ɲgie paʔ]
 I.will N.wash clothes my week like.this
 ‘I will wash my clothes next week.’

In (90), we see a typical sentence that displays a homorganic nasal prefix on the verb ‘go’. When voiceless fricative-initial verbs are in the same syntactical environment, the verb is not prenasalized. Instead, the preceding pronoun can be nasalized as we see in (91). Silverman (1994) writes about this phenomenon, however he restricts his study to verbal adjectives.

7. The phonological structure of morphemes

7.1 Lexical roots

7.1.1 Verb roots

All verb words must have the following word structure:

- (92) (C) (V-) C (S) V (V)
 prefix - root
- | | |
|---------------------|-------------------|
| [zû] | ‘eat’ |
| [tî] | ‘put, place, set’ |
| [lîê] | ‘forget’ |
| [sqê ^j] | ‘tell, recount’ |
| [ʒúʔà] | ‘marry’ |
| [lqéè] | ‘end’ |

Bafanji verb roots have the same structure as the syllable which is repeated here: the verb root consists of an obligatory onset consonant, followed by an optional semivowel, and an obligatory vowel which is optionally followed by another vowel.

7.1.2 Verbal Affixes

Contrary to what is found in most Grassfields Bantu languages, Bafanji allows no suffixes on verbs. One would expect three or four verbal extensions as they are attested in every branch within Grassfields Bantu, even in neighboring Nun languages. However, in Bafanji, it seems as if the functions that are expressed in verbal extensions in other languages are expressed in either partial or fully reduplicated words or in auxiliary verbs within the verb phrase. These are discussed in section 7.2.

In certain tenses, a homorganic nasal prefix is attached to the verb root.

There are three verbal prefixes that we have found so far. There is one verbal clitic, /te/ that could be suspected to be a suffix, but the fact that other words can come between the verb word and the clitic, it cannot be a verbal suffix. The verbal prefixes must have the following structure:

(93) (C) (V-)

Verbal prefixes can either be CV- or N-, but never V-.

- | | | |
|------|-------|----------------------|
| (94) | [mè-] | ‘infinitive marker’ |
| | [kè-] | ‘verb word negation’ |
| | [né-] | ‘no longer’ |
| | /Ñ-/ | ‘serial verb prefix’ |

7.1.3 Nouns

Characteristic of Nun languages, Bafanji has a noun class system that is among the most reduced of all Grassfields Bantu languages, having only six classes. Half of all nouns have a segmental noun class prefix in the singular, while the other half show no prefix. Almost all plural nouns have a noun class prefix. Noun classes in Bafanji are identified by a particular combination of concord consonant and concord tone on the noun modifier.

All noun words in Bafanji must have the following word structure:

- (95) (N)(C)(V)(N-) C (S) V (V)
 Class prefix - root

- | | |
|-----------|-------------|
| [yíê] | ‘armpit’ |
| [ñ-dʒì] | ‘hunger’ |
| [ñ-kwêʲ] | ‘firewood’ |
| [mú-sqèè] | ‘mouse’ |
| [pàñ-gǔ] | ‘strangers’ |

[mún-dzàà]	‘sheep (sg.)’
[mbó ^w ŋ-kəʔú]	‘roosters’

Nouns in Bafanji have an optional prefix (discussed in 7.1.4) attached to the root. Bafanji noun roots are identical in structure to both verb roots and the basic syllable.

7.1.4 Noun Prefixes

All noun affixes in Bafanji are prefixes and must have the following word structure:

(96) (N)(C)(V)(N-)

Not all combinations of the above elements are attested. The possible combinations of onset, nucleus and homorganic nasal are as follows.

(97) C-	l- p-
N-	m̃- ñ- ŋ-
CV-	m̃- p̃- w̃- mú- s̃- ɣ̃-
CVN-	m̃m̃- m̃ñ- m̃ŋ- múm̃- múñ- múŋ- m̃p̃- m̃w̃- p̃m̃- p̃ñ- p̃ŋ-
NCV-	m̃bó ^w -
NCVN-	m̃bó ^w m̃- m̃bó ^w ñ- m̃bó ^w ŋ- m̃bó ^w ŋ-

Note that there are no prefixes that consist of a vowel alone. The most common prefix is the plural class 6 marker /m̃-/. There are two items worthy of mention here. First, the plural prefix /m̃bó^w-/ is not a typical affix. It is likely a grammaticalization of ‘children’, in the same way that /mú-/ and /mún-/ come from ‘child’. These are the only prefixes with high tone.

Second, all of the prefixes that end in a nasal are homorganic to the root consonant. It is possible to view the root as being prenasalized. It is also possible to view all of the prefixes that end in a homorganic nasal as consisting of two prefixes, a CV and a homorganic nasal N prefix. The latter interpretation maintains the current number of consonant phonemes. The former interpretation would necessitate positing a number of prenasalized phonemes. Therefore, we prefer the analysis of either one prefix (CVN-) or two prefixes (CV- and N-) on the same root.

7.1.5 Grammatical words in the noun phrase

Minor words such as pronouns, prepositions, demonstratives, and adjectives have the following word structure:

(98) (C-) (N)(C)V
Prefix - root

Demonstratives, subject pronouns, and possessive pronouns consist of a noun class concord prefix attached to a root which has no onset. The concord consonant becomes the onset in order to fit into the syllable template.

- (99) [w-ə] ‘my (class 1)’
 [p-ùʔù] ‘we (dual) (subject pronoun)’
 [j-ìʔí] ‘this (class 9)’

There are very few adjectives in Bafanji. The adjectives for large and small are prenasalized in certain contexts, but do not have a noun class concord prefix.

- (100) [lɛʔɛ́] [n-dɛ́ʔɛ́] ‘large’
 [kúú-kúúʔúú] [ŋkúú-ŋkúúʔúú]¹¹ ‘small’

Prepositions are invariable in that they also do not have a noun class concord prefix. Some are prenasalized, others are not.

- (101) [mɔ̃] ‘inside’
 [ndʒɔ̃] ‘behind’
 [lɔʔù] ‘under’

7.1.6 Grammatical words in the verb phrase

Grammatical words used in the verb phrase may have a nasal prefix except for the negative marker, /pə/. The precise environments where the nasal prefix surfaces will become more clear with further grammatical study.

Verb phrase grammatical words must have the following structure:

- (102) (N-) C (S) V (V)
 prefix - root

There is an optional nasal prefix that attaches to a single syllable verb root. The nasal prefix is part of the tense-aspect-mood system.

- (103) [pə] ‘negative marker’
 [ní] ‘again (negative)’
 [táá] ‘habitual aspect’
 [káà] ‘already’
 [pɔ̃ʷ] ‘again’
 [tə] ‘so, since’
 [ɣə] ‘particle of insisting’
 [tʃmɔ̃ʷ] ‘progressive aspect’
 [ŋjɪʔá] ‘distant future tense auxiliary’
 [lwɔ̃ʷ] ‘near future tense auxiliary’
 [ŋgũ] ‘immediate future tense auxiliary’

¹¹ This is a case of partial reduplication which is discussed in section 7.2.1.

[pìí] ‘near past tense auxiliary’

7.2 Reduplication

7.2.1 Partial stem reduplication

There are 41 instances of partially reduplicated words in our database. The majority of these are found in nouns. Some of these bear a semantic relationship with the non-reduplicated roots.

(104)	[fũfũ]	‘wind’	[fũ]	‘blow’
	[kókᵐē]	‘bone’	[kᵐé]	‘bead’
	[lèlqí]	‘gall bladder’	[lqĩ]	‘(be) bitter’
	[səs̩jê]	‘ground, soil’	[sjẽ]	‘grave’
	[tètóʷ]	‘basket’	[tòʷ]	‘dig’

There are also some verbs that have been partially reduplicated. Some of these also bear some semantic relationship with their unreduplicated roots.

(105)	[tʃútʃᵐḁ]	‘sit’	[tʃᵐḁ]	‘stay, live’
	[púúpúù]	‘ugly’	[púù]	‘bad’
	[tátĩ]	‘stand (of a person)’	[tĩ]	‘stand (of an object)’
	[lúlùʔũ]	‘argue’	[lùʔũ]	‘set a trap’
	[fəfòʔù]	‘bubble (v.)’	[fòʔũ]	‘boil’

Some prepositions are also partially reduplicated:

(106)	[tʃátʃẽ]	‘middle’
	[kúkúkúʔú]	‘small’

The formation of partially reduplicated words follows this pattern. The root-initial consonant is copied and one of the following four vowels is inserted:

u, ə, i, u

The details as to the choice of vowel is as yet uncertain. The most common vowel in the copy of the root is ə, with it surfacing 2/3 of the time.

7.2.2 Complete stem reduplication in nouns

There are 39 examples of complete stem reduplication in our database. Only 11 of these are nouns. Plural stem reduplication is possible in a few cases (and this is optional reduplication):

(107)	[fũĩ]	‘chief’	[wù-fũĩfũĩ]	‘chiefs’
	[m̀bôʷ]	‘poor person’	[wù-pôʷpôʷ]	‘poor people’

Most nouns that are reduplicated are mass nouns:

- (108) [n̩tĩʔíntĩʔì] ‘dragonfly’
 [ndʒǝ́ndʒǝ́] ‘darkness’
 [n̩dĩn̩dĩ] ‘smoke’
 [kũkũ] ‘breastbone’
 [tʃúʔtʃú] ‘ringworm’
 [n̩n̩ĩ̃] ‘movement’
 [ŋgúàèŋgúàè] ‘peace’
 [sìsĩ] ‘thread’

7.2.3 Complete stem reduplication in verbs

Most instances of complete stem reduplication are found among verbs. The functions reduplication plays are many. Below are just a few examples.

All verbs can be fully reduplicated when fulfilling the function of describing a noun or a verb:

- (109) 37 3 7 7 3 2 2 2 6
 [ŋgũð jĩʔi a jɛ mbəgəmbəgə]
 plantain this it which red.red
 ‘This plantain is a ripe one.’
 3 353 66 3 3 3 32
 [a kaa nduuu mətōmətō]
 he ran run power.power
 ‘He ran quickly.’

When there is focus on specifying the specific verb in a phrase, the present tense with progressive aspect is realized by a verbal auxiliary plus verbal root reduplication:

- (110) 3 7 64 63
 [o tʃmoʷ ndã pjẽẽ]
 you.sg. PROG turn corn fufu
 ‘Are you stirring corn fufu?’
 5 5 42 4
 [ŋga ntʃmōʷ səʷsəʷ]
 no 1.sg.PROG sift.sift
 ‘No, I am *sifting*’

There is a different form of the progressive aspect in Bafanji that is realized with complete verbal stem reduplication. This is often heard as a greeting.

- (111) 37 62 5
 [pãʔ kwəʷkwəʷ]
 2.pl. return.return

Some underived and uninflected verbs are seen to be already fully reduplicated:

- ## 8. Morphophonemic Alternations

8.1 Coalescence

(113) [múmǐbí wə̀]
goat my
'my goat'

(114) Coalescence in the noun phrase

Root Vowel	Noun	Noun + ‘your’	Noun + ‘his’	Gloss
i	múmɐ̃bɪ	múmɐ̃bíḁ	múmɐ̃bíĩ	goat
ɛ	pê	pê'ḁ	pêě	excrement
a	tâ	tâ'ḁ	tâă	shoe
u	kû	kuúḁ	kuúĩ	eyebrow
ə	ndɔ́	ndɔ́'ḁ	ndɔ́ě	truth
ɑ	zâ	zâ'ḁ	záă	odour
u	ʃú	ʃúḁ	ʃúĩ	fish
ɔ	ngḁ	ngḁḁ	ngḁă	skin

42

vowel in any way. In fact, it is the root vowel that fully assimilates in the case of the two non-high back unrounded vowels. It is clear that /ɔ/ is the underlying form.

As for the third person singular possessive pronoun (‘his’), it assimilates in every case. It seems that the underlying form may be a front vowel that is underspecified for height.

Something else to be noted from the above paradigm is that the root vowel in [zâ] ‘odour’ assimilates to be a front vowel when the third person singular possessive pronoun follows it, so that both the root vowel and the possessive pronoun are pronounced together like a long vowel [zaa]. This is the only instance of the long [aa].

Another case that triggers morphophonemic alteration is when a verb takes the second or third person singular direct object. The direct object follows the verb as shown in the following examples.

(115) Coalescence in the verb phrase

Root Vowel	Verb	Verb + ‘you’	Verb + ‘him’	Gloss
i	pí	píð	pîi	give birth
ɛ	γē	γéð	γéē	have
a	nā	năð	năā	show
u	ʒû	ʒûð	ʒûi	sweep
ə	zê	zôð	zôē	slap
ɑ	nâ	nâð ~ nôð	nâā	allow
u	tû	túð	túi	pay
ɔ	kô	kóð	kóā	tie

We see that verbal coalescence is realized in exactly the same way as nominal coalescence.

8.2 Nasal consonant insertion

In the same context as seen above, a noun or verb with a nasalized root vowel may insert an optional velar nasal consonant when the vowel is high.

- (116) [ɛ̃dzĩ] ‘relative’ [ɛ̃dzĩɲĩ] ‘his relative’
 [ɛ̃gũ] ‘mother-in-law’ [ɛ̃gũɲĩ] ‘his mother-in-law’
 [sɔ̃] ‘friend’ [sɔ̃] ‘his friend’

The last example (his friend) shows that this nasal consonant insertion does not happen when the root vowel is not high.

8.3 Homorganic nasal verbal prefix

The first person singular subject pronoun surfaces in three different ways, depending on the root consonant that it attaches to.

(117) Homorganic nasal surface forms

[ɲdẽˈj]	‘I want’
[ɲgɛˈw]	‘I go’
[ɲbɛˈɛ]	‘I ask’

One can consider this to be an underspecified nasal that receives its specification for place from the verb root that it attaches to.

8.4 Continuant Hardening and Intrusive Stop Formation

A common phenomenon across Grassfields languages is a process of hardening consonants when they are prenasalized (Bird 1996:6, Satre 1997:19-21). We have discussed this above in section 2.3.2 and the hardening rule presented there is repeated here in (118).

(118) Continuant Hardening Rule

$$\begin{array}{c} \text{C} \\ [+cont] \\ [+voice] \end{array} \rightarrow \begin{array}{c} [-cont] \\ / \\ \text{N_} \end{array}$$

The most common environment to find this hardening is in conjugated verbs, where the first person singular pronoun is a homorganic nasal consonant.

(119) Prenasalized Hardening Process:

Phoneme	3.sg. Verb	1.sg. Verb	Gloss
l	àlẽˈj	ɲdẽˈj	want
ɣ	àɣɛˈw	ɲgɛˈw	go
z	àzĩ	ɲdʒĩ	know
w	àwẽˈj	ɲgwẽˈj	hold
j	àjĩɲɛ	ɲgjĩɲɛ	say that...
q	àqá	ɲgqá	harvest (plantains)

In the last four examples above, there is an extra consonant that is inserted between the nasal prefix and the verb. This has been described in other Grassfields Bantu languages as intrusive stop formation (Satre 1997:21) and also applies in the same way in Bafanji.

(120) Intrusive Stop Formation

$$\emptyset \rightarrow \begin{array}{c} \text{C} \\ [-cont] \\ [+voice] \end{array} / \begin{array}{c} \text{N_C} \\ [+cont] \\ [+voice] \end{array}$$

The rule formalized in (120) says that when a nasal consonant precedes a voiced continuant, a voiced non-continuant consonant is inserted.

8.5 Voicing Assimilation

The same environment will also trigger voicing assimilation in the consonant of the verbal root (when it is a labial plosive). This was also discussed above in section 2.3.2 and the rule presented there is repeated here in (121).

(121) Voicing Assimilation Rule

$$C \rightarrow [+ \text{voice}] \quad / \quad N_$$

$$\left[\begin{array}{l} - \text{cont} \\ - \text{coronal} \\ - \text{voice} \\ + \text{anterior} \end{array} \right]$$

(122) Voicing Assimilation

Phoneme	3.sg. Verb	1.sg. Verb	Gloss
p	àpéè	mbéè	ask
	àpâ	mbâ	hunt (v.)
	àpə́ə́	mbə́ə́	capsize

In fact, in these examples, two processes are at work. First the homorganic nasal receives is specification for place from the labial plosive to become [m]. Then the voicing assimilation rule voices the labial plosive to become [b]. Thus the root first causes the specification for the prefix, and then the prefix causes the voicing of the root consonant.

8.6 Noun class concord alternation

In class 7 and 9, there is some variation between the concord consonants. The difference between class 7 and class 9 is the concord tone (not shown here). Both classes are attested with the two different concord consonants as seen below. Starred forms in the following table do not occur.

Possessive Pronouns	Class 7 or 9 Concord	
1 sg	jə	*zə
2 sg	ɔ	ɔ
3 sg	ε	ε
1 pl dual	juʔ	*zuʔ
1 pl exclusive	*juɠu	zuɠu
1 pl inclusive	jĩʔẽ	*zĩʔẽ
2 pl	jã ^j	zã ^j
3 pl	jo ^w	zo ^w

It is assumed that the noun class system of Bafanji is reduced from its historical precedents. It is possible that there used to be a distinction between classes which was defined by a difference

in concord consonants such that [z] was the concord consonant of one class and [j] was the concord consonant of a different class. The present day reduced system seems to be indicative of this.

9. Summary and Conclusion

This paper has proposed the underlying contrastive phonological units of Bafanji, covering consonants, semivowels, and vowels. Tone presented in this sketch is an area that will need extensive research before determination of underlying tones and tonal melodies. It is hoped that this paper will be a solid foundation for any further linguistic study on the language.

It has been suggested here that Bafanji has no coda consonants, a phenomenon not attested as yet in any Grassfields Bantu language. There are also three underlying semivowels and a very rich vowel system, including phonemic vowel length, vowel sequences, diphthongs, nasalization and laryngealization.

We have also seen that reduplication plays a part in the morphophonology of Bafanji, with both partial and complete stem reduplication observed. Because Bafanji syllables are open, this gives rise to coalescence when the following morpheme is onsetless.

A number of areas, however, need further research:

The **tonal system** awaits phonemic study. If Bafanji's tonal system is similar to other Grassfields Bantu languages, then only extensive research will provide a clear understanding of the underlying tonal melodies and processes that are at work.

A significant question remains regarding the status of apparent **nasal codas**. Further study will be needed to know if there is a phonemic distinction between nasalized vowels and a velar nasal consonant, which would make it the only coda consonant in the language. Perhaps phonetic study could be made of laryngealized words in order to gain a better understanding of our interpretation of glottal stops.

The underlying form of '**CVgV**' words is also an area of further research. The underlying form is clearly not the surface form, but it has been difficult to propose a solution to this analytical problem.

Given the fact that we posit more phonemic long vowels than their short counterparts, it could be advantageous to further study the **vowel system** to know whether it might be better to posit ten underlying vowels instead of eight (adding [e] and [o] to the inventory). And it would be helpful to do an acoustic study of **vowel length** to validate our use of the mora to distinguish short vowels and diphthongs from long vowels and vowel sequences.

Finally, the question of **syllabic or non-syllabic nasals** is one that is left without satisfactory answer at present. It seems that at least one nasal morpheme is syllabic, while others seem to be non-syllabic (but tone-bearing).

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Appendices

Presentation of contrasts among short, oral, non-laryngealized vowels

	/i/	/ɛ/	/a/	/u/	/ə/	/ɑ/	/u/	/ɔ/
/t/		[tê] ‘pimple’	[tâ] ‘shoe’	[tú] ‘tree’	[ntô] ‘jigger’		[tû] ‘pay’	[tɔ̃] ‘field’
/k/	[kí] ‘fish dam’	[kê] ‘or’	[kâ] ‘arrow’	[kû] ‘eyebrow’	[kə] ‘egusi shell’		[kû] ‘chew’	[kô] ‘tie’
/tʃ/	[mútʃí] ‘cricket’	[tsé] ‘meet’	[tʃâ] ‘cut’	[tʃú] ‘spot’	[tʃə] ‘shut’	[tʃáá] ‘type of tree’	[tʃû] ‘say’	
/p/	[pí] ‘give birth’	[pê] ‘flock’	[pâ] ‘flat’	[pû] ‘danger’	[pə] ‘blister’	[pà] ‘carry child on back’	[pû] ‘ashes’	[pò] ‘your’
/ɣ/	[ɣgĩ] ‘voice’	[ɣê] ‘obtain’	[ɣá] ‘wander’				[múɣgû] ‘chicken’	[ɣð] ‘skin of fruit’
/l/	[lí] ‘jump’	[lê] ‘there’			[ndə] ‘truth’			[ló] ‘vagina’
/f/	[fí] ‘resemble’		[fâ] ‘meat’	[fû] ‘be blind’	[fə] ‘give’	[fà] ‘weak’	[fú] ‘white’	
/s/	[sí] ‘black’			[ʃû] ‘egg plant’			[jú] ‘fish’	[sô] ‘leech’
/z/	[zî] ‘knowledge’	[zê] ‘many’	[zâ] ‘smart’	[zû] ‘sweep’	[zə] ‘heavy’		[zû] ‘eat’	[zô] ‘be sated’
/h/								[hò] ‘god’
/m/	[mí] ‘swallow’	[mê] ‘his/her’	[mâ] ‘finish’			[mà] ‘I’		[mó] ‘inside’
/n/	[ní] ‘cook’		[ná] ‘show’	[nú] ‘defecate’		[nâ] ‘leave’		[nô] ‘snake’
/ŋ/								
/w/			[wâ] ‘type of tree’	[wû] ‘death’	[wə] ‘who?’		[mòwû] ‘oil’	
/y/								
/ɥ/			[ɥá] ‘harvest plantains’					

In the above chart, short oral non-laryngealized vowels have been the basis. Where there was no word in our database for a particular cell, words with short nasalized vowels have been added. If long vowels were also allowed, this would fill in many more gaps.

Frequency of vowels (oral, short, non-laryngealized, non-diphthongs)

	Front	Central	Back
High	187 i	105 ʊ	188 u
Mid	85 ε	211 ə	56 ɔ
Low	94 a	80 ɑ	

Phonetic Segment Count in data (1100 words)

ʔ	245	ɥ	69	uu	18
ə	211	ũ	67	ʒ	16
u	188	ɳ	64	ii	13
i	187	o	61	uuu	13
k	159	ɔ	56	õõ	12
p	115	j	56	əə	12
w	111	z	53	ɔɔ	12
g	107	n	49	uɥ	11
ʊ	105	ã	48	õ	10
t	96	ĩ	46	ee	10
l	96	ɣ	46	dz	6
a	94	ɑɑ	45	ɲ	4
tʃ	89	b	43	ẽ	3
ɳ	89	e	42	v	3
ε	85	ɱ	41	ts	2
õ	81	ẽẽ	36	ũũ	2
m	80	õ	27	oo	2
ɑ	80	d	27	õõ	1
s	74	dʒ	24	h	1
f	70	ʃ	20		
ẽ	69	ɳ	20		

Phonological rules proposed

- 1 Voicing Assimilation Rule (p -> b)

$$C \rightarrow [+ \text{voice}] \quad / \quad N_$$

$$\left[\begin{array}{l} - \text{cont} \\ - \text{coronal} \\ - \text{voice} \\ + \text{anterior} \end{array} \right]$$
- 2 Continuant Hardening Rule

$$C \rightarrow [- \text{continuant}] \quad / \quad N_$$

$$\left[\begin{array}{l} + \text{cont} \\ + \text{voice} \end{array} \right]$$
- 3 Intrusive Stop Formation

$$\emptyset \rightarrow C \quad / \quad N_C$$

$$\left[\begin{array}{l} - \text{cont} \\ + \text{voice} \end{array} \right] \qquad \left[\begin{array}{l} + \text{cont} \\ + \text{voice} \end{array} \right]$$
- 4 Sibilant Palatalization Rule

$$/s, z/ \rightarrow [+ \text{high}] \quad / \quad _V$$

$$\left[\begin{array}{l} + \text{high} \\ + \text{back} \end{array} \right]$$
- 5 Semivowel Dissimilation Rule

$$/w/ \rightarrow [- \text{back}] \quad / \quad V \quad C \quad V$$

$$\qquad \qquad \qquad [+ \text{back}]$$
- 6 Semivowel Assimilation Rule

$$/ɥ/ \rightarrow \left[\begin{array}{l} + \text{back} \\ - \text{round} \end{array} \right] \quad / \quad _V$$

$$\qquad \qquad \qquad \left[\begin{array}{l} + \text{back} \\ - \text{round} \end{array} \right]$$
- 7 Semivowel Devoicing Rule

$$C \rightarrow [- \text{voice}] \quad / \quad C_$$

$$\left[\begin{array}{l} - \text{syllabic} \\ - \text{consonantal} \\ + \text{voice} \end{array} \right] \qquad \qquad [- \text{voice}]$$

Table of Distinctive Features for all segments

	ant	cor	cont	voic	lat	rd	bk	hi	lo	syl	cons
t	+	+	-	-	-	-	-	-	-	-	+
tʃ	-	+	-	-	-	-	-	-	-	-	+
k	-	-	-	-	-	-	+	+	-	-	+
p	+	-	-	-	-	-	-	-	-	-	+
l	+	+	+	+	+	-	-	-	-	-	+
ɹ	-	-	+	+	-	-	+	+	-	-	+
f	+	-	+	-	-	-	-	-	-	-	+
s	+	+	+	-	-	-	-	-	-	-	+
z	+	+	+	+	-	-	-	-	-	-	+
h	-	-	+	-	-	-	-	-	-	-	+
m	+	-	-	+	-	-	-	-	-	-	+
n	+	+	-	+	-	-	-	-	-	-	+
ŋ	-	-	-	+	-	-	+	+	-	-	+
ɰ	-	+	+	+	-	+	-	+	-	-	-
j	-	+	+	+	-	-	-	+	-	-	-
w	+	-	+	+	-	+	+	+	-	-	-
i				+		-	-	+	-	+	-
ɛ				+		-	-	-	-	+	-
a				+		-	-	-	+	+	-
ʊ				+		-	+	+	-	+	-
ə				+		-	+	-	-	+	-
ɑ				+		-	+	-	+	+	-
u				+		+	+	+	-	+	-
ɔ				+		+	+	-	-	+	-