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A PHONOLOGICAL GRAMMAR OF KUCHE

The members of the Committee approve the masters thesis of Janet Evelyn Wilson

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DEDICATION

This thesis is lovingly dedicated to my husband Chuck Wilson. He has cooked and cleaned and washed and ironed while I devoted myself to writing and revising. But more than anything else, he believed I could do it

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A PHONOLOGICAL GRAMMAR OF KUCHE

by

Janet Evelyn Wilson

Presented to the Faculty of the Graduate School of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

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My advisor, Dr. David Silva, also contributed his experience and expertise. He took time to read and make valuable suggestions for revisions. My other committee members, Dr. Donald Burquest and Dr. Norris McKinney also helped to shape my thinking and encourage me during the writing process.

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ABSTRACT

A PHONOLOGICAL GRAMMAR OF KUCHE

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The phonology of Kuche, a minority language of Northern Nigeria, is described, with a view to proposing a practical orthography. A sketch of the morphology and syntax is presented; the noun class system is similar to the systems found in Bantu languages of Eastern Africa. Syllables tend to be open, with nasalized vowels surfacing as nasal codas. Vowel harmony is a pervasive feature of the language: harmony based on all vowel features operates at the morpheme level and harmony based on tenseness operates at the word level. The last chapter outlines a tentative orthography proposed to replace an older, abandoned orthography developed earlier this century. The appendix lists more than 2,000 words of Kuche, transcribed phonetically, with English glosses.

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INTRODUCTION

1.1 Background

Kuche is spoken by about 50,000 people (Crozier and Blench, 1992) in at least 17 villages northwest of Jos, Plateau State, in Northern Nigeria. The people call themselves Bache and they call their territory Kiche; however, the Hausa people call them Rukuba ("people of the rocks"), and that is the name by which their language is widely known. The most recent edition of the Ethnologue (Grimes 1992) lists the language simply as "Che," omitting the noun class prefix.

1.2 Purpose

The Bache people are eager to have their language in written form. Although Scripture portions were translated into Kuche earlier this century, there is no current indigenous written literature and no program to teach a written form of Kuche in the local schools. The orthography used to translate the Scripture portions was developed by missionaries--a nurse and a dentist--with no linguistic training. That orthography makes use of the five English vowels that can be found on a typewriter, even though Kuche has at least eight vowel sounds. Word divisions are made to coincide with English word breaks, although Kuche pronouns are verb prefixes and suffixes rather than separate words. Tones and vowel length are not

marked, even though both carry a heavy functional load. It is no wonder that only a few of the older generation know how to read their own native language.

According to Katherine Barnwell (1989:51), "Analysis of the sound system is the essential preparation which must be done before proposals for an orthography can be made." The phonological analysis presented in this thesis provides a sound basis for the development of a practical Kuche orthography.

1.3 Setting

1.3.1 Language Taxonomy

Ruhlen (1987) places Kuche--which he lists as Rukuba--into the bigger picture, placing it in the Eastern branch of the South-Central Niger-Congo group:

NIGER-KORDOFANIAN

I. KORDOFANIAN (32 Languages)

II. NIGER-CONGO
- A. Mande (30 languages)
- B. Niger Congo Proper
  - 1. West Atlantic (46 languages)
  - 2. Central Niger-Congo
    - a) North Central Niger-Congo (216 Languages)
    - b) South Central Niger-Congo
      - (1) Ijo-Defaka (7 languages)
      - (2) Western (49 languages)
      - (3) Eastern
        - (a) Central Niger (11 languages)
        - (b) Yoruba-Northern Akoko (6 languages)
        - (c) Edo (22 languages)
        - (d) Lower Niger (7 languages)
        - (e) Jukunoid (12 languages)

(f) Delta Cross (12 languages)
(g) Lower Cross (8 languages)
(h) Upper Cross (23 languages)
(i) Benue-Zambesi
  i) Cara (45 languages)
  ii) Nyima
    A. Plateau
      1. Ayu
      2. Yashi
      3. Mabo-Barkul
      4. Irigwe
      5. Birom-Migili
        a) Migili
        b) Aten
        c) Birom: Birom, Fachara
      6. Kaje-Kadara
        a) Katab
        b) Yeskwa: Yeskwa, Lungu, Koro
        c) Kaje: Kamanton, Kagoma, Jaba, Nandu, Izarek, Kaje
        d) Kadara: Kadara, Kuturmi, Ikulu, Idong, Doka, Iku
      7. Ninzam-Rukuba
        a) Rukuba (**Kuche**)
        b) Kwanka: Kwanka, Shall
        c) Ninzam: Ninzam, Mada, Gwantu, Nindem, Kaningkon, Kanufi
      8. Eggon: Eggon, Nungu, Ake, Jidda
      9. Fyam: Fyam, Horom
      10. Tarok: Tarok, Bashar, Pai
      11. Turkwam: Turkwam, Arum
    B. Wel
      1. Bendi-Bokyi (9 languages)
      2. Bantoid
        a) Non-Bantu (16 languages)
        b) Broad Bantu
          (1) Bane (118 languages)
          (2) Narrow Bantu (380 languages)

Previous researchers who have investigated Kuche have used Greenberg's (1963) classification of the Plateau languages. A small section of Greenberg's outline (1963:8) is reproduced here, beginning with #5, Benue-Congo:

5. Benue-Congo
   A. Plateau
      1. (Plateau 1)
         a) Kambari, Dukawa, Dakakari, Basa, Kamuku, Reshe
         b) Piti, Janji, Kurama, Chawai, Anaguta, Buji, Amap, Gure, Kahugu, Ribina, Butawa, Kudawa
      2. Afusare, Iregwe, Katab, Kagoro, Kaje, Kachicheri, Morwa, Jaba, Kamantan, Kadara, Koro, Afo
      3. Birom, Ganawuri (Aten)
      4. Rukuba [**Kuche**], Ninzam, Ayu, Mada, Kaningkwom
      5. Eggon, Nungu, Yeskwa
      6. Kaleri, Pyem, Pai
      7. Yergam, Basherawa
   B. Jukunoid
   C. Cross-River
   D. Bantoid

1.3.2 Related Languages

As we see above, Greenberg lists four languages as sisters to Kuche, while Ruhlen lists none. In Gerhardt's (1984) reconstruction of Proto-Plateau 4, he uses data from Kuche, Nindem, Kaningkom, Ninzam, Mada (West) and Mada (North). According to Ruhlen, the languages most closely related to Kuche are Kwanka, Shall, Ninzam, Mada, Gwantu, Nindem, Kaningkon, and Kanufi. Except for Gerhardt's reconstruction, there is no published language data or linguistic analysis of any of these languages.

More extensive linguistic analysis is available for a few more distantly related languages. Norris McKinney has written two articles (1984 and 1990) about fortis consonants in Jju (listed as Kaje in Ruhlen's outline) and Tyap (Katab); and Carol McKinney (1978) discusses plural verb roots in Kaje. Leo Sibomana (1985) presents a phonological and gram-matical outline of Eggon. Selbut Longtau (1993) has written a formal Tarok phonology.

Even though Kuche is geographically distant from the Bantu languages of eastern Africa, the genetic distance is not so great. The noun class system of Kuche fits very neatly into the system for proto-Bantu introduced by Meinhof (1899, 1932), and developed by Welmers (1973) and others. For further discussion, see chapter 2.

1.3.3 Cultural Setting

Northern Nigeria is an area of extensive language contact. Within a 50-kilometer radius of Kiche (the area where Kuche is the native language), about thirty-one different languages are spoken (according to the "Language Map of Nigeria," included as a fold-out in Crozier and Blench, 1992). Besides these other minority language groups, Hausa and Fulani traders live among the Bache. Hausa is the *lingua franca* of Northern Nigeria, and is spoken in schools, in government offices, and in the markets of Jos, the only city nearby. English is one of the official languages of Nigeria, and is the only language of higher education.

1.4 Literature

1.4.1 Texts in Kuche

Written texts in Kuche are scarce. Scripture portions were published from 1924 till 1943, including the gospels of Mark and John, and the Epistle to the Romans. A book of hymns translated into Kuche was first published in 1931. More recently (1993), the Christmas Story was translated by Gideon Asukutuk--using a tentative orthography developed by this author--and was mimeographed and distributed. Also at that time, one native folk tale, told by Ruth Adiwu, was transcribed for a very limited distribution.

1.4.2 Linguistic Analysis

Earlier researchers have given the world a peek at what Kuche has to offer, but detailed linguistic analysis is quite scarce. The earliest published work about the language is a chapter about the noun class systems of six Plateau languages by Luc Bouquiaux (1967). He examines the noun class system of Kuche and compares it to the system of the Bantu languages in Eastern Africa. He presents fewer than half a dozen examples from each noun class that he identifies; he may have had more data available to him, but he did not publish any of it. He makes no explicit statements about the phonology, but his transcription indicates that his understanding of Kuche phonology was less than adequate. However, he makes a good case for a close relationship between Kuche and the Bantu languages, based on the forms and semantics of noun class prefixes.

Carl Hoffmann (1976), at the University of Ibadan, Nigeria, produced a paper on the noun class system of Kuche. He cites Bouquiaux as a reference, but dismisses him by remarking: "Considering the scantiness of previous descriptive work on Che [Kuche] and the unsatisfactory state of Bouquiaux's presentation of the noun class system, nobody will be surprised that I seized the opportunity to have a slightly closer look. . . ." Hoffmann extends the analysis of the noun classes to include the intricate concord system. I also have excerpts from unsigned essays written by four of Hoffmann's undergraduate students during the previous academic year. Five pages of these deal with the tones of the language, and there is a cursory glance at the tense/lax vowel distinction. The remaining pages of the student essays discuss the noun class system. Hoffmann et al. present

many new examples of data, both lexical and grammatical items; but, if they had a large corpus of data on which to base their conclusions, they have not made the bulk of their data available to other researchers.

Ludwig Gerhardt (1984) attempted a reconstruction of "Proto-Plateau-4," using Kuche data from Hoffmann. He mentions Bouquiaux also as a source, but his analysis reflects nothing of Bouquiaux's presentation. While he presents no new data, he systematizes Hoffmann's by charting the noun class prefixes and drawing a table of pronouns and demonstratives.

Elisha Kuchili, a native speaker of Kuche, wrote a Master's level thesis (1990) entitled "The Noun Phrase in Rukuba and English." He does not refer to any of the previous researchers. (As a native speaker, he apparently did not need their data, since he could supply his own.) His purpose in writing this paper is "to make a detailed analysis and comparison of Rukuba and English language and identify the extent of the first language (mother tongue), interfering in the effective learning of English as a second language" (p. 7). He presents numerous examples--examples not in any of the other three works and even examples that I have not seen--but his transcription is inadequate. He is limited by the typewriter to the Roman alphabet; however, he does mark all the tones.

Insights presented by these four linguists have been significant in directing my own analysis. However, I could not feel justified in making generalizations and drawing definite conclusions on the basis of the data they have provided. For that reason, I have gathered a large body of language data over a period of three years; much of it is appended to this

thesis. I trust that other linguists will be able to rely on the data provided here to extend our understanding of this little-studied language.

1.5 Data

Most of the data in this paper was contributed by Ms. Ruth Adiwu of Jos, Mr. Isaiah Ayhok of Jos, and Mr. Gideon Asukutuk of Kisayhip. Mr. Asukutuk spent many years working in civil service, but is retired now and lives in a village of Kiche. Mr. Ayhok is an executive with the Christian Health Association of Nigeria; Carl Hoffman (1976) names him as the informant that supplied his class with language data for their analyses. Ms. Adiwu grew up in Zagun (traditionally called Kakek), but now teaches at the Polytechnic College in Jos. She received a B.A. in business education from the University of Kansas. When I was able to record conversations and oral literature by other speakers, it was Ms. Adiwu who helped with the transcription. She and Mr. Asukutuk speak Kuche on a daily basis, while Mr. Ayhok indicated that he was probably not as fluent as the other two.

As with any synchronic analysis of a living language, the language data reflect a dynamic, rather than a static, situation. Every language is a work in process, constantly in flux, with various local populations often moving different directions. Minority languages of northern Nigeria often represent extreme situations, with pressure from higher-status languages (e.g. Hausa and English) accelerating the pace of change. Such is the case in Kuche: dialect differences, generational shifts, encroachment by the languages of wider communication--all these increase the randomness of

the data. However, it is still possible to make many reasonable generalizations about the phonological system of Kuche.

The phonological analysis presented in chapters three through five depends heavily on the word list appended to this thesis. This list was transcribed by hand, and two informants read the words (in isolation) onto cassette tape for a later, more detailed transcription. I also used naturally-occurring text, including:

1. A language meeting: 3,379 words, various speakers.
2. A Christian testimony: 156 words transcribed, Ruth Adiwu.
3. Uyho and Apanchuk folk tale: 271 words, Ruth Adiwu.
4. Two girls folk tale: 870 words, Rev. Amabu's sister.
5. Animals folk tale: 540 words, Ruth Adiwu.
6. Gideon's texts: about 500 words, not all translated, none on tape; written by Gideon Asukutuk.

Besides these texts and the word list in the appendix, I have nearly 150 elicited sentences and other isolated words with their English meanings.

In examples cited in this work, I have used IPA conventions for the most part. However, most orthographies of Nigeria are based on the English pronunciation of the Roman alphabet, which makes it more practical to use an "Americanized" version of IPA. And in some cases, phonetic symbols show more West African influence than American influence (see Hartell, 1993). The following is a list of transcription conventions used herein that merit note:

(1) Since there is no front, unrounded vowel, [y] is used for a palatal approximate (IPA [j]).

(2) Kuche makes a distinction between a palatal approximant and a voiceless palatal fricative/approximant; I was at a loss to find a symbol that was appropriate for the very similar (but phonemically distinct) voiceless segment. I chose the small capital [ʏ] to represent this sound.

(3) For marking tone, I have followed widespread linguistic convention (Kenstowicz, 1994:47), whereby an acute accent mark [á] indicates high tone, a macron [ā] indicates mid-tone, and a grave [à] indicates a low tone.

(4) Many long vowels are written as a sequence of two vowels, especially where it facilitates the marking of rising or falling tones. A sequence of two tones can easily be written above a sequence of two vowels, thus: [áā]. But it is not always possible to distinguish which two levels comprise a contour tone; then I have to be satisfied with a hachek [ǎ] for any rising tone or a caret [â] for any falling tone.

(5) I have used [r] for IPA (flapped) [ɾ], and [r̄] for IPA (trilled) [r]. The flapped /r/ is very common in West African languages; in Kuche the trilled [r̄] is a word-final allophone of /r/.

(6) Kuche has a labio-velar approximant, but it is pronounced differently than an English /w/. It is also distinct from [ʍ] as in 'where,' but similar; there is slight friction at the lips and velum. It is transcribed as [w̬].

(7) The IPA symbol [ɥ] should indicate a labio-palatal approximant. In Kuche, it indicates a voiceless labio-velar-palatal approximant, very nearly a fricative.

(8) IPA lists no symbol to transcribe a labio-dental flap. In the word 'baldheadedness' [bà:bᵛ ɛ̄], the medial consonant is a sound similar to [v], but the bottom lip is sucked far inside the top teeth and then ejected forcefully. Carl Follingstead (personal communication, 1990), has suggested the use of the symbol [bᵛ], which is used in a few other Nigerian languages to transcribe this sound.

1.6 Organization

Chapter two of this thesis lays the groundwork for a phonological anaylysis of Kuche by briefly describing the morphology and syntax. Chapter three presents the phoneme inventory, including vowels, consonants and tones. Chapter four discusses the syllable structure of the language, fitting it into the theoretical framework of feature geometry. Chapter five discusses two different vowel harmony processes: one operates at the morpheme level and the other operates at the word level. Chapter six presents a tentative orthography which was proposed to the Bache people; whether they accept it or reject it or modify it is a matter yet to be decided. The appendix, beginning on page 130, records data on which I based much of my analysis. It is an extensive word list, the first of its kind ever prepared for this language.

CHAPTER 2

SYNTAX & MORPHOLOGY

Almost all the research previously done on Kuche has been concerned with the morphology of the language. Only one paper, by Elisha Kuchili (1990), is concerned with the syntax of the language. However, his paper concentrates on the structure of the noun phrase only; there is no thorough treatment of the sentence structure of Kuche. While this chapter does not purport to be a thorough treatment of either the syntax or the morphology of the language, it does extend previous analyses and lays a good foundation for the discussion of the phonology.

2.1 Morphology

2.1.1 Noun Morphology

Nouns of Kuche are marked with noun class prefixes, as in the indigenous names mentioned in chapter 1: "**Ba**che," "**Ku**che," and "**Ki**che." Gerhardt (1983:201) distinguishes 12 classes with 11 different prefixes. He cites Hoffmann (1976) as a source, and his and Hoffmann's analyses are very similar. Hoffman and Gerhardt both name an earlier work by Bouquiaux (1967) as a reference, but this earlier work seems to have had little influence on theirs. Bouquiaux's analysis, in contrast to the other two, includes 12 different prefixes. He lists 16 classes (if 1 and 2 are counted as

separate from 1a and 2a) and he numbers them to coincide with an arrangement of Bantu classes (see his fold-out after page 151).

My research also reveals 16 classes, but not exactly the same 16 as Bouquiaux. I have found at least 15 different prefixes. I have added the prefixes for proper names of people; most names begin with [à], but some feminine names are unique in that the prefix is [ɔ̄]. I have listed these two prefixes as variations of the class 1 prefix. Table 1 is my own arrangement of the noun-class prefix system of Kuche. (It differs considerably from Gerhardt, 1983:201 and from Hoffmann, 1976. The class number labels come from Bouquiaux, except for class 11.) Where the tone of the prefix is lexically specified, I have included it; where the tone varies according to the noun root, I have left it unmarked. Commonly associated singular/plural pairs are opposite each other.

TABLE 2.1
NOUN CLASS PREFIXES

Singular Classes		Plural Classes	
Class 1	ū/à/ɔ̄	Class 2	bā
Class 1a	Ø	Class 2a	bān
Class 3	ū	Class 4	i(N)
Class 5	kî	Class 8	ā
		Class 6	bà(N)
Class 7	à	Class 8	ā
Class 9	ì	Class 10	î
Class 11	kū	Class 8	ā

Table 2.1. Continued.

Class 12	ka	Class 4	i(N)
Class 14	ū	Class 15	kù

I have followed Bouquiaux in leaving out Class 13, so as to match up with Bantu noun classes.

Both the forms and the semantics of the noun class prefixes bear great similarity to the Proto-Bantu system. For a description of the forms involved, see Meinhof (1899, 1932) and Welmers (1973). The semantics of noun classes, on the other hand, can be nebulous. Lakoff (1986:13) says:

> The fact is that people around the world categorize things in ways that both boggle the Western mind and stump Western linguists and anthropologists. More often than not, the linguist or anthropoligist just throws up his hands and resorts to giving a list. . . .

However, Denny and Creider (1986) have designed a model of Proto-Bantu noun classes that captures the semantics of those languages; many of the Kuche classes coincide with them. Figure 1 is a reproduction of Denny's and Creider's visual representation of Bantu noun classes (1986:219).

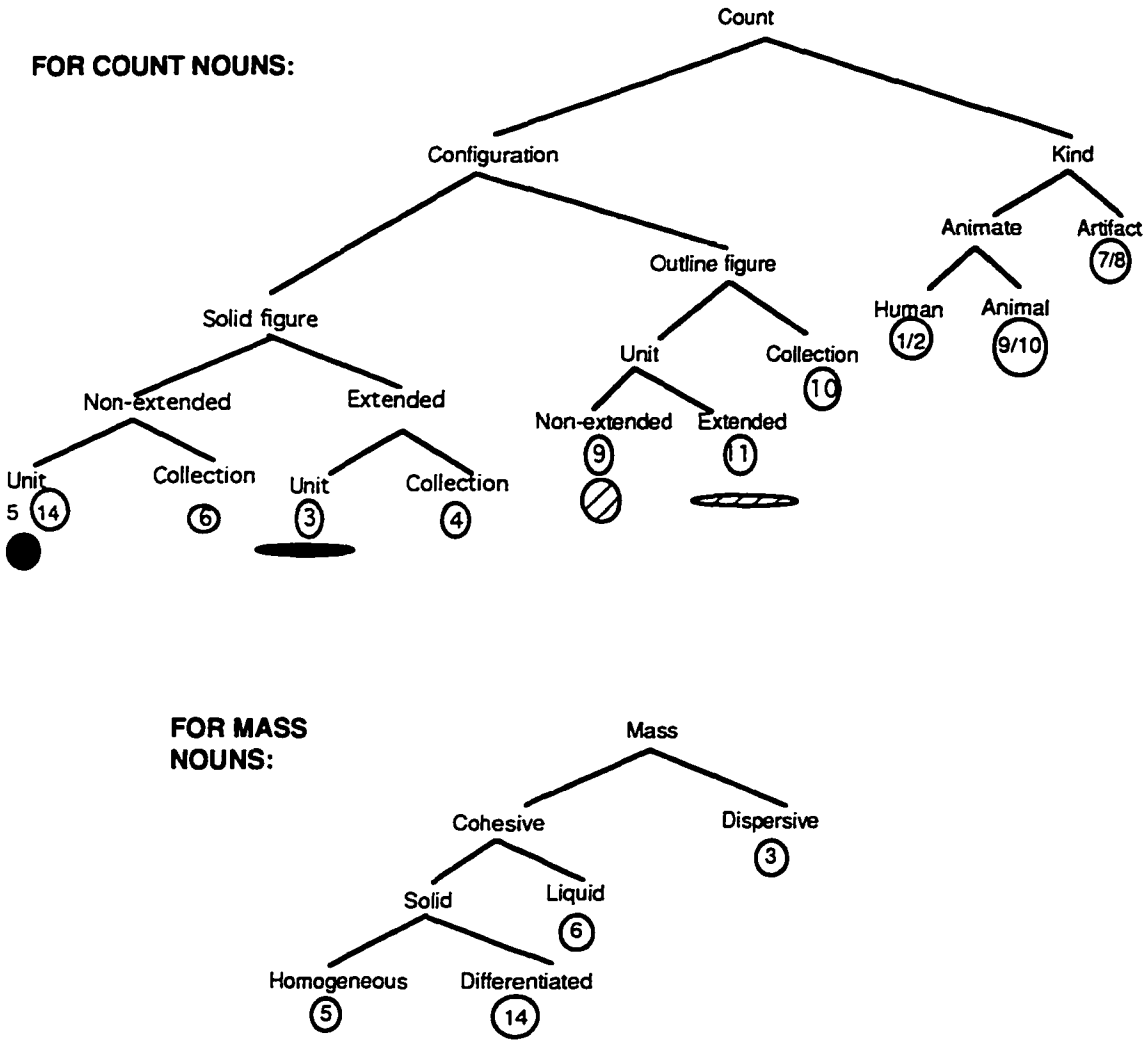

Figure 1. Proto-Bantu Noun Class Semantics. (Denny and Creider, 1986)

Below are semantic descriptions of Kuche classes, adapted from Denny and Creider where noted. I have also included some sample nouns. In the examples given, there are three pairs of vowels that alternate: [a] and [ɐ], [ɷ] and [u], [i] and [ɪ]. I will discuss the details of these alternations in chapter 5.

Classes 1&2: Human. Common terms for people start with [ū], while men's and women's names start with [à], and a few women's names start with [ɔ̄].

Class 1, singular	Class 2, plural	English Gloss
ɷ̄nīt	bānīt	'person'
ūtù	bētù	'chief'
àʤāŋkɔ́		'man's name'
ɔ̄ʤàŋkɔ̀		'woman's name'

Classes 1a & 2a: Human.

Class 1a, singular	Class 2a, plural	English Gloss
àtîyàāŋ	bānātîyàāŋ	'husband'
àtîàgɔ̄	bānātîàgɔ̄	'grandfather'
ātî	bānātî	'father'
îʏɛ̄	bānîʏɛ̄	'mother'

Classes 3 &4: Women and fire are in this class, but no other dangerous things (see Lakoff, 1986:13). According to the model of Proto-Bantu, this class should include solid, long and narrow objects, as well as dispersive mass nouns.

Class 3, singular	Class 4, plural	English Gloss
ɷ̄ʉ̣ā	īmbā	'woman'
ɷ̄vīn	îŋmīn	'child'
ūʉ̣ʹɔ́ŋ	iŋʉ̣ʹɔ́ŋ	'fire'
ɷ̄kɔ̄t	iŋkɔ̄t	'throat/voice'

There may be good reason, though, to consider 'women' [īmbā] and 'children' [îŋmīn] as irregular forms of class 2 nouns. (See discussion in section 2.1.2.)

Classes 5 & 8: Place names usually begin with [kî], without any corresponding plural. The progressive form of the verb in Kuche is formed with the class 5 prefix. The model predicts this should name solid, fairly round-shaped objects.

Class 5, singular	Class 8, plural	English Gloss
kîʃî		name of a village
kīgbáāt	āgbáāt	'hillock'
kīŋfá	āŋfá	'word'

Class 6: The model predicts this should be a class of liquids; in Kuche, it includes liquids as well as some other non-count nouns. Class 6 also marks the plural of a few class 12 nouns.

Class 6	English Gloss
bèʏî	'blood'
bàtʃīlĭ	'sweat'
bèēnʃĭ	'tears'
bàntèn	'beard'

Classes 7 & 8: Denny & Creider's model defines these as artifacts. In Kuche, there are animals in this class, too, and various other things. Class 8 prefix [ā] is the plural marker for several singular classes.

Class 7, singular	Class 8, plural	English Gloss
àhàmà	āhàmà	'axe'
àŋfɔ̀n	āŋfɔ̀n	'cloth'
àkpàtàk	ākpàtàk	'shoe'

Classes 9 & 10: The model identifies this as a class of animals, as well as fairly round objects that are basically hollow. The Kuche verbal infinitive is also formed with the class 9 prefix.

Class 9, Singular	Class 10, Plural	English Gloss
ìw̰ū	îw̰ū	'dog'
ìw̰ó̰l	īw̰ó̰l	'goat'
ìnʃ̰āl	īnʃ̰āl	'plate/dish'
ìŋkās	îŋkās	'bracelet'

Classes 11 & 8: Among other things, names of languages are here. This is not the same as Denny & Creider's class 11. Bouquiaux left a gap at class 11, and I filled in the gap with a class he did not seem to identify. He did not differentiate between [kū] as a singular prefix (always with a mid-tone) and [kù] as a plural prefix (see class 15, where the tone is usually low), so I put the singular [kū] into the vacant class 11 slot.

Class 11, singular	Class 8, plural	English Gloss
kūk̰pì sèk		'The Hausa language'
kɔ̃ntɔ̃	āntɔ̃	'ear'
kɔ̃tārà	ātārà	'room'
kūvū	ēvū	'leaf'

Classes 12 & 4: Some time-period expressions are in class 12, but other words as well. Denny and Creider do not include class 12 in their model.

Class 12, singular	Class 4, plural	English Gloss
kābá	ìmbā	'harvest season'
kēyú	îyú	'farm'
kāmā	ìmā	'back (of person)'

Classes 12 & 6: This singular/plural collocation is rare; only three class 12 nouns have plurals from class 6. There may be others, depending, perhaps, on dialect: Hoffman cites the plural of 'back' as [bàmā] instead of [ìmā], as listed above.

Class 12, singular	Class 6, plural	English Gloss
kētūk	bètūk	'(24 hr.) day'
kēnū	bènū	'mouth'
kāʧɔ̄	bànʧɔ̄	'place'

Classes 14 & 15: The model predicts that 14 should be solid (rather than liquid) mass nouns, and 15 should be the verbal infinitive. In Kuche, although the forms of these prefixes are similar to the Proto-Bantu prefixes, the semantics are not. The following three words are the only nouns I have encountered that have this combination of prefixes.

Class 14, singular	Class 15, plural	English Gloss
ɔ̄ndàr̄	kɔ̀ndàr̄	'bow'
ɔ̄ŋgī	kɔ̀ŋgī	'arrow'
ɔ̄ŋgīs	kɔ̄ŋgīs	'broom'

The noun class system labelled "Proto-Bantu" by Denny and Creider and Welmers and Meinhof may indeed be more pervasive than just Bantu. Clear on the other side of Africa, here is a language that fits into the same pattern, both in the forms of the items and in the semantics as well.

2.1.2 Pronoun Morphology

Many Kuche pronouns are derived from the noun class prefixes. Pronouns are not always independent words: the subject and object of a verb

may be indicated simply by affixes. As a matter of fact, the subject of a sentence is *always* indicated by a verb prefix--except in the imperative--even if there is a noun subject in the sentence. So it is more of a subject agreement--or concord--marker than a pronoun. However, the object pronoun is more like a real pronoun: it is only used when there is no noun object. It still seems to be a suffix, rather than a separate word.

Gerhardt sketches out Kuche's complex concord system. Table 2.2 is a reproduction of his chart of the Kuche concord system (1983:202). His system of transcription is different than mine; I have basically left his transcription, except that I have changed his [j] to [ʏ]. Note that his numbering of noun classes does not agree with the numbering system in table 2.1.

TABLE 2.2

KUCHE CONCORD SYSTEM

(The third column shows the near demonstrative (this), the fourth shows the distant demonstrative (that). Next is the interrogative, the independent pronoun, and last is the base form (the form that is actually prefixed to a noun). Low tone (à) and high tone (á) are marked, and mid-tone is left unmarked. ị = [ɪ] ụ = [ʊ] š = [ʃ])

Class	Subject Concord	Object Concord	Dem. I	Dem. II	Inter.	Ind. Pro.	Base Form
1	á	a	àwaì	ǎnìŋị	àšɛ	waì	à
2	á	á	áwaì	ánìŋị	ašɛ	wáì	a
3	bá	ba	bàbaì	bǎnìŋị	bàšɛ	baì	bà
4	bá	bá	bábaì	bánìŋị	bašɛ	báì	ba
5	i	ị	ìʏìì	ǐnìŋị	ìšɛ	ʏị	ì
6	í	ǐ	ǐʏìì	ǐnìŋị	išɛ	ʏǐì	i
7	ká	ká	kákaì	kánìŋị	kašɛ	káì	ka

Table 2.2. Continued.

8	kĭ	?	kĭkị̀	kĭnị̀ŋị̀	kišeè	kĭị̀	ki
9	kú	kú	kùkuì	kŭnị̀ŋị̀	kùšɛ	kúì	kù
10	kú	kú	kúkuì	kúnị̀ŋị̀	kušɛ	kúì	ku
11	ú	ụ	úwuì	únị̀ŋị̀	ušɛ	wụ́ì	u
12	á	ụ	àwaì	ănị̀ŋị̀	àšɛ	wụ́ì	u

Apparently, Gerhardt's data did not include all the forms that occur in the language. Kuche has three demonstrative adjectives: a near one (corresponding to English "this"), a more distant one (in between English "this" and "that"), and a remote one (like English "that"). He does not include the remote demonstrative, nor does he include the relative pronouns. And since he did not identify all the classes, the forms for those classes are missing from his chart. In table 2.3, below, I have rearranged his table to conform to the class numbering system that appears in table 2.1 and expanded it to include the data recently collected:

TABLE 2.3
EXPANDED KUCHE CONCORD SYSTEM

(The columns show: subject concord prefix, object concord suffix, near demonstrative (this), more distant demonstrative, and remote demonstrative (that), the relative pronoun, interrogative pronoun, independent pronoun, and the base form (the form that is actually prefixed to a noun).)

Class	Subj. Conc.	Obj. Conc.	Dem. I	Dem. II	Dem. III	Rel. Pro.	Inter.	Ind. Pro.	Base Form
1	a	ɔ̃	àwạ̀ì	ănìŋī	àʏūŋɔ́	āyī	àʃē	wọ́ì	ū/à/ɔ̄
2	ba	bā	bàbāì	bănìŋī	bɛ́ʏūŋɔ́	bāyī	bàʃē	bāì	bā
1a	a	ɔ̃	àwạ̀ì	ănīŋī	àʏūŋɔ́	āyī	àʃē	wọ́ì	Ø

Table 2.3. Continued

2a	ba	bé	babâi	bānìŋī	béʏūŋɔ́	bāyî	bāʃē	bāî	bān
3	u	ō	úw̰uì	únìŋī			ūʃē	w̰ōì	ū
4	i	í	ĭʏĭì	ĭnìŋī		îyĭ	îʃē	ʏíì	i(N)
5	ki	kĭ	kĭkīì	kĭnìŋī	kĭʏūŋɔ́	kîyíì	kîʃēè	kíì	ki
6	ba	bà	bàbaì	bănīŋī		bayi	bàʃē	baì	bà(N)
7	a	ā	àw̰aì	ănìŋī	àʏūŋɔ̄	āyî	àʃē	w̰āì	à
8	a	á	áw̰aì	ánìŋī	āʏùŋɔ̄	āyíì	āʃē	w̰áì	ā
9	i	ī	ìʏiì	ĭnìŋī		ìyì	ìʃē	ʏī	ì
10	i	í	ĭʏĭì	ĭnìŋī		îyî	îʃē	ʏíì	î
11	ku	kú	kúkuì	kúnìŋī			kūʃē	kúì	kū
12	ka	ká	kákaì	kánìŋī			kāʃē	káì	ka
14	u		úw̰uì	únìŋī			ūʃē		ū
15	ku	kú	kùkūì	kŭnìŋī			kùʃē	kúì	kù

I have eliminated the tone marks over the subject concord prefixes because those tones depend on the tense/aspect of the verb. Gaps remain in the table where there is no data to support a given form.

Example 2.1 demonstrates subject-verb agreement. In all the examples in this chapter, the noun class markers are glossed by number, whether they are noun prefixes or agreement prefixes on verbs and adjectives.

2.1 Class 5

kĭ-gb̰áāt **kĭ**-zĭrĭ **kĭ**-nĭ-kō bì-ì-yɔ̀n.

5-mountain 5-come.down 5-PAST-fall LOC-9-sea

A mountain fell into the sea.

Some details of the concord system are lost when the system is collapsed into a table like this; for instance, most nouns referring to humans take the agreement markers for classes 1 and 2. There are some human nouns (most notably, 'woman' [ɔ̄wā̰] and 'child' [ɔ̄vīn]) whose plurals are of the form of class 4 ([īmbā] and [ī̱mīn]). The (singular) class 1 noun prefix is the same as the (singular) class 3 noun prefix, so one of the few things that distinguishes class 1 from class 3 is the way the plural is formed. However, the bulk of the relevant generalizations are preserved; for example, the singular nouns [ɔ̄wā̰] and [ɔ̄vīn] take class 1 verb-agreement markers, and their plural counterparts [īmbā] and [ī̱mīn] take class 2 verb-agreement markers. Examples 2.2 and 2.3 demonstrate how the system of concord is violated if [ɔ̄wā̰] and [ɔ̄vīn] are considered to be class 3 nouns.

2.2 **Ɪm**-bā-ī **bāà**-rās bān-ātī yáŋ-ī kātâmā ì-mɔ̀sɔ̀.
4-women-the 2-join 2a-husbands-the after 9-meeting.
The women will join their husbands after the meeting.

2.3 **ɔ̄**-vīn **á**-kēn **á**-lí lí būmi kī-kɔ̄-ì.
3-child 1-go 1-enter inside 5-house-the
A child went into the house.

If these sentences are glossed instead with class 1 and 2 prefixes, as they are below, then the requirements of the concord system are satisfied.

2.4 **Ɪm**-bā-ī **bāà**-rās bān-ātī yáŋ-ī kātâmā ì-mɔ̀sɔ̀.
2-women-the 2-join 2a-husbands-the after 9-meeting.
The women will join their husbands after the meeting.

2.5 **ɷ̄**-vīn á-kēn **á**-lĭlĭ būmì kī-kɔ̄-ì.
1-child 1-go 1-enter inside 5-house-the
A child went into the house.

There are only two independent pronouns from table 2.3 that are commonly used: [ɥ̨ʊ́ì] 'he/she' and [bāì] 'they.' These pronouns are actually a combination of two morphemes: the third person pronoun plus the definite article [-i]. The other independent pronouns in the next-to-the-last column of table 2.3 are courtesy of Gerhardt. In nearly two hours of transcribed text, the only independent pronouns I ever heard were the "human" ones. Try as I might to elicit the others from my informants, I could never construct a sentence in English that required a non-human independent pronoun in the Kuche translation. Class 1 and 2 independent pronouns are used in examples 2.6, 2.7, and 2.8:

2.6 Class 1 independent pronoun
ɥ̨ʊ̀ à-málāmá ā-ʃì à-bā-ʃì kì-tĭ yākā.
She 1-teacher 1-is 1-also-is PROG-do hurry.
The teacher here is in a hurry too.

2.7 Class 1 independent pronoun, with the definite article
ā-**ɥ̨ʊ́**-ì nā **ɥ̨ʊ̄**-**ì** á-ʃɔ̄k ì-bā î-ʏì nî î-ʃî nì kù-ŋkūŋ . . .
and-she-the that she-the 1-take 9-thing 9-this that 9-is with 9-strength
And she who has taken this important thing. . .

2.8 Class 2 independent pronoun, with the definite article
ā-bá-tā **bā**-ì bāà-tĭ î-máî kā-ŋkāì.
and-they-say they-the they.will-do 9-their 12-today
And they said they would do theirs today.

There are also concord affixes and various pronouns for first and second person, singular and plural. They are listed here in table 2.4.

TABLE 2.4
FIRST AND SECOND PERSON PRONOUNS

	Independent Pronoun	Subject Concord	Object Suffix	Genitive Form
1st sing.	mi-i	iN-	-i	-mɷ-i
1st pl.	tɷt-i	ku-	-ata	-mɔt-i
2nd sing.	ŋɷ-i	u-	-ɷ	-mi
2nd pl.	vɐ(ŋ)-i	u- -i	-vɐ	min-i

The tones are not marked because they vary according to context. The subject concord of the second person plural involves both the prefix [u-] and the suffix [-i]; occasionally, the suffix [-i] may occur with other plural subjects (i.e., 'we' and 'they'). The [ŋ] at the end of the second person plural independent pronoun is only pronounced when the definite article is suffixed. The genitive form requires a prefix that agrees with the noun class of the head noun. Here are a few examples of first and second person pronouns:

2.9 1st person singular, independent pronoun

mî-ì ín-sā-múlɔ́k bā-bī-hám ū-ùfīs à-mî ín-sā-mā.

I I-not-want they-might-close 3-office and-I I-not-there

As for me, I don't want them to close the office while I'm not there.

2.10 1st person plural, genitive pronoun

ī-ŋmín **bā-mɔ́t-ì** nā bā-nì-tà bā-shî kì-ɲɛ̄, ẉɷ̀ kú-sà-ŋā-tɔ̀ . . .

2-children 2-our-the that they-PAST-say they-are PROG-come, but we-not-even-see

Our people that said they were coming, but we haven't even seen. . .

2.11 2nd person plural, independent pronoun

yɛ̄ bà-nɔ̄ ɪ̄n-tà mālā ū-nì-sā-māɲ-í mā. . .

you(pl) 2-others I-say perhaps you-PAST-not-there-PL there

Those of you who were perhaps not even there. . .

2.1.3 Adjectives and Numeral Qualifiers

Other words in the noun phrase agree with the noun, usually by taking the same prefix. Kuche sentences contain few adjectives; for instance, the phrase translated "this important thing" in example 2.7, above, is literally "this thing with strength." All the demonstrative pronouns can also be used as adjectives, though. In example 2.12, [àw̰āí] is used as a pronoun, while in 2.13 it is used as a demonstrative adjective.

2.12 ɪ̄n-tàrā **à-w̰aí**.

I-shot 7-this

I shot this one.

2.13 ɪ̄n-tàrā **à**-ŋ͡kpà **à**-w̰aí.

I-shot 7-hawk 7-this

I shot this hawk.

The data does include a few ordinary adjectives. In example 2.14 below, the adjective 'new' agrees with the noun 'wife.' In 2.15 'dark' agrees with 'stomach' (and the phrase 'dark stomach' means 'unhappiness'). Reduplication (glossed RED in 2.15) often implies intensity: 'dark dark' would mean 'very dark.'

2.14 ɪ̂n-sɔ̀k **ɷ̄**-w̰ā ū-hás.

I.PAST-take 1-wife 1-new

I have taken a new wife.

2.15 ī-mɔ́lɔ́k kî-tɷ́ í-tá-ɲɛ́ nì **kî**-nɛ̀ **kî**-ʃî-ʃīūk.
INF-love 5-head 9-HAB-come with 5-stomach 5-RED-dark
Loving one's self brings great unhappiness.

Example 2.16 below indicates that 'water' [îmā] is an irregular class 6 noun. Even though it has a prefix identical to the class 10 prefix, the demonstrative adjective [bàānìŋī] and the color 'black' [bàʃītí] both take the class 6 prefix. Since water is a liquid and class 6 contains mostly names of liquids, this is not surprising.

2.16 ʧɛ́, ū-tù-hî **î**-mā **bàā**-nìŋī **bà**-ʃīt-í, à-ŋú gārá.
go, you-if-find 6-water 6-that 6-black-the, then-you pass.
Go, and if you find that black water, pass by.

Numerals also agree with the head noun.

2.17 î-ŋkɛ̄rɛ̄hí ì-kpɷ̄: ì-māì mā **ì**-hɛ̀ɛ̄l **ì**-tàāt kú-sā-ŋá-nɷ̄-ɷ́.
10-money (for) 9-food 9-his even 9-month 9-three we-not-even-give-him
Even money for food we have not given him for three months.

Hoffmann (1976:36) points out that the cardinal numbers take the same concord prefix as adjectives, which he calls the "nominal concord" prefix. There is another concord prefix, which he calls the "pronominal concord" prefix; this is the prefix that occurs with the demonstratives, interrogatives and possessive qualifiers, as well as in the ordinal number construction (1976:37). It should be noted that the only difference between the two prefixes is in class 1, the singular human class, where the nominal concord prefix is [u] and the pronominal concord prefix is [a]. The

significance of this distinction is highlighted by Gerhardt (1984:201), who refers to the same nominal/pronominal distinction in the Bantu class 1.

2.1.4 Verbs

2.1.4.1 Finite Verbs

In Kuche, a subject agreement marker is prefixed to all finite verb forms. There are also two kinds of nominalized verbs--corresponding closely to the English infinitive and gerund--that take prefixes. The imperative form is the verb root only, with no affixes.

2.18 Sentence with noun subject and verb concord marker.

ū-tù ā-nì-yîŋî.

1-chief 1-PAST-speak.

The chief spoke (i.e., made a speech).

2.19 Imperative sentence: verb with no affixes.

bɔ̃l ā-ɱfɔ̀n-ì à-bā-nî bā-tā bā-tá-ʧî ā-bá-ʏî . . .

open 10-cloth-the so-2-people 2-if 2-HAB-walk then-2-know

Open the curtains so that when people walk by they will know. . .

The verb may also take a variety of aspect (or tense) markers, as well as modality prefixes. Whether the time-oriented morphemes actually indicate tense or aspect is a subject for further research; it will be simpler for this thesis to refer to them as aspect indicators. Most aspects are indicated by the tone and vowel length of the subject prefix, but one is indicated by a separate prefix. The order seems to be: modality prefixes adjacent to the verb root; aspect markers before modality; negation before aspect or modality; and the subject concord is always the first prefix, the

farthest from the verb root. Aspect may also be indicated suprasegmentally, as the tone pattern of the subject prefix.

(aspect)
[subject] + (neg. + (emph)) + (aspect) + (mode) + [root] + (object)

There is a lot of phonological variation in the forms of aspect and mode prefixes. Only the negative prefix is fairly consistent; it is [sā], and it is often accompanied by the emphatic [ŋá]. A very effective translation of this sequence is 'not even' as in [kú-sā-ŋá-nɷ̄-ɷ́] 'we have not even given him.'

The unmarked aspect of the verb, the one often translated into English as the simple present, is indicated by a prefix with a short vowel and a high tone:

2.20 mĭ ín-tɛ̄t á-ŋū ŋĭŋā . . .
I I-tell to-you so.that
I tell you this so that. . .

The future is marked by a long vowel with a falling tone on the subject prefix:

2.21 ĭîn-tɔ̀ ɷ̄vīn.
I.will-see child
I will see a child.

There are other tone melodies associated with verbs, but just what the significance is of each one has yet to be discovered. For instance, the verb 'force' [-kp̰á], with a rising tone instead of a falling tone on the prefix, is glossed as future in example 2.22 (also note the occurrence of the negative prefix [-sà-]).

2.22 **kŭ:**-sà-kpá ɷ-nīt kū-tá-nā ti ì-ḳpì î-ʃì hā . . .
we.will-not-force 1-person we-say-to.him behold 9-thing 9-is or
We won't force anybody by telling him to do this or . . .

In elicited sentences, a low-to-mid rising tone is glossed as 'am able to,' as in example 2.23:

2.23 **ìĪn-tɔ̀** ɷ̄vīn.
I.can-see child
I can see a child.

Modals are marked by prefixes, instead of a tone melody; there is also one tense/aspect--the recent past--which is marked by a prefix. As mentioned earlier, the exact phonological forms of these prefixes vary. The prefix that indicates past tense/aspect is usually pronounced [ni] (tone varies). These next three examples represent three different pronunciations of this prefix:

2.24 Past prefix [nì]
ɱɷ̀ bā-**nì**-ɱɔ̄lɔ̀ ì-mɔ̀sɔ̀. . .
then 2-PAST-call 9-meeting
Then they called a meeting. . .

2.25 Past prefix [nā]
bá-**nā**-tísí ŋ-átā ì-dūp kē-nū à-nú kú-sā-tɔ̀ ī-ŋkērēhîɲ-ì.
2-PAST-did for-us 9-pull 12-mouth and-then we-not-see 10-money-the
They made us a promise (lit. "pull mouth") but we haven't seen the money.

2.26 Past prefix [nū]

kú-**nū**-w̥ɷɪ kū-ʃî kì-ʧɛ̂ŋ-î w̥ɷ̀ kū-ʃî bà-kā.

we-PAST-start we-be (in) 5-Kiche-the but we-be 6-outside

We were first living in Kiche but now we live outside (the area).

It is not clear what conditions the phonological variation in the aspect and mode prefixes. Alternation between the three lax vowels [a], [ɪ], and [ɷ], and their tense counterparts [ɐ], [i], and [u], is common throughout the language. But the alternations observed in the aspect and mode prefixes include all but the two mid vowels [ɛ] and [ɔ].

Modal prefixes and the negative prefix occur along with the prefix [-ni-] or with any of the tone-marked aspects. They are listed here in their most common phonological forms:

Prefix	Meaning
-ta-	continuous/habitual
-ti-	"if"
-bi-	"maybe"
sa-(ŋa)	"not (even)"
Reduplication	repeated action

Here are a few examples; this is not by any means an exhaustive list.

2.27 Negative prefix with past prefix/and "maybe"prefix

ā-bɐ́ɤūŋ-î bā-**sà-nì**-ɲɛ̄ hā à-bá-**bɪ̀**-ɲɐ́-ɐ̄.

And-others-the 2-not-PAST-come or and-they-may-come-?

And the others have not come yet but they may come (unknown morpheme [ɐ̄] at end of sentence).

2.28 Habitual prefix with past prefix

. . .ā-ɣì â-nʧīlī ì-tī nā á-**nī-tá**-tí à-hīk ì-kpì.

1-know 8-ways 9-do that he-PAST-HAB-do 1-find 9-thing

. . .then he would know ways to earn something like he used to do.

2.29 "if" prefix

à-tīŋkí á-tīnā mī īn-**tì**-līk ín-yī ā-gāt ā-yā à-ràndɔ̀ɲ-ì vát kā-w̥ɷ́rɷ́k.

9-elephant 9-said I I-if-get.up I-eat 10-more 10-of 9-cow-the all 12-ten

The elephant said, "As for me, if I do it, I will eat more (grass) than that of the cow, ten times more."

2.30 Reduplication with past prefix

kū-**nì**-tì-**tī** ì-mɔsɔ kì-kɔ̀ bà à-ʤɔ̄n i---

we-PAST-RED-do meeting (at) 5-house of 1-John I.

We used to have meeting after meeting at John I.'s house.

The only pronoun suffix that occurs with the Kuche verb is the direct object pronoun. Here is one example:

2.31 ú-sā-tárá-**ɷ́** kì ī-bùtɷ̀rɷ̀ kɛ́ɛ̀?

you-not-throw-her into 10-bees Q?

Why don't you throw her into the bees?

The dative object also follows the verb, but it is not clear whether it is a suffix or a separate word. For instance, in example 2.32 [-ŋá] seems to be a suffix, while in 2.33 [ŋátā] may be a separate word.

2.32 wà ā-tī īn-sɔ́k kū-hú-í īm-bī-wàsà-**ŋá**.

she she-say I-take 11-mat-the I-should-wash-for.her

She told me to take the mat and wash it for her.

2.33 bá-nā-tĭsĭ **ŋ-átā** ì-dūp kē-nū à-nú kú-sā-tɔ̀ ī-ŋkērēhĭɲ-ì.
2-PAST-did for-us 9-pull 12-mouth and-then we-not-see 10-money-the
They made us a promise (lit. "pull mouth") but we haven't seen the money.

2.1.4.2 Nominalized Verb Forms

Kuche has two nominalized verb forms: the infinitive and a progressive form often used in conjunction with the verb 'to be.' The progressive form of the verb takes the prefix [ki-] (see class 5 above), and the infinitive takes the prefix [ì-] (class 9).

2.34. The progressive form
in-ʃì **ki**-zèsè i-ɲɔ̀li ì-ʃĭ-yĭ mi i-yi.
I-am *prog.*-frighten 10-birds 10-not-eat (for)me 10-grain.
I am frightening the birds away so that they won't eat my grain.

The morphology of [kìzèsè] suggests both verb (the verb root [-zèsè]) and class 5 noun (the prefix [ki-]). The other possibility is that it could be a finite verb agreeing with a class 5 subject. The syntax of the sentence favors interpreting it as a noun: the subject is the first person singular, not a class 5 noun, and although the verb "to be" does not take an object, its complement would be a noun (or an adjective, or an adverb of place), as in:

2.35 àn-ā-ʃì ū-vĭ àʧēŋ.
and-he-is child (of) Bache.tribe
And he is a Bache person.

So, even though the morphology of [kìzèsè] might be a bit ambiguous, the syntax indicates that it is a noun.

The other non-finite verb form is the infinitive; example 2.36 contains the infinitive [ìyì] 'to eat.'

2.36 Infinitive

á-w̥ɔ́ ì-yì ìyî nānā.

1-feel *inf.*-eat other kind.

He wants to eat another kind.

In these examples, the finite verb morphology outlined in section 2.1.4.1 does not occur. The verb roots take ordinary noun morphology instead. Nominalized verbs are common cross-linguistically (see Givón, 1984:chapters 12-13), but not always is the morphology so readily available.

2.2 Syntax

2.2.1 Simple Sentences

The basic word order of Kuche is Subject-Verb-Object.

2.37 ū-tù ā-sɔ̄k ū-w̥ā.

1-chief he-took 1-wife

The chief took a wife.

Kuche has at least one auxilliary, the verb 'to be' /-ʃi/, used in the progressive construction. In this construction, the auxilliary precedes the main verb; example 2.34 is repeated here as 2.38:

2.38 in-ʃì kì-zɛ̀sɛ̀ i-ɲɔ̀li ī-ʃī-yī mi i-yi.

I-am *prog.*-frighten 10-birds 10-not-eat (for)me 10-grain.

I am frightening the birds away so that they won't eat my grain.

The order of the noun phrase is head noun followed by modifier:

2.39 ʧɛ́, ū-tù-hī̃ **ī̃-mā̃ bàā̃-nìŋɪ bà-ʃɪt-í,** à-ŋú gārá.
go, you-if-find 10-water 6-that 6-black-the, then-you pass.
Go, and if you find that black water, pass by.

Relationships between noun phrases are marked by prepositions, rather than by postpositions, as in 2.40:

2.40 ɪ̃n-tá-yī̃ kā-wùɲ-ì **bú** ú-tá?
I-CONT-eat 12-advice-the with 1-who
Who will I be consulting with?

2.2.2 Questions

The word order of questions is the same as for simple sentences--Subject-Verb-Object. A question is indicated by pitch and/or a question word; example 2.36 ends with a question word.

2.41 wɔ̃̀ ɪ̄n-nɪ̄sɪ́-ŋɔ̃̄ ā-nʧɪ̃ **ā-ʃì-ʃɛ̃?**
so I-give-you 8-eggs 8-kind-which
So, which kind of eggs shall I give you?

2.2.3 Relative Clauses

Relative clauses begin with the relative pronoun and/or the conjunction 'that,' usually pronounced [ná]. The relative pronoun must agree with the noun to which it refers. It should also be noted that the noun precedes the relative clause (see example 2.42, next page).

2.42 Class 7 Relative Clause

à-ŋ͡kpà ā-yĭ̀ ná ā-nì-ʧɔ kū-lúk kātāb ā-táĭ̀ ā-vɔ̀ ī-ŋ͡mí̀ ì-kɔ́ bē-mù.
7-hawk 7-which that 7-past-build 11-nest on 8-stone 7-catch 2-children.of 9-chicken 2-my.
The hawk which built a nest on the rocks has caught my chicks.

This last example is one of the few that gives insight into the genitive noun phrase involving no pronouns, but only nouns. The phrase translated 'children of chicken' (i.e., baby chicks) is [ī-ŋ͡mí̀ ì-kɔ́]. In isolation, 'children' is [īŋ͡mīn] and 'chicken' is [ìkɔ́]; there is a shift in tone on both nouns and the head noun loses its final consonant. Several noun phrases in the text exhibit noun-final consonant loss to mark a genitive phrase; however, not all nouns end with a consonant, and it is not clear if the change in tones is sufficient to mark a genitive phrase. The word order--head noun followed by genitive noun--is consistent throughout the texts.

Kuche, then, is a classic head-initial language. In the sentence, the subject precedes the verb. In the verb phrase, the auxilliary precedes the and the verb precedes the complement; the noun precedes the modifier, be it adjective or relative clause. The situation is doubtless more complex than the brief outline here; however, a phonological analysis can begin from here.

CHAPTER 3

PHONEME INVENTORY

There has been little agreement on the phoneme inventory of Kuche, especially when it comes to vowels. There may be some dialect differences that confuse the issue to some extent, but the biggest problem up till now has been that the corpus of data was too small to support definite con-clusions.

3.1 Vowels

While Bouquiaux (1967) makes no explicit claims about the phonology of Kuche, he uses seven different vowel symbols in his transcription of the language: [i] [e] [ɛ] [a] [ɔ] [o] and [u]. Hoffmann (1976) and Gerhardt (1983) present a system of nine (or ten) vowels. The nine/ten vowel system is:

i		u
ɪ		ʊ
e	(ə)	o
ɛ		ɔ
	a	

The central vowel that they wrote as [ə] is not phonetically identical to schwa, and both Hoffmann and Gerhardt expressed doubt about its phonemic status (Gerhardt 1983:113; Hoffmann, 1976). Because of the phonetic difference and because the central vowel alternates with [a] in much the same way as [i] and [u] alternate with [ɪ] and [ʊ], it is transcribed

here as [ɐ]. It is not merely an allophone of [a], though, as is evidenced by the near-minimal pair:

3.1 gbāŋgbā 'truly, verily' gbéŋgbé 'in the past'

Elisha Kuchili (1990:85) proposes a different configuration of vowels. He presents a seven-vowel system that looks identical to Bouquiaux's:

i		u
e		o
ɛ		ɔ
	a	

However, there may be some differences between Bouquiaux's system and the one above, in that Kuchili specifies certain vowels as tense and others as lax, while Bouquiaux gives no explanation. Kuchili's explanation is a little hard to follow: for one thing, he lists [i] in both the tense group and the lax group. He divides them like this:

Tense			Lax	
i		u	i	
			e	o
	a		ɛ	ɔ

This arrangement of tense and lax vowels is not what one expects in a West African language (Barnwell, 1989:84). Generally, in West African systems, if there is a vowel that appears in both the tense group and the lax

group, it is [a]; and [e] and [o] are usually considered tense, while [ɛ] and [ɔ] are considered lax. I would speculate that Kuchili has noticed some important distinctions but was not familiar enough with phonetic notation to express them adequately. If we interpret his symbols like this, some of the problems disappear:

Kuchili's symbol	Actual phonemes represented
/i/	/i/ and /ɪ/
/u/	/u/
/e/ and /ɛ/	/ɛ/
/o/	/ɷ/
/ɔ/	/ɔ/
/a/	/a/

While this may seem to be an arbitrary reinterpretation of Kuchili's analysis, it has two things to recommend it. First, it rearranges the vowels into a familiar West African pattern. Secondly, it reflects some of the same difficulties that I encountered in distinguishing between the phonetic manifestation of the vowels and the phonemic pattern. The phonetic reality is that many Kuche words are pronounced with vowels very close to English /o/ and other words are pronounced with vowels close to English /e/. However, there is strong evidence that the phonemic pattern includes /ɛ/ and /ɔ/ but not /e/ or /o/.

The phonemic pattern suggests that [e] is an allophone of /ɛ/, while [o] is an allophone of /ɷ/.* A vowel harmony process at work in Kuche

* If there is some phonetic environment that conditions the variation, it is not yet discovered; they seem to be in free variation.

excludes phonemic /e/ and /o/. The harmony process divides the vowels into two sets: /ɐ/, /i/ and /u/ make up one set (which I label "tense"), and the other set includes /ɪ/, /ɛ/, /a/, /ɔ/, and /ɷ/ ("lax"). While the details of the harmony process are hard to pin down, one thing is absolutely certain: [ɐ] never occurs in a word that contains a mid-vowel. (See chapter 5; also, the appendix.) The tense mid-vowels /e/ and /o/ are missing from the vowel system. Consider the following class 2 and class 6 nouns:

3.2	bānɪt	'people'
3.3	bɛ̀ɛ̄nʃɪ̄	'tear'
3.4	bànʧɷ̄	'places'
3.5	bɛ̀sù	'shade'

The vowel in the prefix is tense [ɐ] if the root vowel is tense [i] or [u]; the prefix vowel is lax if the root vowel is lax. On the other hand, it matters not how the mid-vowel of a noun root is interpreted, the prefix vowel is always lax [a]:

3.6	bārò	'evil spirits'
3.7	bārɔ̀	'evil spirits'
3.8	bāʧɛ́:	'Bache people'
3.9	bāʧɛ́ɲí	'the Bache people'

The evidence leads me to propose, then, an eight-vowel system:

i		u
ɪ		ɷ
ɛ	ɐ	ɔ
	a	

The tense and lax vowels cannot be allophones of the same phonemes; they are not in complementary distribution, and there are minimal pairs, or at least near-minimal pairs:

	Constrasting Segments	Word	Gloss	Word	Gloss
3.10	u/ɷ	-túś	'pluck'	-tɷ́ś	'hem'
3.11	i/ɪ	ǐyí	'grain'	ìyí	'to eat'
3.12	a/ɐ	gbéŋgbé	'in the past'	gbāŋgbā	'truly, verily'

The alternation of the tense vowels with the lax vowels in certain morphemes is a pervasive feature of Kuche. A theoretical description of the process has not yet been constructed; however, the observations that have been made up to this point are discussed in chapter 5.

Vowel length is also contrastive. It is one of the features distinguishing the various verbal aspects, and it also distinguishes these lexical items:

	Word	Gloss	Word	Gloss
3.13	kîtĭː	'lower back'	kîtĭ́	'face'
3.14	kɔ̀ːk	'hand/arm'	-kɔ̀k	'grind'

Diphthongs occur only word-finally; diphthongs observed in the data are /ɷɪ/ /ɔɪ/ /ɷu/ /au/ /aɪ/ /ɐu/ /ɐi/ and /ɛɷ/, as in:

3.15	wɷ́ĭ	'(the) he/she'
3.16	kɔ̄ɪ	'withered, withdrawn'
3.17	fɷ̄u	'peace of mind'
3.18	ìŋgāu	'cheek'
3.19	àʃàʃàɪ	'type of broom'

3.20	gèu	'rashly'
3.21	gégéi	'good'
3.22	lèɔ̀	'tending to fall'

Nasalization is not completely predictable, but there are no pairs of words that contrast on the basis of nasalization alone. As I argue in chapter 4, this feature is best treated autosegmentally.

3.2 Consonants

Gerhardt's chart of Kuche consonants (1984:113) is similar to Table 5 below. Not all of Hoffmann's work is available, so there is no way to know all the consonant phonemes he found. The current data support the following array of consonants.

TABLE 3.1
KUCHE CONSONANTS

v'less stops	p		t			kp	k	
v stops	b		d			gb	g	
fricatives		f	s	(ʃ)*				
v. fricatives		v	z					
v. flap		b^v						
affricate				tʃ				
v. affricate				dʒ				
glides				y				h
v'less glides				ʏ	(ɥ)*	w̥		
palatalized/ labialized				h^y		h^w		

* The forms in parenthesis are discussed below, on page 45.

Table 3.1. Continued.

nasals	m		n	ɲ		ŋm	ŋ	
lateral			l					
sonorant			r					

A few other labialized and palatalized consonants occur, but they are phonologically conditioned by the following vowel. Gerhardt lists /c/ and /ʃ/ as phonemes, but these are likely allophones of other phonemes. He says that [t], [d], and [w] are also found in palatal form. I assume that by palatal [t], he means [ʧ] and by palatal [d], he means [ʤ]. The palatal [w] is the segment written here as [ɥ]. I have included /ʧ/ and /ʤ/ as phonemes because there is no phonological conditioning that indicates they are allophones of the non-palatalized versions and because of pairs such as these:

	Contrasing Segments	Word	Gloss	Word	Gloss
3.23	t/ʧ	ātái	'stones'	àʧái	'light'
3.24	d/ʤ	àndì	'chest'	āndʤí	'mortars'

Some of the unfamiliar segments from the consonant chart have already been described in chapter 1, but further explanation is justified.

/bᵛ/ - A labiodental flap. The bottom lip is pulled inside the top teeth and forced out; it sounds rather like a /v/, but more forceful, and not a continuant. /bᵛ/ occurs in only a few words, and most of those seem to be ideophones.

3.25	bàbᵛɛ̄	'bald-headedness'
3.26	gābᵛāp	'caved in, as of a toothless mouth'

/bᵛ/ occurs in many of the same environments as /b/ and /v/: word initially, word medially, before and after various vowels. Voiced segments (except for sonorants) do not occur word-finally. Even though the distribution of this segment is very limited, it cannot be identified as an allophone of some other phoneme.

/ʏ/ - **Rather like the palatal approximant /y/.** It is phonemically and acoustically distinct from /y/, but it is hard to say just what the articulatory difference is. One acoustic characteristic of this segment is voicelessness. A near-minimal pair is:

3.27	-ʏén	'heal'	-yɛ̄n	'hoe' (verb)

/ʍ/ - **Not exactly like an English /w/, but the closest equivalent in Kuche.** Pronunciation varies from almost completely voiceless to definitely voiced; a more consistent characteristic is the air turbulence generally associated with fricatives. Many of the pronouns in chapter 2 contain /ʍ/, as does the word 'mosquito' [ìʍɔ̀ɔ̃)].

/ɥ/ - **This is a voiceless palato-labio-velar approximant (or perhaps a fricative).** There seems to be a sound shift occurring in the language currently. Many words can be pronounced with either /ɥ/ or /ʏ/, the forms with /ʏ/ being the innovation. There are only a few words with /ɥ/; e.g., [ūɥɛ̄rɛ̄] 'whip.'

The phonemic status of [ʃ] and [ɥ] is still ambiguous at this point. For the most part [ʃ] occurs only before the front vowels, [i], [ɪ], and [ɛ], while [s] occurs everywhere else.* [w̰] and [ɥ] are also in complementary distribution, with [ɥ] occurring only before the front vowels and [w̰] elsewhere. However, there are so few words in the word list containing these two segments--less than ten for [ɥ] and less than thirty for [w̰]--that it is difficult to draw definitive conclusions.

The segment /r/ has two allophones: trilled [r̄] word-finally, and an alveolar tap elsewhere.

The labio-velar stops /k͡p/ and /g͡b/ are almost always palatalized before /ɛ/ and sometimes before /ɪ/. The labio-velar nasal also shows evidence of palatalization. Here are examples of palatalized labio-velars and non-palatalized ones.

3.28	àdɔ̀ŋk͡pʸɛ̄t	'termite'
3.29	āfālāk͡pá	'chaff of grain'
3.30	āk͡pʸìk͡pʸèt	'clippings'
3.31	kāg͡bʸɛ̌ŋ	'under-rating'
3.32	-g͡bɔ̀ːk	'drag'
3.33	kɔ̃ŋ͡mʸɪn	'place'
3.34	ìŋ͡mālá	'laughter'

Contrast between all nasal consonants is neutralized word-medially when another consonant follows. A pre-consonantal nasal is always homorganic with the following consonant (unless the following consonant is

* This generalization does not hold for every word in the word list, but the tendency is overwhelming. My informant indicated that there were dialect differences when it came to words containing [ʃ] or [s].

[h]--and then no nasal *consonant* is found). This process is discussed in detail in chapter 4.

3.3 Tones

There are three tone levels in the language, high (á), mid (ā) and low (à). Bouquiaux's data only reflects two tones, high and low; but both Hoffmann and Gerhardt recognize three levels. Following conventions of autosegmental phonology, I interpret falling/rising tones as combinations of tones on a syllable.

Tone has both lexical and grammatical functions. Various grammatical functions were described in chapter 2: (1) tone may be the only feature to distinguish a singular noun from its plural; (2) tone serves as a tense/aspect marker; (3) tone has some role in marking a genitive phrase. Tone may also distinguish one lexical item from another; consider these pairs (and one triad):

3.35	àŋkp͡ʊ́sɔ́k	'frog'			àŋkp͡ʊ̀sɔ̀k	'rat'
3.36	-tàrà	'touch'	-tárá	'shoot'	-tárà	'stumble'
3.37	āʃɛ́n	'song'			àʃɛ̄n	'red (one)'
3.38	kʊ̄ŋg͡bā	'banana'			kʊ̄ŋg͡bà	'wing'

Besides the level tones, there are rising and falling tones (contour tones). Examples are:

3.39	àlʊ̃ʊ̀lʊ̃	'spider's web'
3.40	ɪfʊ̃ʊ́fʊ̃tʊ̃k	'sweaty-looking'

Phonetically, the second syllable of each of these words is a long [ɷ:]. Contour tones usually occur on a long vowel, although they may also occur on a vowel followed by a sonorant. Writing long vowels as a sequence of two identical vowels simplifies the transcription of the contour tones. In a three-tone system, a falling tone [â:] could be a high-mid tone, or a high-low tone, or a mid-low tone; rising tones [ǎ:] are just as ambiguous. Writing a sequence of tones on a sequence of vowels disambiguates the matter.

In some instances of contour tones, the two tone levels seem to have their origins in two different morphemes. For instance, nouns of singular class 5 and plural class 8 generally have a mid-tone prefix in both the singular and the plural:

3.41	kītáɪ	'stone'	ātáɪ	'stones'
3.42	kītɷ́	'head'	ātɷ́	'heads'
3.43	kītɔ̄	'neck'	ātɔ̄	'necks'
3.44	kîīnʃī	'eye'	ēénʃī	'eyes'

But notice example 3.44: the tone on the prefix of 'eye/eyes' is a rising tone. A mid-tone is lexically specified for the prefix; the high tone must be associated with the root. Both tones link to the prefix, combining to form a contour tone.

There is another phenomenon regarding tone in Kuche which Hoffmann describes; he labels this unique tone "Low Plus" (L+). Not all of his pages are numbered: this explanation begins on the second page of his section titled "Tone."

> But there is at least one additional phenomenon in the tone system of this language, viz. a *variable* tone whose behaviour can--at least to a

> certain extent--be described, but whose ultimate analysis in terms of the total tonal structure of the language has to wait until other tonal phenomena have been sufficiently investigated. So far it can be said that this tone seems to characterize the final syllables of certain lexical items. It is realized as a final *level* Low (i.e., a Low that lacks the otherwise characteristic final drop of final Lows) in pre-pause position after Low, but as High in non-final contexts or in final position after Mid.

Some of the singular/plural pairs in the appendix manifest this phenomenon; however, since the plural nouns are not necessarily listed next to the corresponding singular, this alternation is not obvious. Hoffmann adds:

> The whole LL+ or LLL+ sequences seem to be slightly raised above the level of a normal LL or LLL sequence. This is so much the case that quite often such LL+ or LLL+ sequences were initially recorded--erroneously--as MM or MMM, although for a number of morphological reasons they cannot really be regarded as such.

Here are a few of his examples:

3.45	àŋmkpà	LL+	'blackshouldered kite'
3.46	āŋmkpá	MH	'blackshouldered kites'
3.47	àŋmkpá àʃī t	LH LM	'a black kite'
3.48	-hàs	L+	'new'
3.49	ìkpì ìhàs	LL LL+	'a new thing'
3.50	ōnīt ōhás	MM MH	'a new person'
3.51	īkpì īhĭhás	ML MHH	'new things'
3.52	àhàmà àgbì t	LLL LL+	'a short axe'
3.53	ōnīt ōgbít	MM MH	'a short person'
3.54	ūkǒn ōgbít	MH MH	'a short stick'
3.55	āhàmà āgbígbít	MLL MHH	'short axes'

He then contrasts the above examples with lexical items ending in a genuine final low tone (page 11).

3.56	àɱfùn	LL	'cloth'
3.57	āɱfùn	ML	'cloths'
3.58	àɱfùn àʃît	LL LM	'a black cloth'
3.59	-ʧàp	L	'small'
3.60	ɷ̃káw ɷ̃ʧàp	MH ML	'a small bag'
3.61	kɷ̃k͡pá kɷ̃ʧàp	MH ML	'a small body'
3.62	āk͡pá āʧàʧàp	MH MLL	'small bodies'

Kuche's inventory of phonemes, then, includes: 8 vowels; 28-30 consonants (depending on the phonemic status of [ʃ] and [ɥ]), and three level tones. Other contrasts do not need to be specified in the inventory: they can be explained in a framework of autosegmental phonology or its descendent, feature geometry.

CHAPTER 4

SYLLABLE STRUCTURE

This chapter describes the syllable structure of words in Kuche. I argue that, even though there are syllables in Kuche that are realized phonetically as CVC or VC, the syllable inventory of Kuche includes only syllables that are underlyingly open. The most common phonetic coda is a nasal consonant, which may occur word-finally or word-internally. The nasal consonant is completely predictable in word-internal codas, and I argue that it is the phonetic realization of a nasalized vowel. Word-final syllables that have a phonetic coda are realizations of an extraprosodic segment. (See Itô, 1988, for discussion of "extraprosodic.")

4.1 Description

The most frequent type of syllable in Kuche is the CV syllable; the V may be a short vowel, a long vowel, or a diphthong. Syllables may also be simply V, as in the first syllable of examples 4.2 and 4.3 below:

4.1	Short Vowel:	bāzìnǐ	'friends'
4.2	Long Vowel:	ūbú:	'lower abdomen'
4.3	Diphthong:	ìlaí	'granary'

Long and short vowels may occur in any syllable, but diphthongs only occur word-finally. Syllables without a consonant onset occur only word-initially.

Both VC and CVC* syllables also appear; but in these cases the coda consonant is highly constrained. Word-finally, the coda may be an /s/, a voiceless stop (except /k͡p/), a liquid, or a nasal (except /ŋ͡m/). Moreover, there are no consonant clusters in word-final position. Following Calabrese (1995), we could say that only unmarked consonants are permitted word-finally (more discussion below, section 4.3.3).

Word-internally, the only codas that occur are nasal consonants—any nasal consonant. A word that contains both a word-internal and a word-final CVC syllable is:

4.4 bàtīnzìk 'competition'

The word-internal nasal coda is always homorganic with the following segment. This is not a problem when the following syllable onset is /t/ or /d/, /p/ or /b/, /k/ or /g/, as there are nasal consonants in the phoneme inventory to match all these places of articulation. But when the syllable onset of the following syllable is labio-dental, or even when it is labio-velar, there is variation in the pronunciation of the nasal consonant. /n/ usually occurs before coronal segments and sometimes before labio-dental segments, as in examples 4.5, 4.6, and 4.7, below.

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* Complex onsets and other consonant clusters are evident in a few words, most of them ideophones. For instance, my informants gave one example in the language of a word with a complex onset: /pràs/, which is an intensifier (or specifier) of the word "many." Of the 2,000 words in the word list, there are fewer than a dozen that do not fit the syllable pattern described here.

4.5	ūndú	'tail'
4.6	ānʃāk	'spoons'
4.7	ɔ̄nvî	'sun'

/m/ occurs before /p/ and /b/, and sometimes before /k͡p/, and sometimes before /f/ and /v/.

4.8	kîmpúk	'heap'
4.9	àdùmk͡pēt	'termite'
4.10	kìmfā	'word'

/ŋ/ occurs before /k/ and /g/ and usually before /g͡b/ and /k͡p/.

4.11	èŋkì	'eagle'
4.12	àdùŋk͡pēt	'termite'
4.13	āŋg͡bā	'bananas'

/ŋm/ may also be found before /g͡b/ and /k͡p/.

4.14	āŋmg͡bā	'bananas'

Before /y/ and /ʏ/, /ɲ/ occurs.

4.15	īɲyáŋ	'lice'
4.16	īɲʏɔ̄k	'fish'

If the word-internal syllable-onset is /h/, /h^{w}/, or /h^{y}/, then there is never a nasal consonant before it. Instead, a nasalized vowel may occur. (Tone marks are deleted in these examples, to avoid clutter in the representation.)

4.17	ĩŋkērēhĩ	'money'
4.18	ūhū	'it (a voice) goes'

Seldom in Kuche is an entire word nasalized; it is a phenomenon unique to words containing /h/. These forms are discussed in section 4.3.1, on page 60.

After much discussion of the labio-dental syllable onsets, my informant decided that the segment preceding them was neither an /n/ nor an /m/, but a labio-dental nasal, /ɱ/. Then words with /f/ and /v/ can also be pronounced:

4.19	āɱfɛ̄n	'yams'
4.20	ōɱvĩ	'sun'
4.21	kìɱfā	'word'

The data do not show any words with an /l/ or an /r/* after a nasal consonant. This gap might be filled in if there were more data available, but it is more likely that the gap is evidence of a pattern. /r/ is the only non-nasal consonant that may occur in consonant clusters, and one of my informants allowed both /l/ and /r/.

4.22	àbīrʤɛ̄ ~ àbrīʤɛ̄	'expert'
4.23	prās	an intensifier of 'many'

* The fist person singular concord marker is /ɪn-/; there are several verbs that begin with /l/ and a few that begin with /r/, but I have no examples of these verbs in the first person singular.

Word-final nasals are of two varieties: the stable nasal consonants, and a variable nasal ending. Examples 4.24 and 4.25 are words ending with stable nasal consonants. Examples 4.26 and 4.27 are words that alternate between an oral /-V/ ending and a /-Vŋ/ ending.

4.24	àkɔ̀kɔ̀n	'beni seed'
4.25	kɔ̃vám	'generosity'
4.26	kîtú ~ kîtúŋ	'girl'
4.27	àʧɛ̀ɛ̃ ~ àʧɛ̀ɛ̃ŋ	'ancestral name of Bache people'

When the definite article suffix /-i/ is used with words like [kîtú] and [àʧɛ̀ɛ̃], the nasal consonant always occurs: never is /-i/ suffixed to the oral vowel ending. Before the definite article, the "unstable" nasal may surface as /ŋ/, but more often it is /ɲ/. For example:

4.28	kîtúɲî	'the girl'
4.29	àʧɛ̀ɛ̃ɲî	'the ancestral name of Bache people'

An early analysis of the process assumed there were three allomorphs of the definite article. The article is always pronounced as /-i/ in words ending with a consonant.

4.30	kɔ̀ːk	'hand'	kɔ̃ːkî	'the hand'
4.31	kīkɔ́m	'corpse	kīkɔ́mî	'the corpse'
4.32	ìyìn	'pot'	ìyínī	'the pot'

[ŋi] or [ɲi] seemed to be the definite article for vowel-final nouns.

4.33	ī̱kpìsɔ̀	'chairs'	ī̱kpìsɔ̀ɲî	'the chairs'

4.34	ĩbá	'story/matter'	ĩbáɲì	'the matter'
4.35	ĩbá	'story/matter'	ĩbáŋì	'the matter'

But then, there are other vowel-final nouns that suffix the /-i/ directly to the final vowel, yielding a diphthong.

4.36	kūhū	'mat'	kūhūĭ	'the mat'
4.37	ìmà	'water'	ìmàı	'the water'

The process is easier to analyze if the variable nasal segment is considered to be a part of the root and not a part of the suffix. When I changed my assumptions, the following analysis helped to explain this process, as well as others.

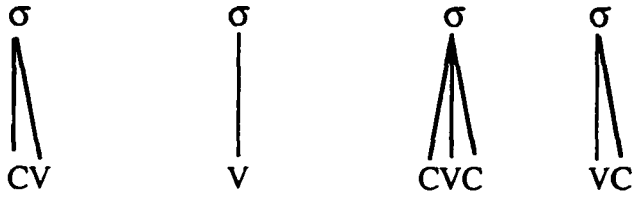
4.2 Syllable Theory

4.2.1 Templates

Itô (1988) proposes that languages use a "syllable template" to enforce wellformedness conditions on segment strings. That is, every language has an inventory of patterns to which syllables must conform. Words are then built up of well-formed syllables; moreover, all segments in a string must be licensed, that is they must associate with at least one syllable. However, at the edges of words (i.e., at the beginning or at the end), the word may be augmented with "extra" phonetic material that need not be matched to a syllable template. The extra phonetic material is called "extraprosodic" and is tolerated even though the syllable template does not license it. Itô says that every segment that surfaces in a sequence is licensed by the syllable or

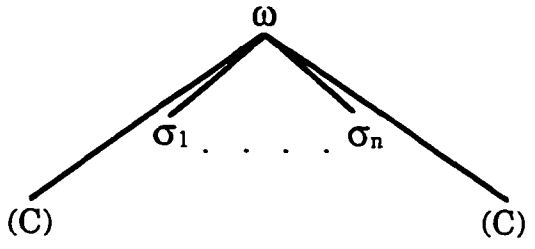
licensed by its extraprosodicity. Alternatively, I claim that every segment is dominated by a syllable node (is licensed by the syllable) or it is dominated directly by the word (is licensed by the word). Then we could say that a language L has the following inventory of well-formed syllables:

4.38



Words of L are built from strings of well-formed syllables plus optional extraprosodic segments which may occur only at the periphery of the word:

4.39



4.2.2 Coda Filter

Itô later (1989) expands her discussion of syllable templates to include the notion of a "coda filter." The syllable template, as outlined in section 4.2.1, does not account for constraints that may limit certain syllable positions. A syllable template such as the third one in example 4.26 (CVC) would allow any consonant at the beginning of a syllable, any vowel in the middle, and any consonant at the end. There are languages that do not allow any such

thing, Kuche being one. The coda filter is a device that limits the possible segments in coda position. As Itô states it, the coda filter is:

4.40 Coda Filter * $C]_{\sigma}$
|
[Place]

The filter should be interpreted to mean that a consonant singly linked to a place of articulation is not allowed in the coda. However, a coda that is linked to the place of the following consonant *is* allowed. This allows for word-medial geminate consonants and homorganic nasals in the coda. Also, when combined with the concept of extraprosodicity (discussed above in section 4.2.1), the coda filter allows for word-final consonant clusters--as long as both consonants are linked to the same place of articulation. Itô (1989:226) gives these examples from Ponapean:

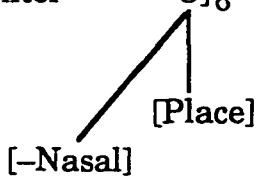
4.41	mand	'tame'
4.42	emp	'coconut crab'
4.43	kull	'roach'

She claims (1989:225) that, "The coda filter can be found in Japanese, Ponapean, Lardil (Wilkinson, 1988), Diola Fogny (Steriade, 1982), and Southern Paiute, and variations of the coda filter are encountered in Finnish, Italian (Prince, 1984; Itô, 1986 [and 1988]), and English (Borowsky, 1986)." I argue, however, that it does not account for the Kuche data.

4.3 Syllable Theory: Kuche

The coda filter proposed above does not constrain the coda consonant tightly enough to explain Kuche syllables. First of all, Kuche has no geminate consonants (except for some geminate nasals). To make it work, the coda filter would have to be revised by adding a language-specific prohibition against non-nasals:

4.44 Kuche Coda Filter * C]$_\sigma$



That is, Kuche allows only codas that are unspecified for place, and does not allow *any* codas unless they are nasal. This analysis correctly predicts that the only codas occurring word-internally are nasals homorganic with the following onset.

This analysis would also identify the word-final consonant as extraprosodic. In languages where the coda filter is operative, it excludes codas that are singly linked to [Place]. In Kuche, the word-final consonant is indeed linked to its own place of articulation, as these examples demonstrate:

4.45	kîdēk	'bread'
4.46	ìnʃál	'plate'

The final consonant of [kîdēk] must be singly linked to [Place], because there is no adjacent segment that shares its place of articulation--the same goes

for [ɪnʃál]. Since they do not comply with the coda filter, then they are not codas--they must be extraprosodic. Extraprosodic segments are licensed by the word and not the syllable; they need not satisfy syllable constraints (see Itô, 1988).

However, this analysis of Kuche syllables makes one incorrect prediction and misses one very important generalization. It incorrectly predicts that word-final consonant clusters should appear in phonetic representations. Itô (1989) assumes that it is the extraprosodicity of word-final consonants that allows for the consonant clusters in examples 4.41-4.43, above. Since the word-final consonant is extraprosodic, the coda filter should allow another consonant to occupy the coda slot--as long as it were linked to the same place as the extraprosodic consonant. We should find words ending with /nt/ or /ŋk/ or some other nasal + consonant cluster. There are none.

The important generalization that the coda filter misses is that nasal syllable codas and nasal vowels are part of the same pattern in Kuche, as I will argue in section 4.3.1. Given these very serious problems, I must reject the coda filter as an inadequate explanation of the syllable structure of Kuche.

4.3.1 Syllable Codas

If syllable and word templates, in conjuction with the coda filter, do not explain Kuche syllable structure, how can it be explained? I will show that the *appropriate* templates, along with the notion of extra-prosodicity, are sufficient to account for the Kuche data, *without* resorting to a coda

filter. There is no need to filter out certain codas because there are none. Pre-consonantal nasals do not arise from an underlying nasal con-sonant: the underlying representation contains only the feature [+nasal], most likely associated with the vowel. But the feature [+nasal] seldom surfaces on a vowel; instead, it links to the following syllable onset and is assigned a timing slot of its own. The exception occurs when the following onset is /h/; the unique thing about /h/ is that it is the only consonant in Kuche with no oral place of articulation (Lass, 1976:156; Kenstowicz, 1994:489). In words with a nasal vowel before /h/, nasality is realized on the vowel.

Though the coda filter does not apply to Kuche, the notion of extra-prosodicity is still very useful. If the language allows only open syllables, then we still need to account for words that end with a consonant. Extensive discussion of extraprosodicity can be found in Clements and Keyser (1983). According to Itô (1989:221), extrametrical [i.e. extraprosodic] segments may occur only at the edges of a prosodic domain. Word-final consonants do not need to conform to the syllable template (Itô, 1988); they are licensed by extraprosodicity (or, as I prefer to say, they are licensed by the word). Since diphthongs occur only word-finally, this may even suggest that a better analysis of diphthongs is a sequence of vowel plus approximant, with the approximant taking the extraprosodic slot.

4.3.2. Syllable Template

Apart from the nasal consonants in the phoneme inventory, there is another [+nasal] feature in Kuche that is distinct. It is most likely associated with a vowel in the underlying representation, but it seldom

surfaces on a vowel unless a consonant is inserted. This [+nasal] feature is distinct from an ordinary nasal consonant in several ways:

4.47 It is never phonetically realized without being linked to a consonant root node.

4.48 It takes its oral place of articulation from the segment to the right, whether that segment is [+consonant] or [-consonant]. An ordinary nasal consonant, on the other hand, is specified for place, and does not assimilate to the vowels surrounding it (and it never has any consonants around it).

4.49 If the segment to the right has no oral place of articulation (that is, if it is /h/), then the nasality spreads throughout the word. This is in contrast to the nasal consonant phonemes of the language, where nasality is strictly a local feature, and does not spread.

4.50 If there is no segment to the right--that is, if [+nasal] is associated with a word-final vowel--then either a nasal consonant is inserted or the nasality disappears. However, when a nasal consonant is lexically specified word-finally, it is stable.

Although the syllable-level [+nasal] feature tends to surface only when linked to a [+consonant] node, even [–consonant] segments can share a place of articulation with the nasal consonant that surfaces. The nasal consonant that thus surfaces may occupy either a syllable-initial position or a syllable-final position. For instance, a palatal nasal surfaces before either /y/ or /i/, as in 4.51 and 4.52:

4.51	kĩtúɲĩ	'the girl'
4.52	ĩɲyáŋ	'lice'

In example 4.51, I maintain that [ɲ] is not a syllable onset in the underlying representation. It only becomes a syllable onset after the suffixation of the definite article /-i/, which, as a [–consonant] segment, may surface as a syllable peak. Without the suffix [-i], the word is not [kĩtúɲ], but [kĩtú] or [kĩtúŋ]. This is because, if there is no segment to the right of the [+nasal], the nasal either does not surface or a default nasal consonant is inserted (see Calabrese, 1995:432 for a discussion of default nasal). Except for the default nasal, the place of articulation is conditioned strictly by the segment to the right of the [+nasal], whether it be a consonant or a vowel, whether it be a syllable onset or a syllable head.

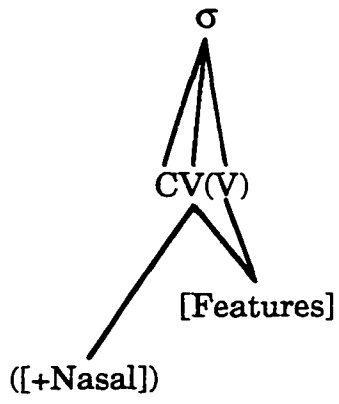
The only three non-nasal consonants in the language that are [+cons, +son] are /h/ and /l/ and /r/. Moreover, /h/ has the distinction of being the only consonant in the language with no oral place of articulation. Two possible explanations for the unique interaction of /h/ with nasalized vowels are: (1) The nasality spreads if it does not link to a consonant with an oral place of articulation; or (2) The nasality spreads if it links to a [+cons, +son] segment. So then, is item 4.49 based strictly on speculation, or is there any basis for this interpretation?

I base my interpretation largely on the *lack* of data. It would seem that, in so large a sample (more than 2,000 words in the appendix), there *ought* to be words in which a syllable-level [+nasal] occurs before /r/ or /l/. If the nasal spreading were triggered by a [+cons, +son] segment, at least one or two of the 2,000 words in the appendix should show nasal spreading on

words containing /l/ or /r/. I speculate that the [+nasal] feature completely disappears from the surface representation if it occurs before either of these two segments. This could be confirmed by eliciting first-person singular verb forms of [-rĩ:] 'hold,' or [-làt] 'lie down,' or [-lúũ] 'cook.' If these forms show no nasalization and no homorganic nasal "coda," then my interpretation would be supported.

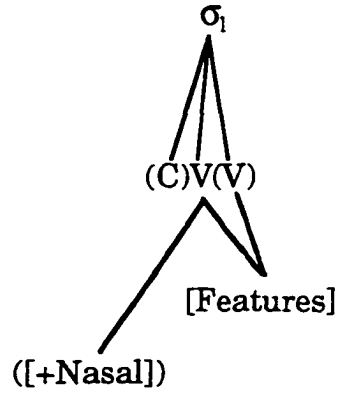
The syllable template of Kuche would then be:

4.53



This means that only vowels that share all their features (i.e. long vowels) can occur within the same syllable. This analysis would characterize diphthongs, not as a syllable phenomenon, but as a word phenomenon. Word-initially, Kuche allows for onset-less syllables, as in 4.54:

4.54



4.3.3. Word Template

The words of a language are built from well-formed syllables, and, optionally, extraprosodic segments at the word margins. In Kuche, the end of the word does allow extraprosodic consonants, but not just any consonant will do. The consonants that may occupy the word-final position are:

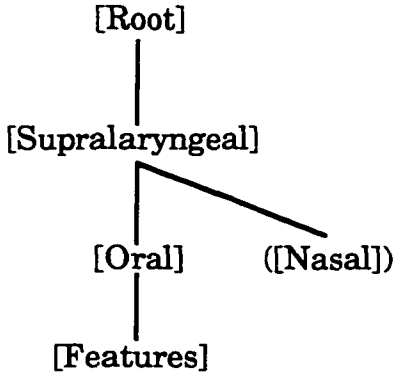
4.55 (a) /t/ /p/ /k/: voiceless stops only.
(b) /s/: only one voiceless fricative.
(c) /n/ /m/ /ŋ/ /l/ /r/: sonorant consonants.
(d) /y/ and /w/ or /i/ and /u/, depending on how we interpret diphthongs.

Excluded are:

(e) /h/.
(f) affricates.
(g) labialized and palatalized segments.
(h) double-articulated segments: /k͡p/ /g͡b/ /ŋ͡m/.
(i) the exotic labio-dental flap /bᵛ/.
(j) voiced stops: /d/ /b/ /g/.
(k) most of the fricatives: /ʃ/ /z/ /f/ /v/.

It is hard to see how the segments in 4.55(a-d) form any kind of natural class. They have no place feature in common, nor any manner of articulation. The only characteristic that they share is their "unmarkedness." Kenstowicz (1994:64-65) discusses the unmarked status of the above segments. Underspecification theory allows the unmarked segments of 4.55 to be characterized in a fairly simple diagram.

4.56



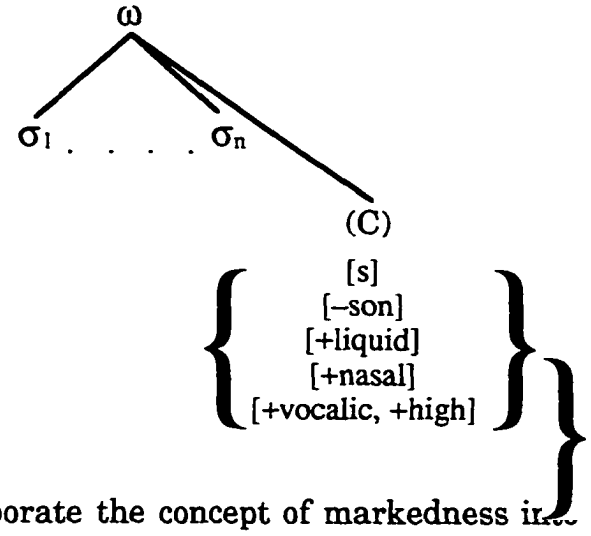
4.56 is interpreted as a segment unspecified for laryngeal features, with no branching oral features; [+nasal] is optional. Unspecified features are assigned by redundancy rules (default rules, see Kenstowicz, 1994:64). Voiced stops and fricatives are thus excluded, because voicing is a marked feature for [–sonorant] segments; /h/ is also excluded, since it is a laryngeal fricative. If the root node is [+sonorant], then voicing is not specified, but it is assigned [+voice] by default. Double-articulated segments and affricates are excluded by the constraint on branching.

In her very thorough discussion of markedness, Calabrese (1995) argues that phonological rules may refer (1) to any feature in a particular language, (2) just to the contrastive features, or (3) just to marked features (1995:418). While the syllable and word templates are not, in the strictest

sense, phonological rules, it is still evident that the extraprosodic segment in Kuche is selected on the basis of markedness.

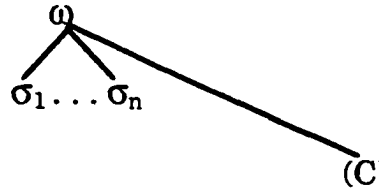
So, it would be possible to devise a very complex word template for Kuche by specifying all the different kinds of segments that may occur word-finally, like this:

4.57



But if we incorporate the concept of markedness into our description, then we could simplify the statement of the Kuche word template:

4.58



Where C is unmarked, as per 4.56.

4.4 Grammatical Restrictions

Words of different grammatical classes may have slightly different surface forms in Kuche. In particular, verbs conform to a more restricted

template than most of the other major word classes. Verbs may be either one syllable CV(X) or two syllables CVCV(C).* That is, a verb must begin with a consonant. Moreover, a one-syllable verb may have just one short vowel, or it may end with a consonant or a long vowel or a diphthong. A two-syllable verb root has two short vowels and an optional extraprosodic consonant (never a diphthong). Examples are:

4.59	-fú	'take'
4.60	-tɨ̀k	'keep down'
4.61	-yíp	'sell'
4.62	-bí:	'pay/wait'
4.63	-bāɪ	'count/read'
4.64	-zīsí	'loosen/untie'
4.65	-tɛrɛk	'put out to dry'

If a verb begins with /h/, the entire word may be nasalized, as in 4.66.

4.66 õkɔ̀t **õhõ** 'voice goes up'

Only one-syllable verb roots beginning with /h/ are recorded. There is no data to indicate what happens in a two-syllable verb root beginning with /h/.

Verbs seem to have few nasal vowels; at least there are none that surface in word-medial consonant clusters. However, some verbs apparently end with a nasal vowel that surfaces occasionally as the default [ŋ]. The situation is ambiguous because the dative object begins with [ŋ] and seems to be a verb suffix. Consider this sentence:

---

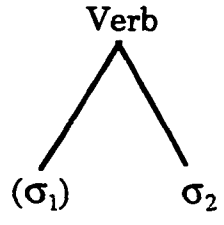
* There is one three-syllable verb in the appendix: [gbɔ̀kɔ̀kɔ̀] 'puff (in anger).' But there is also a one-syllable version of this verb: [gbɔ̀ɪ].

4.67 būmì ì-k͡pì nū kū-ʧɔ́ŋ-ì bàā-tù-ŋù. . .
inside 9-thing that we-write-PL they.could-show-you
Among the things we could write, it could be shown whether. . .

In this sentence, I have interpreted [ŋù] in [bàātùŋù] as the dative pronoun object, so the segment [ŋ] is part of the suffix, not a part of the root. But I have interpreted [-i] in [kū-ʧɔ́ŋ-ì] as the plural suffix that occasionally occurs with any plural subject--in this case, the first person plural (see section 2..1.2, page 26). The word 'write' usually ends with just the oral vowel [ɔ], as in [bátābàʧɔ] 'if they write.' The alternations here are just like the alternations in examples 4.26 and 4.27, where the nouns 'girl' [kì̀tú(ŋ)] and 'ancestral name of Bache' [àʧɛ̀ɛ(ŋ)] alternate between an oral vowel ending and a [-Vŋ] ending.

An even more restricted syllable and word structure is imposed on the verbs of the language. A template that reflects the more restricted structure is:

4.68



Where: σ_1 = CV
σ_2 = CV(V)(X)
X = C or [+nasal]

Moreover: Verbs are limited to two moras.

This allows σ_2 to surface as CV [±nasal], or as CVV, or as CVVC if there is no σ_1, but only as CVC or CV [±nasal] if σ_1 occurs.

Other major word classes manifest the entire range of syllable possibilities, in any combination (except, of course, that vowel-initial syllables occur only word-initially). Only verbs seem to be restricted beyond the ordinary syllable and word templates for the language.

4.5 Applications

4.5.1 Derivations of Some Kuche Words

Below are some examples of how selected Kuche words may be derived from their underlying representations. I have followed some of the conventions of Calabrese (1995), including:

4.69 Use of three repair strategies, which she also calls "simplification procedures." (1995:387-388) These are:

(a) Fission: an operation that splits a feature bundle containing a disallowed configuration (that is, an ill-formed segment) into two successive bundles. This allows one complex (or "marked") segment to become two simpler (i.e. unmarked) sequential segments. In some cases, this may yield segments with incomplete representations--for instance, perhaps the place of articulation goes with the first segment, leaving the second with no place specification. In those cases, the missing feature must be supplied by default; it is also

necessary to insert a timing slot (i.e. a mora, an X, or a root node, depending on the terminology being used.

(b) Delinking: an operation by which one of the incompatible features of an ill-formed configuration is delinked. Again, if some necessary feature is left unspecified by this operation, a compatible feature must be supplied by default.

(c) Negation: an operation that changes the values of all the incompatible features in a bundle to their opposites.

However, I have not followed Calabrese in separating the recognition of ill-formed constructions from their repair. She argues for the necessity of such a separation in this theoretical framework (1995:393), but the arguments are rather hazy. For the sake of economy, I represent recognition and repair of an ill-formed construction as one step.

Some general principles constraining the surface representation of nasal vowels were outlined on page 61, #4.47-4.50. They are expanded and formalized here:

4.70 [+nasal] spreads right.

4.71 [+nasal] is only realized phonetically if it spreads to a consonant node. Four different surface forms result from the combination of right-spreading and the requirement for a consonant:

(a) A nasal consonant homorganic with the following consonant is formed. This requires the insertion a new "timing slot" (or new mora or new root node--the terminology varies), which is reminiscent of "the intrusive stop formation" in English, as

discussed in Clements, 1987. The segment thus formed shares [+consonant] and [Oral Place] with the consonant to the right, but it shares [+sonorant] and [+nasal] with the vowel to the left.

(b) An empty consonant node may be inserted. There are two conditions that trigger this strategy:

(i) If [+nasal] is associated with a word-final vowel, then there is no segment at all to the right. The epenthesized consonant is nasal because of the spreading, but it lacks any specification for place. The default place of articulation for a nasal consonant is [+dorsal] (see Calabrese, 1995:432). An alternative strategy is discussed below, in (d).

(ii) If the segment to the right is [–consonant], then a consonant node must be inserted. There are four such segments that occur after [+nasal]: /w̰/, /y/, /ɤ/, and /i/. However, the [–consonant] segments can still share a place of articulation with the epenthetic nasal consonant.

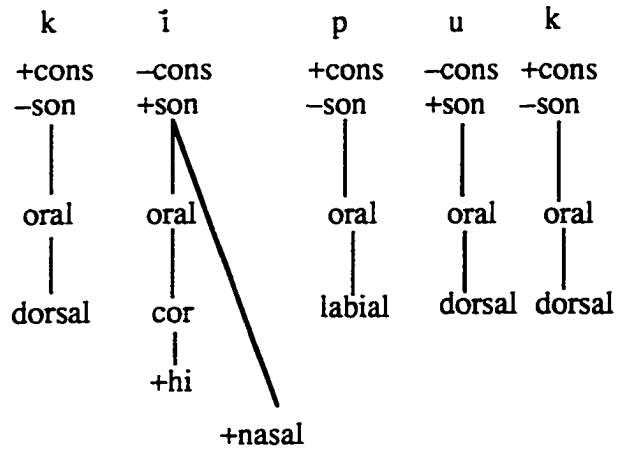
(c) If the segment to the right lacks an oral place of articulation, [+nasal] spreads throughout the word. The only consonant in Kuche with no oral place of articulation is /h/.

(d) If [+nasal] fails to spread to a consonant node, it is de-linked and does not surface at all.

4.5.1.1 Derivation of [kîmpúk]*

In conformity to the word and syllable templates of Kuche, we could expect the underlying representation of [kîmpúk] 'heap' to be:

4.72

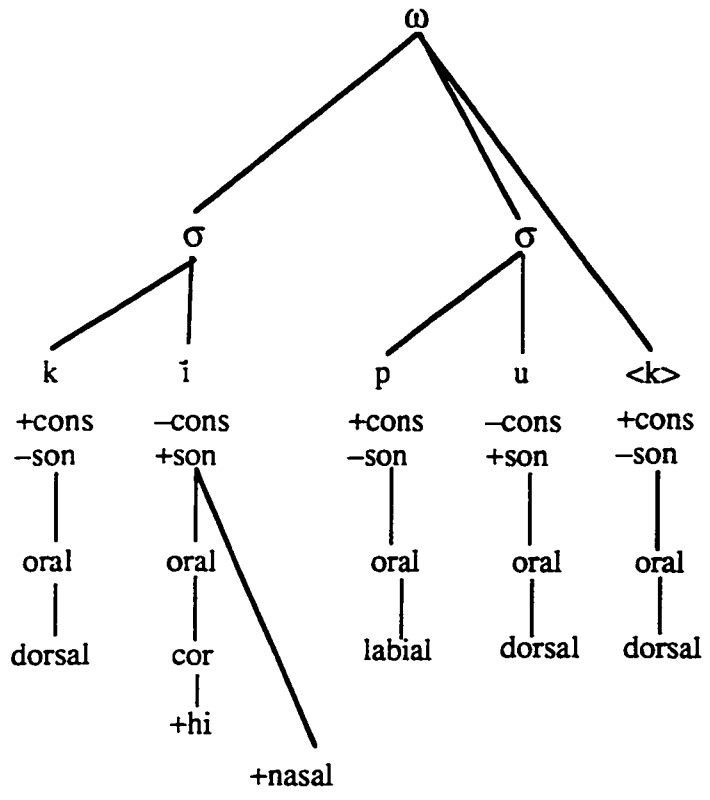


The first step is to license all the segments. Since a syllable can only license a (C)V(V) sequence, the final [k] is dominated directly by the word.

---

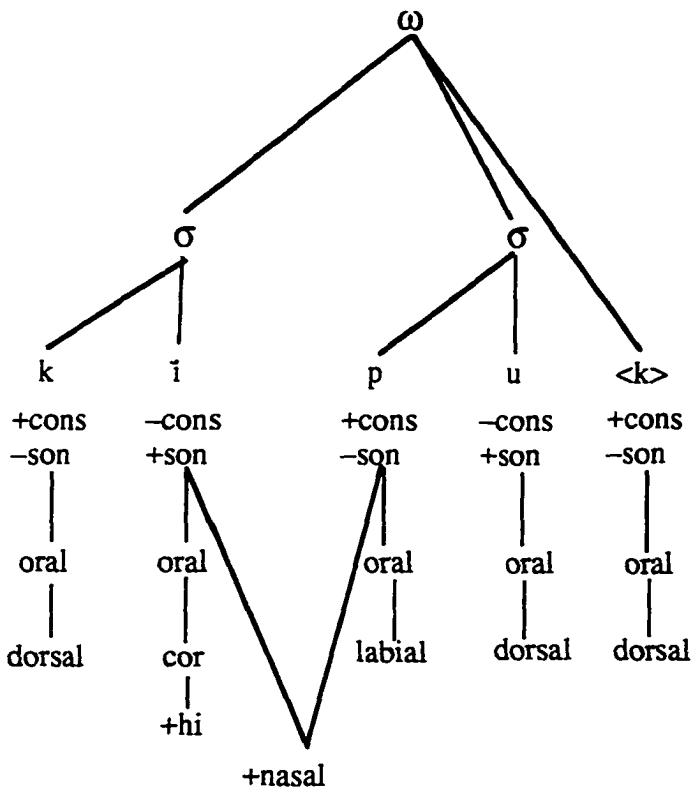
* Even though tones are an important feature of Kuche phonology, they are not relevent to this discussion, and so they are not indicated in the following derivations. I have also eliminated most of the vowel features, nasalization being the most pertinent in these cases.

4.73



According to constraint 4.70, the feature [+nasal] spreads right.

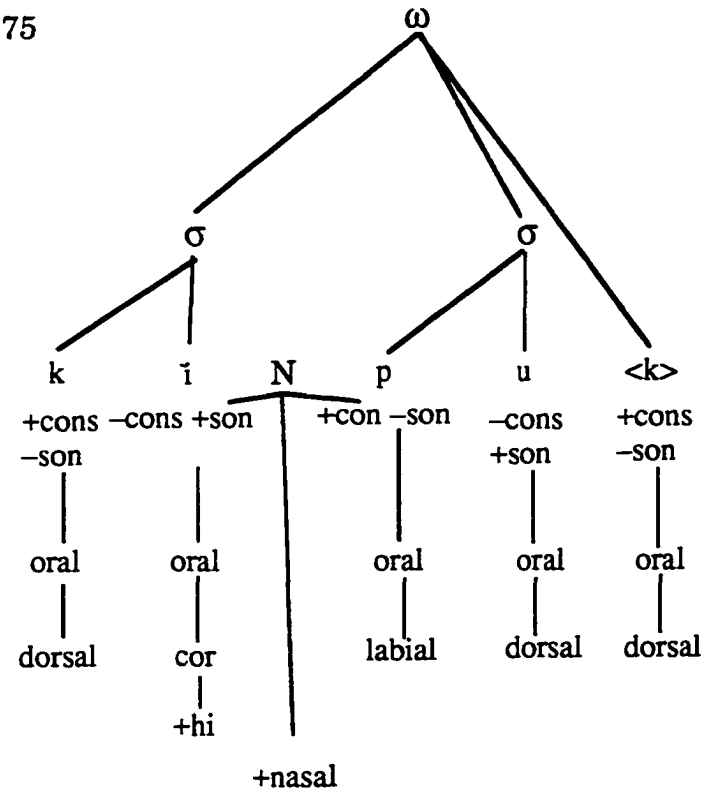
4.74



Since [+nasal] has linked to a consonant node, it is now a candidate for phonetic realization. But the segment is ill-formed: Kuche has no [–sonorant] nasal consonants. In some West African languages, this would be a perfectly legal segment, surfacing as a prenasalized stop (see Welmers, 1973:66). However, prenasalized stops should occur both word-initially and word-medially if they occur at all in a language. In Kuche a sequence of nasal plus stop occurs only word-medially; the restricted distribution would suggest that the combination is indeed a sequence of segments rather than one complex segment. Lacking independent evidence of prenasalized stops in the language, I interpret [+cons, –son, +nasal] as an ill-formed segment. It is repaired by fission (see Calabrese, 1995 as well as 4.69(a), above). [+nasal] delinks from [–sonorant] and delinks from [–consonant]: the newly

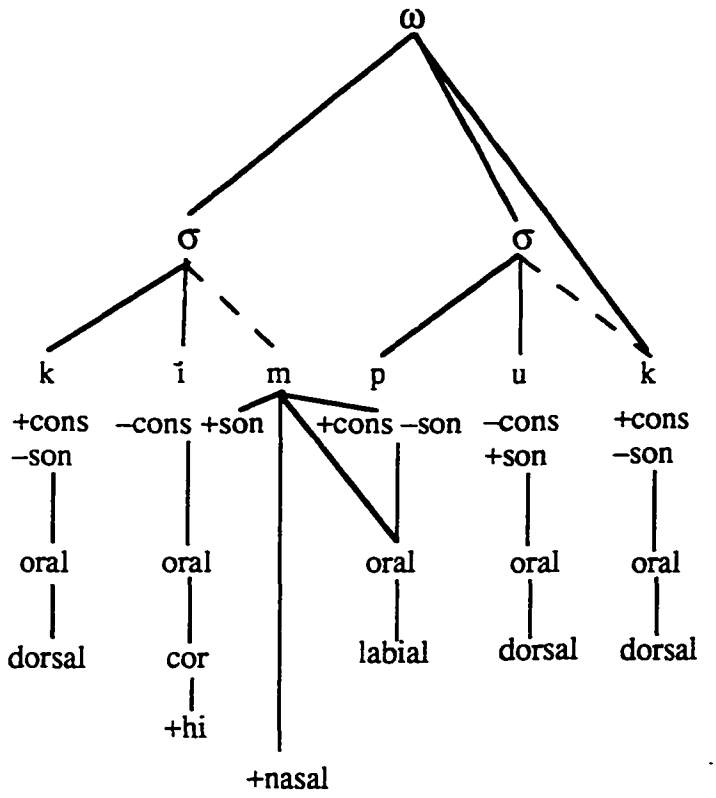
formed segment shares [+consonant] with the [p] and shares [+sonorant, +nasal] with the [ĩ].

4.75



Actually, #4.75 shows only half of the fission process. Though the newly-formed nasal segment no longer shares [–sonorant] with the consonant [p], it retains the labial place of articulation.

4.76

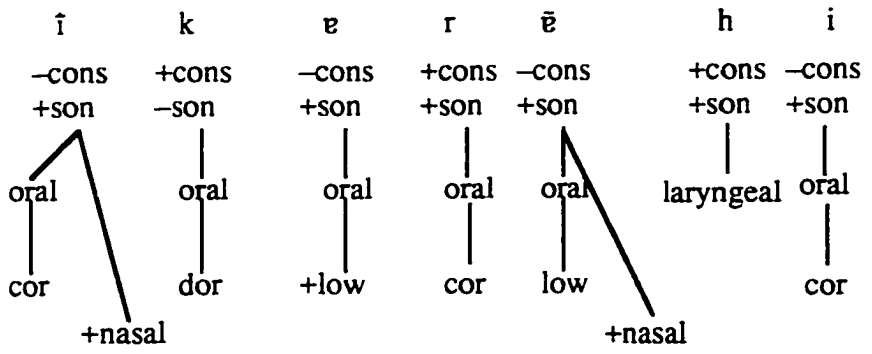


The phonetic realization of [kĩm.púk] is a two-syllable word. Although the syllable cannot license any codas in Kuche, a segment cannot be phonetically realized without being somehow incorporated into a syllable.

4.5.1.2 Derivation of [ĩŋkẽrẽhĩ]

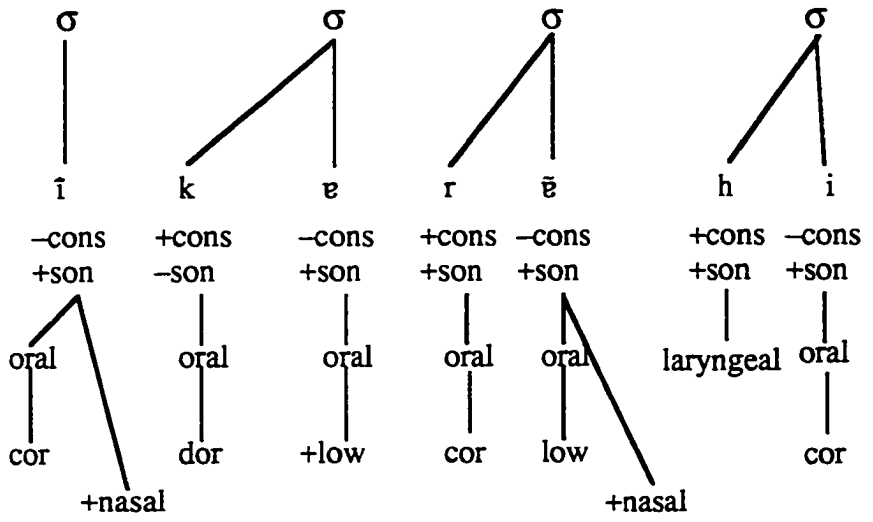
The derivation of [ĩŋkẽrẽhĩ] 'money' differs from the above example because one of the [+nasal] instances is before an /h/. The underlying representation is shown in 4.77:

4.77



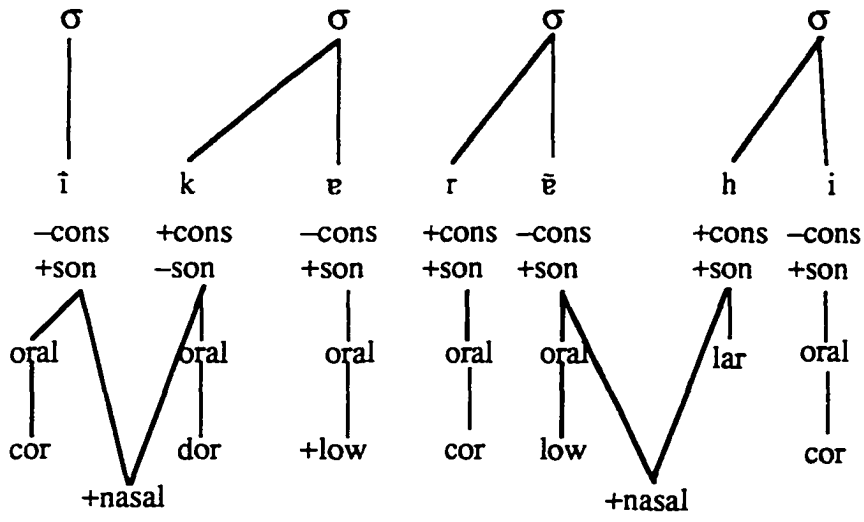
First, all the segments are licensed. Although the syllables are still dominated by the word, I will economize by leaving the word level licensing out of this derivation. Since there is no extraprosodic consonant, all the segments are licensed by the syllable.

4.78



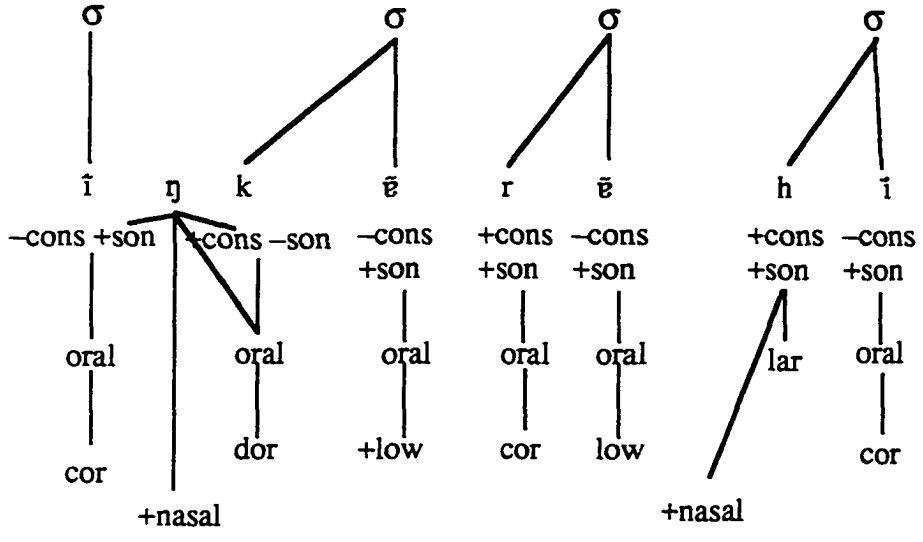
Next, the [+nasal] spreads right and links to a consonant root node.

4.79



Just as in [kîmpúk], there is an ill-formed segment: the [+nasal] that is linked to [k] must delink from [–sonorant]. The repair is made by fission, inserting a timing slot for a new nasal consonant, which receives its place of articulation from the [k] on its right (see 4.69(a), above).

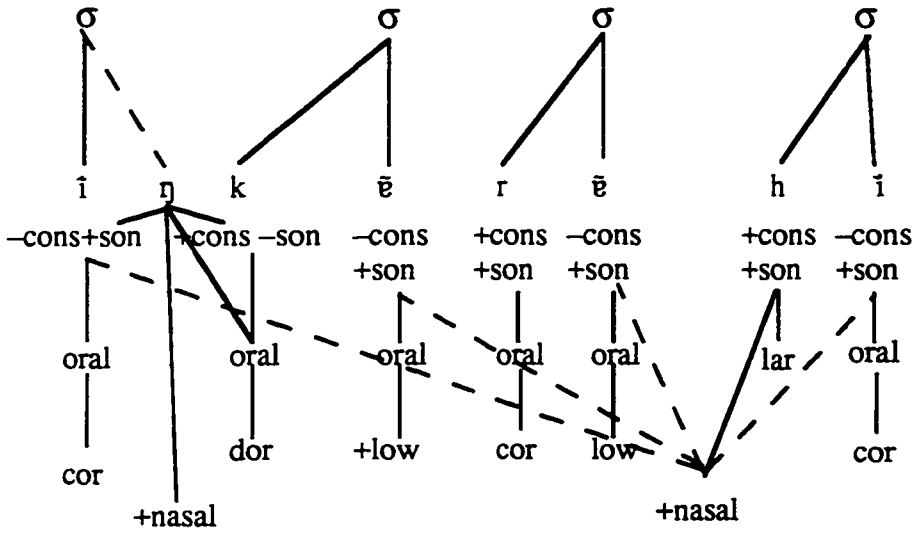
4.80



The [+nasal] linked to the [h] is not ill-formed. However, it lacks an oral place of articulation, so it spreads (see 4.71(c)). It is as if it reaches out

in both directions, then, in search of an oral place of articulation. Every syllable is nasalized.

4.81



The phonetic realization is a four-syllable word [ĩŋ.kẽ.rẽ.hĩ].

4.5.1.3 Derivation of [kĩtú], [kĩtúŋ]

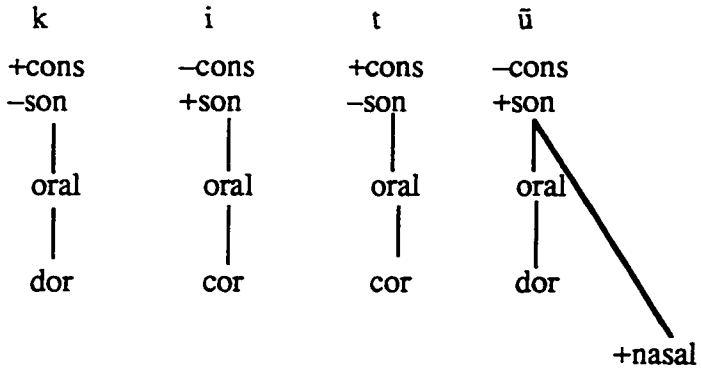
In the following derivation, both surface representations of the word 'girl,' [kĩtú] and [kĩtúŋ], are derived from the same underlying representation. The difference between this example and the two above is that [+nasal] is associated with the final syllable--there is no segment to the right. In this word, the [u] is not nasalized unless an epenthetic nasal consonant is inserted: either the word is pronounced with an oral [u], or the final syllable ends with [-ũŋ]. The two alternatives result from choosing two different repair strategies. Choosing the de-linking strategy (see 4.69(b), above) leads to [kĩtú] . Choosing the fission strategy (4.69(a) above), leads to [kĩtúŋ].

In this instance the dorsal nasal is the default nasal; it does not

matter what the preceding vowel is. Calabrese proposes "a special last resort rule that inserts dorsal articulation in the case of placeless nasals." (1995:432) However, if a vowel *follows* the epenthetic nasal consonant, it does effect the place of articulation. The only vowel observed occurring after the epenthetic nasal is [-i] (most often as the definite article, but there is at least one other homophonous morpheme). If [-i] is suffixed to the stem, the dorsal nasal occasionally occurs, but more often we find the palatal nasal [ɲ]. (See section 4.5.1.5, page 86, for further discussion of this alternation, and for the alternate derivations that give rise to the surface variation.)

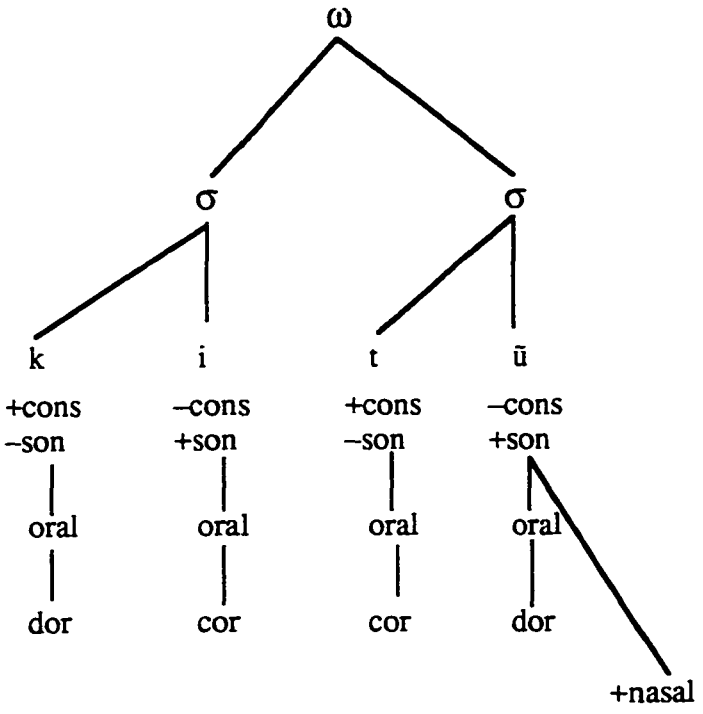
The underlying representation of [kîtú]/[kîtúɲ] is:

4.82



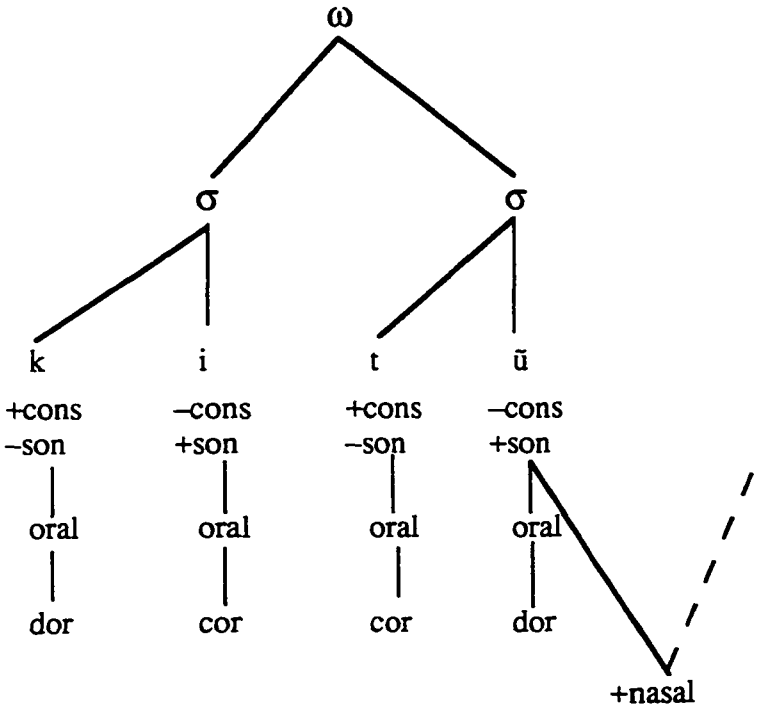
First, license all the segments.

4.83



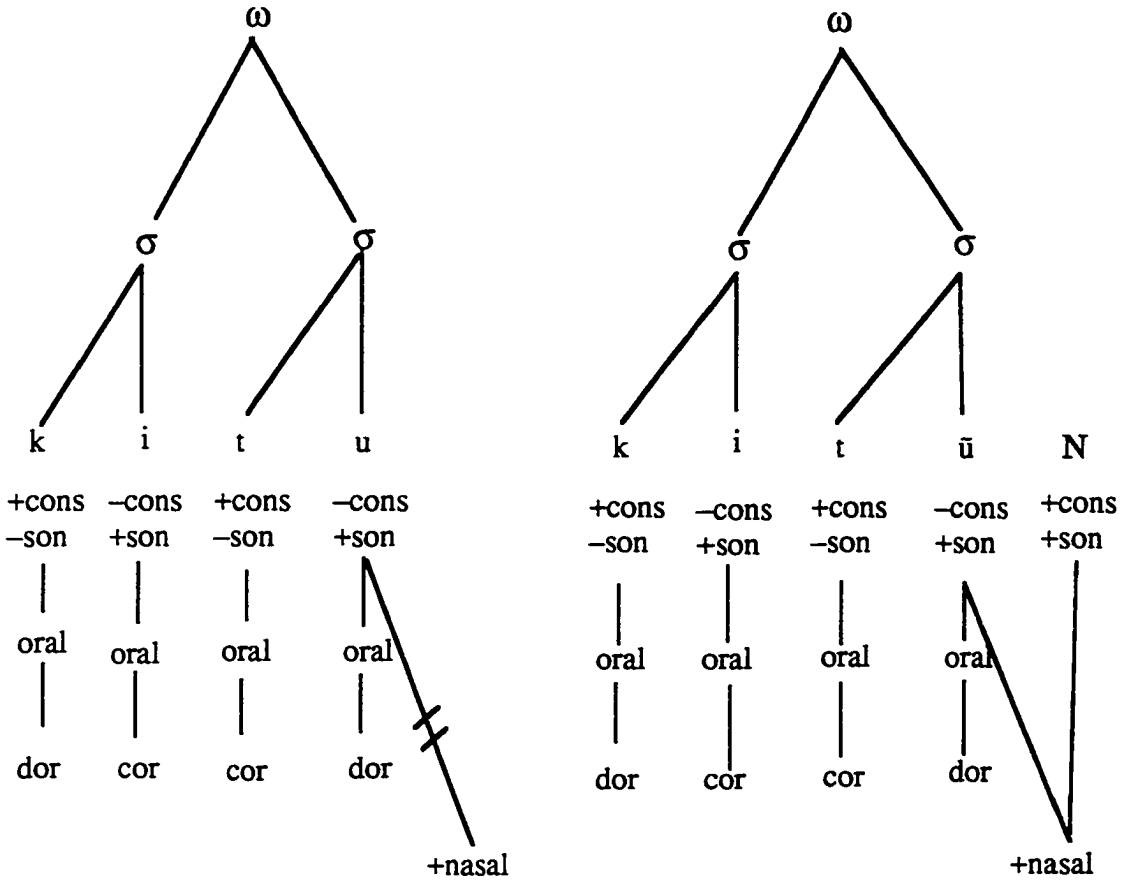
The next step is to spread the [+nasal] to the right.

4.84



But there is no consonant to the right of the [+nasal], so the segment is ill-formed. The repair is made in one of two ways: (1) Either the feature [+nasal] is delinked, and the [u] is pronouced without nasalization, or (2) An epenthetic [+cons, +son] is inserted.

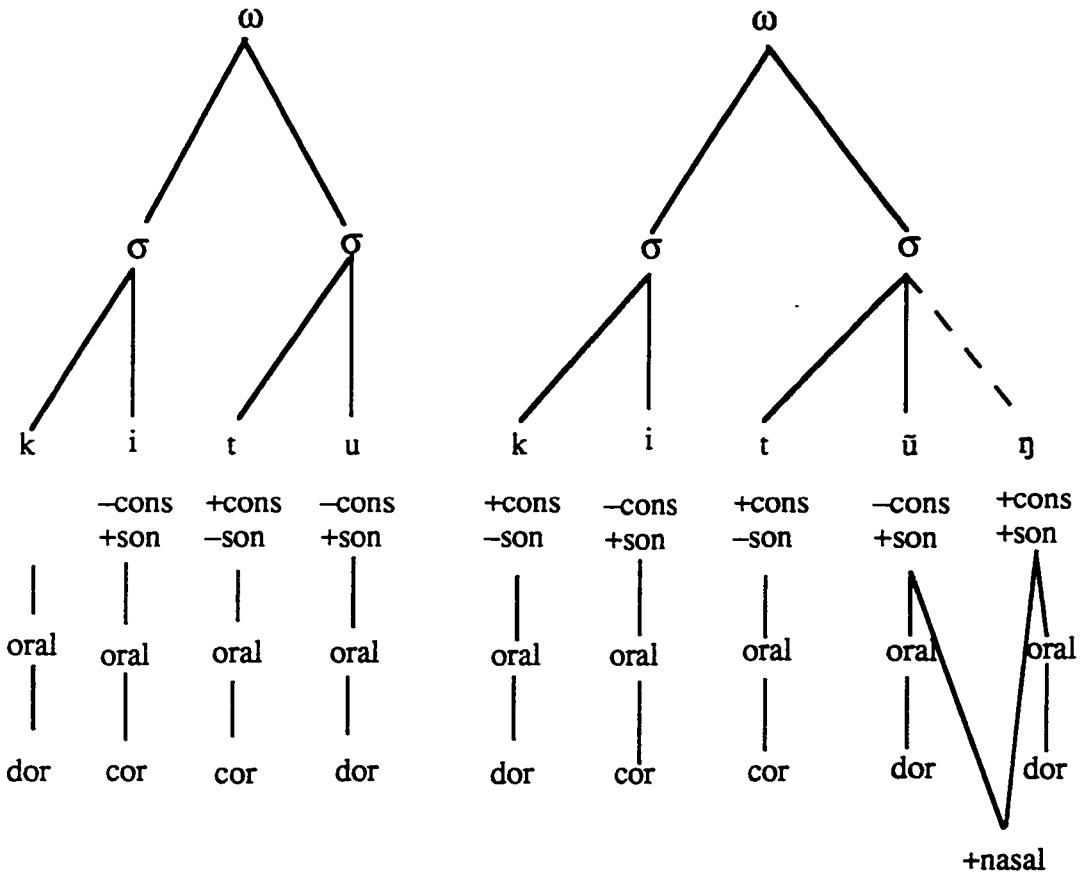
4.85 Repair by De-linking ↓ Repair by Fission ↘



In the version repaired by de-linking, we have reached the surface representation: all segments are well-formed, so no further repairs need to be made. In the repair-by-fission version, we have a placeless nasal segment--at this point in the derivation it is no longer a syllable-level

[+nasal], but a nasal segment that is still not quite well-formed. In order to be articulated as a consonant, there must be constriction at some place in the oral cavity: the place is provided by default. Following Calabrese, a nasal consonant unspecified for [Place] is dorsal.

4.86 Repaired by De-linking ↓ Repaired by Fission ↘



It is realized as a 2-syllable word.

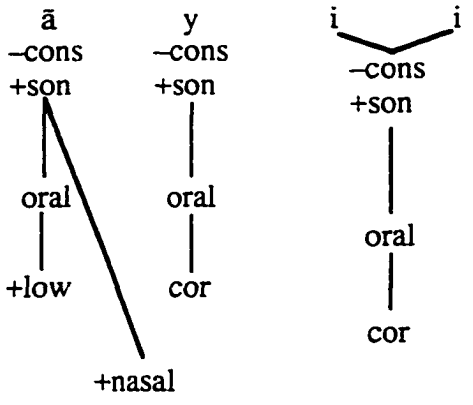
↓ ↓

[ki.tu] [ki.tuŋ]

4.5.1.4 Derivation of [ãŋyĩĩ]

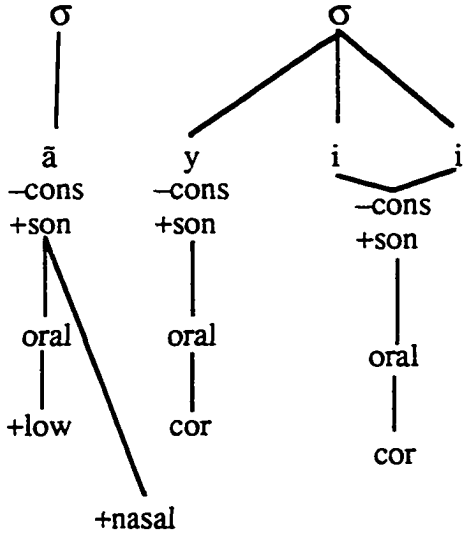
In 'teeth' [ãŋyĩĩ], the surface representation of the nasalized vowel is not much different than in [kĩmpúk], but the surface form is derived from the underlying representation more like [kĩtúŋ]. That is, the [+consonant] arises from epenthesis rather than from fission of an ill-formed segment. The underlying representation is:

4.87



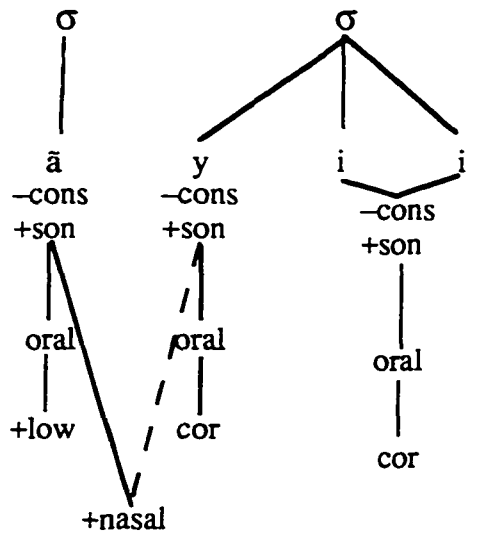
First, license all the segments. Again, I leave out the word level licensing, since all these segments can be licensed by the syllable.

4.88



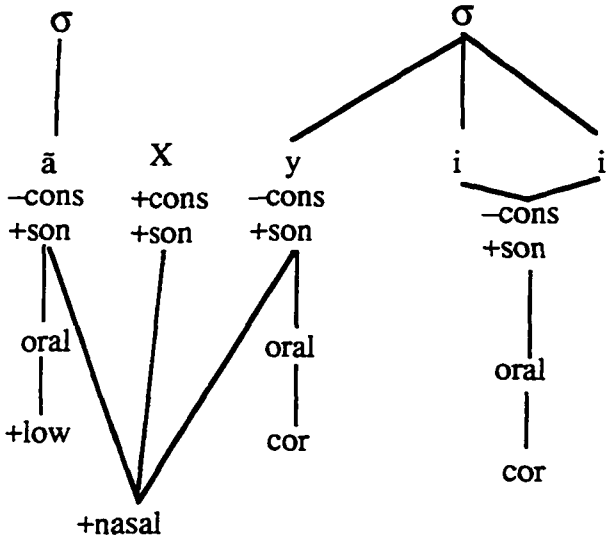
Next, [+nasal] spreads right; but there is no consonant node there.

4.89



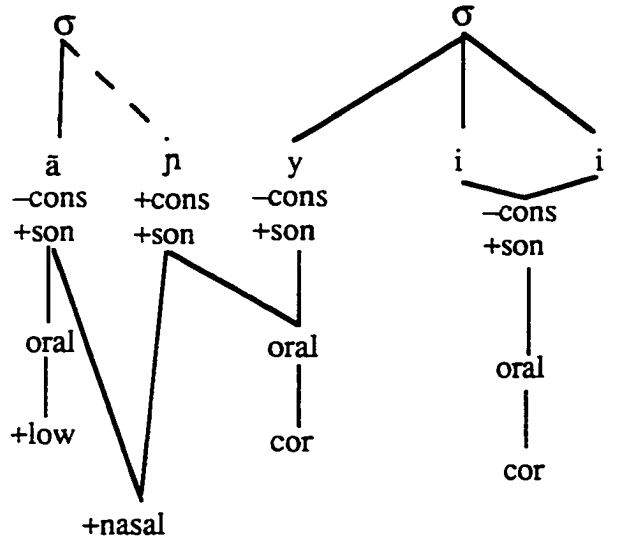
Since there is no consonant root node to the right, insert one.

4.90



However, the epenthesized segment is not really a placeless nasal in this case: it shares an oral place of articulation with the /y/. When the [+nasal] spread right in 4.89, it did not link to a consonant node, but it did find a place of articulation.

4.91



Thus [āɲ.yīĭ] surfaces as a two-syllable word.

4.5.1.5 Derivation of [ībáɲì]/[ībáɲì] 'the matter'

One process that is difficult to explain without this analysis is a process involving definite article, a suffix [-i] (see discussion on pages 55-57, section 4.1). A first investigation seems to indicate the the definite article has three allomorphs: [ŋi] or [ɲi] with vowel-final nouns, and [-i] with consonant-final nouns. But a closer look reveals that [-i] occurs even with some vowel-final nouns:

4.92	kūhū	'mat'	kūhūĭ	'the mat'
4.93	ìmà	'water'	ìmàì	'the water'

Compare these examples with the following:

4.94	ɪ̄k͡pìsɔ̀	'chairs'	ɪ̄k͡pìsɔ̀ɲĭ	'the chairs'
4.95	ībá	'story/matter'	ībáɲì	'the matter'

4.96	ībá	'story/matter'	ībáŋì	'the matter'

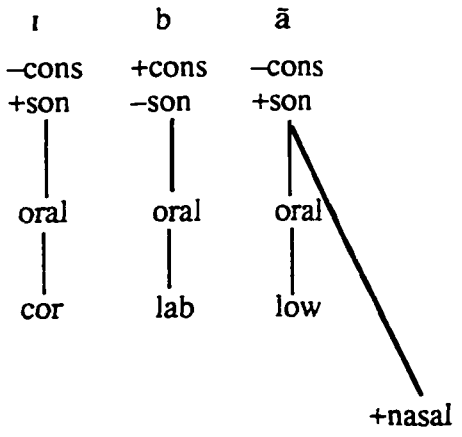
Neither is it possible to say that the nasal consonants are neutralized in this environment. Many nouns ending with a nasal consonant simply suffix [-i]:

4.97	āmfɔ̀n	'cloths'	āmfɔ̀nì	'the cloths'
4.98	kīkɔ́m	'corpse	kīkɔ́mī	'the corpse'
4.99	àtîyàāŋ	'husband'	àtîyāŋì	'the husband'

The analysis outlined in this section gives a very satisfying solution to this problem. The definite article is [-i] and it has no other forms. The alternations that occur are stem-final alternations of the noun. Nouns that end with a nasalized vowel in the underlying representation show variability in the surface form. Without the definite article suffix, they may surface with or without a nasal consonant--and the nasal consonant is always [ŋ]. With the definite article, a [+nasal] vowel always surfaces, but sometimes as [ŋ] and sometimes as [ɲ]. I will show how a difference in rule-ordering gives rise to these variations.

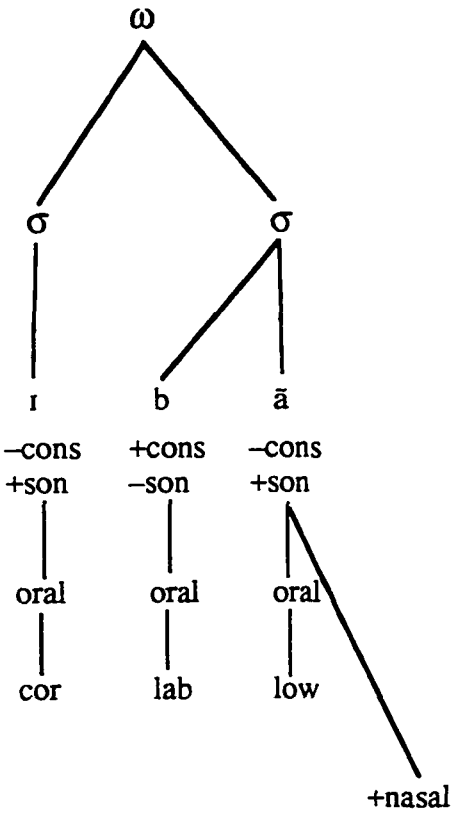
The word [ībáŋì]/[ībáɲì] 'the matter' consists of two morphemes, the noun [ībā] and the suffix [-i]. If the [+nasal] spreads before the word is syllabified, the surface form is [ībáɲì]; if syllabification occurs before spreading, then the outcome is [ībáŋì]. The underlying representation of the noun is:

4.100



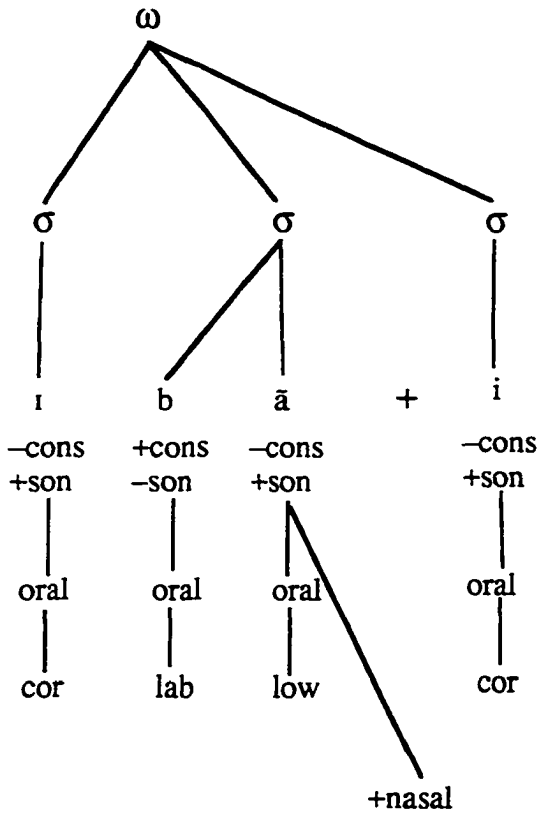
If we license the segments as the next step, then the derivation differs little from the derivation of [kitu]/[kituŋ]--at least, not until the suffix is added.

4.101



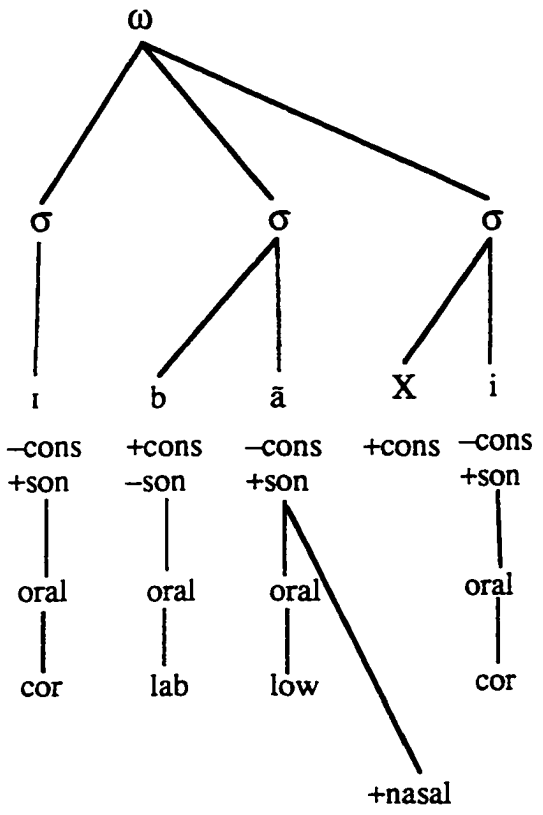
Next, the suffix [-i] is added; I assume that at this point in the derivation, the suffix is also syllabified.

4.102



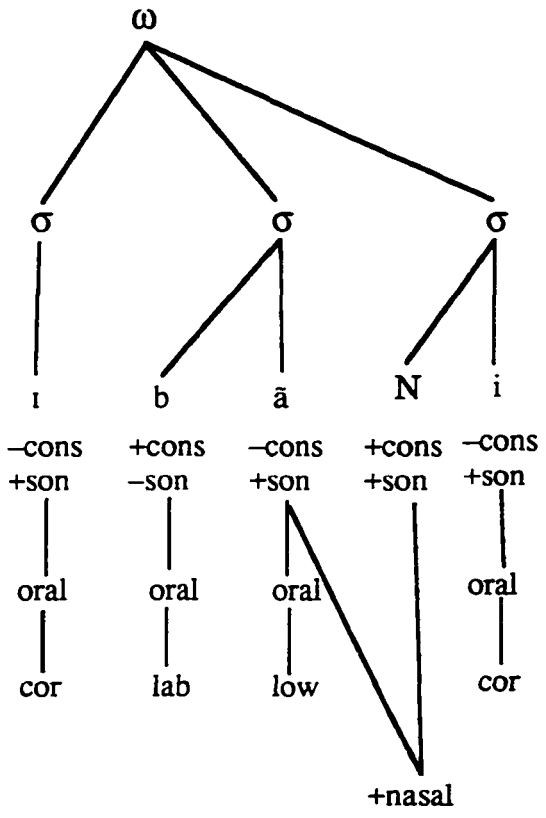
Kuche only allows onsetless syllables word-initially. The last syllable of the word is illegal at this point in the derivation. According to Itô (1989:228), epenthesis is one method of enforcing syllable structure. An empty consonant node is inserted and incorporated into the last syllable.

4.103



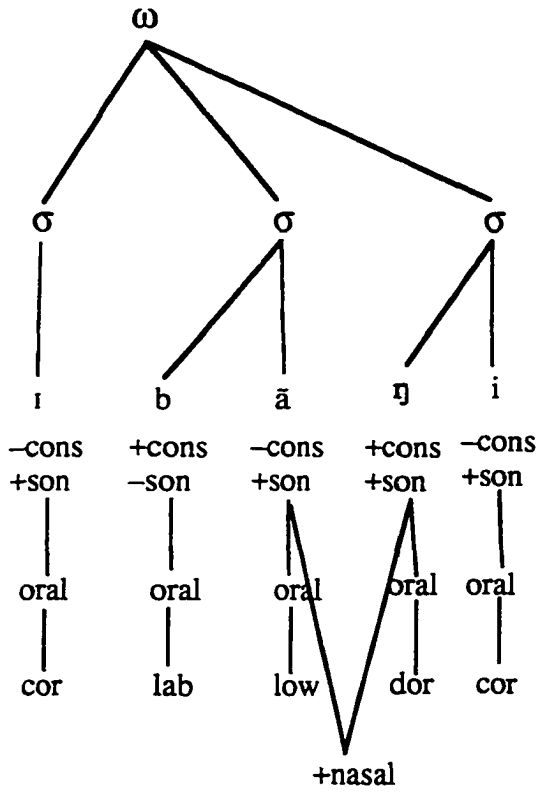
The [+nasal] spreads to this syllable onset, just as it would to a fully-specified consonant. Since [+nasal, +cons] must also be [+son], that feature is filled in here.

4.104



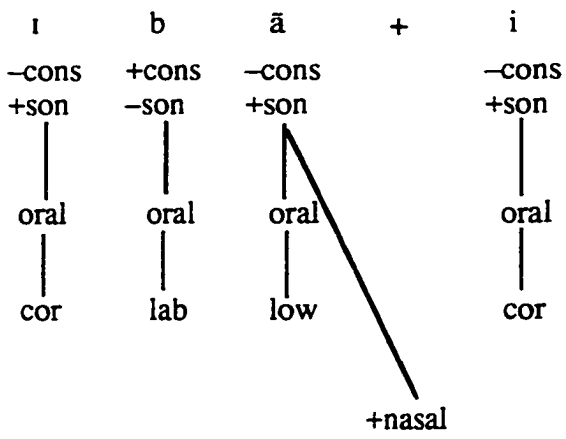
By default, the placeless nasal consonant is specified [+dorsal].

4.105



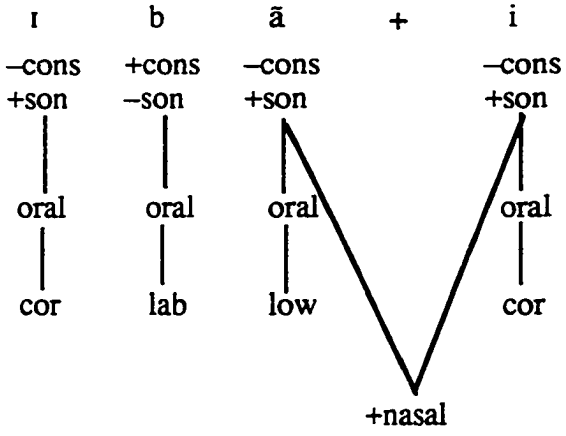
But, apparently, nasal spreading can take place earlier in the derivation, if we assume that the licensing of segments need not be the first step. In order to get the surface form [ɪbáɲì], the nasal spreading and linking to [Place] must occur before syllabification. The underlying form, once again, is:

4.106



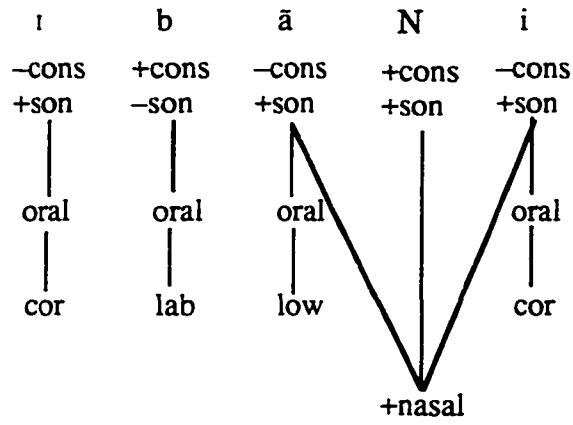
And the morpheme boundary does not prevent spreading of [+nasal]:

4.107



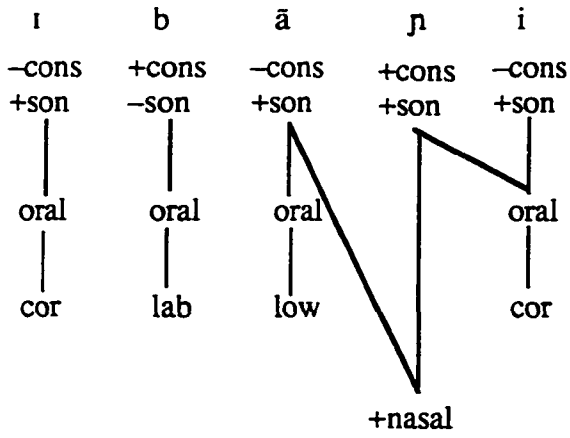
Since the [+nasal] has not linked to a consonant node, a consonant is epenthesized.

4.108



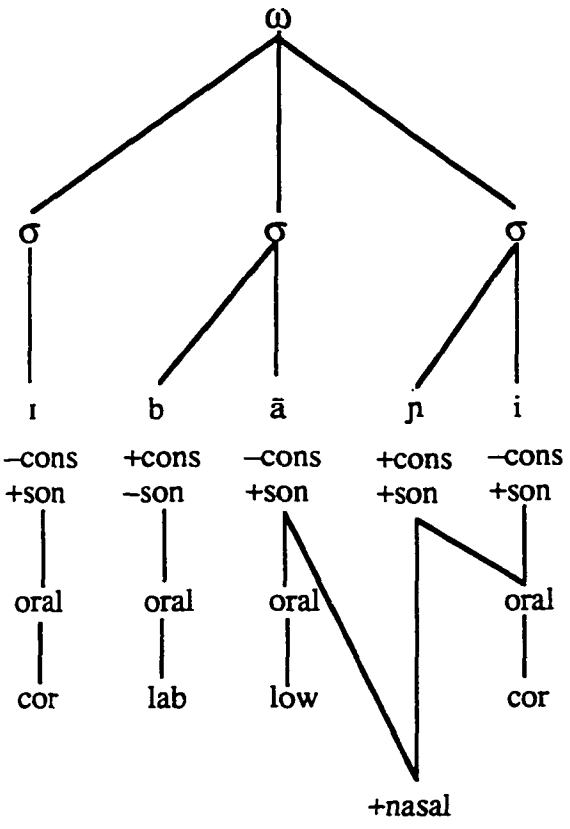
But the epenthesized nasal is not really unspecified for place at this point; it is already linked to the coronal place of the [i].

4.109



Only after the [+nasal] has spread to the coronal segment [i] are word and syllable structure enforced.

4.110



4.4.2 Problems and Solutions

This analysis of syllables in Kuche solves some problems, but leaves at least one question unanswered. In particular, some processes of suffixation are illuminated by this analysis, but other suffixes are still rather mysterious.

One problem that is puzzling without this analysis is an epenthetic [i], which is often inserted between stem and suffix.* For instance, the object of a verb is a separate word if the object is a noun, but if it is a pronoun, the object is a suffix, as in 4.111:

---

* Sometimes [i] is even inserted between words--especially between a consonant-final word and a consonant initial word.

4.111 â-tús kĩŋgbúŋ â-túsĩ-kĩ
she-plucked (a) fig but she-plucked-it

The analysis outlined in this chapter illuminates this process. The motivation for the epenthetic [i] between the verb stem /tús/ and the object pronoun /kĩ/ becomes clear when the word is compared to the syllable and word templates. Kuche requires all syllables to be open; the [s] at the end of /â-tús/ is tolerated because it is on the word margin--it is extraprosodic. When the consonant-initial suffix is added, the [s] is no longer on the word margin; syllable codas are not allowed, so [s] must become a syllable onset if it is to be preserved.

The apparent variation of the definite article is also explained by this analysis. The derivation in 4.82-4.86, above, (kĩtu/kĩtuŋ) would indicate that the [+nasal] that surfaces there as /ŋ/ is part of the stem, not part of the suffix: it is the realization of the nasalized root-final vowel. Once this process is identified as a stem-final process instead of a process of the suffix, the alternation is easier to understand. The alternation between /ŋ/ and /ɲ/ before the definite article is likely a result of a difference in rule-ordering. The alternation in rule-ordering is in free variation--at least I cannot discover any *phonological* context that conditions it.

Still puzzling, however, is a certain vowel-initial suffix; verbs ending in an obstruent often lose the obstruent when the object pronoun /-u/ is suffixed. For instance, the verb for 'give' is /-nĩk/; add the pronoun and derive not */-nĩkũ/, which looks perfectly acceptable, but /-nũː/.

4.5 Conclusion

Although Kuche has syllables that are phonetically closed, the evidence points to a syllable template that allows only open syllables. Closed syllables are phonetic realizations of nasal vowels, or they are manifestations of an extraprosodic segment at the word edge. This analysis explains phenomena of Kuche that are otherwise quite puzzling, for example:

4.112 (a) Words that alternate between a /V/ ending and a /Vŋ/ ending.
(b) Epenthetic vowels.
(c) Suffix alternations.

However, not all phonological processes of the language are completely explained by this. Further reseach is needed to explain why obstruents are deleted before a vowel-initial suffix.

Though more research into the syllable structure of Kuche is warranted, this chapter provides a foundational understanding. Other important phonological processes occur within the prosodic framework outlined here.

CHAPTER 5

VOWEL HARMONY

Like many languages of West Africa, Kuche exhibits vowel harmony. Different types of vowel harmony are evident at different levels: there is harmony at both the morpheme level and at the word level. A theoretical description is yet to be worked out, but this chapter outlines the observations that have been made.

5.1 Morpheme

First of all, a morpheme usually contains the same vowel in each syllable (first brought to my attention by Audrey Johnson, personal communication). This is true of noun roots, verb roots, adjective roots, and adverbs. Words of other classes--pronouns, prepositions, and conjunctions--are usually only one syllable long, so it is difficult to determine whether or not they conform to the pattern. The one pronoun that is two syllables, though--the direct object pronoun 'us'--does conform: [-ata].

Here are some two and three-syllable adverbs:

5.1	dɛ̄dɛ̄r	'correct'
5.2	dɔ̀lɔ̀lò	'long'
5.3	fáŋfálá	'thin & flat' (like paper)
5.4	pɛ̄pɛ̀sɛ̀k	'too brittle or breakable'

The phenomenon is not as easily observed in nouns, because the noun root never stands alone--it always occurs with a prefix. Here are some three and four syllable nouns:

5.5	kī-tɔ̀sɔ́	'bundle of grain'
5.6	kɔ̄-gbàràdà	'strength'
5.7	ì-vìvì	'finger'
5.8	kē-mūsùk	'dribbling'

An adjective must agree with the noun it modifies, so it also occurs with a prefix--one that varies depending on the noun. Because of the variability, adjectives in the appendix are often cited without any prefix, even though they would never actually be used in context like that. This fact makes it easy to identify an adjective in context, but not so easy to identify one in the word list. Here is one adjective from a context where it modifies a class 6 noun:

5.9	bà-kālà	'white'

Verbs usually occur with a prefix, too; but the citation forms in the appendix are recorded without any prefix, since the prefix varies. The longest verb roots are bi-syllabic, at most CVCV(C). Here are some two-syllable verb roots:

5.10	-yɛ́sɛ̄	'sell'
5.11	-ɰ̣àsà	'wash'
5.12	-tūsù	'push'
5.13.	-dĭrĭ	'turn'

Many exceptions to this general pattern are words ending with diphthongs. These words may be mono-syllabic or they may be longer. Again, the exceptions come from all the major word classes.

5.14	a-bàdàɪ	(noun)	'girdle'
5.15	-ʋ̀ɔ̀ɪ	(verb)	'begin'
5.16	fɔ̄u:	(adverb?)	'peace of mind'
5.17	lèɔ̀	(adverb)	'tending to fall'
5.18	ĭ-gégéi	(adjective)	'good'

Some exceptions to the single-vowel pattern turn out to be compound words and not mono-morphemic; for instance:

5.19	kātāàkūrù	'heaven'
	But notice:	
5.20	kā-tàt	'top/on top'
5.21	kū-rù	'god'
5.22	-ʧɔ́kēnū	'chew'
	But notice:	
5.23	-ʧɔ́k	'make'
5.24	kē-nū	'mouth'

However, there are enough exceptions to this generalization that it is not likely a hard and fast rule of the language. In the following examples, all known morpheme boundaries are marked; the longer morphemes all have two different vowels.

5.25	ʤɔ̀kɔ̄mpāt	'sweet taste, good'
5.26	ĭŋ-kērēhĭ	'money'

5.27	ɑ̃n-tɑ́vīn	'type of edible leaf'
5.28	à-dɑ̀ŋ͡kpʸɛ̄t	'termite'
5.29	-hīlɛ̀	'return'

Though it is not an exceptionless rule, there does seem to be a vowel harmony operative at the morpheme level. A morpheme tends to select a single vowel which is repeated in each syllable of the morpheme.

5.2 Word

In an earlier work (Wilson, 1996), I argue that the vowels of Kuche are divided into two harmony groups distinguished by tenseness/laxness. Acoustically, the tense/lax distinction is based on a difference in formant structure. The approximants /ʏ/, /y/, and /u̟/ can also be distinguished by tenseness and laxness. The two groups are:

Tense		**Lax**	
ʏ	u̟	y	
i	u	ɪ	ɷ
ɐ		ɛ	ɔ
		a	

Notice there is a gap among the lax segments, where a lax /w/ might be expected. This is a significant gap because the approximants seem to participate in the word-level harmony process. However, the acoustic characteristics of /u̟/ vary over a wide range: as wide a range as is covered by tense /ʏ/ and lax /y/ together. (Further discussion below, section 5.2.1.)

5.2.1 Acoustic Characteristics of Tense/Lax

There are three specific acoustic differences between tense and lax vowels and approximants (Wilson, 1996).

5.30 Formant values of the lax segments vary widely, while tense segments tend to have a more consistent formant structure. The lax vowels can vary so much that it is hard to determine where the steady state is, because co-articulation with surrounding consonants may reach clear into the middle of the vowel--from both ends. The tense vowels and glides have a more consistent and persistent steady state, without as much assimilation to surrounding segments.

5.31 Tense segments have more "empty space" in their spectrograms. At least two of their formants are widely spaced.

5.32 Lax segments tend to have more energy at more frequencies than the tense ones: formant bands include more harmonics, and even between formants more energy is evident (see Redenbarger, 1975 for measurement of formant bandwidth of [±ATR] vowels).

The "empty space" (#5.31) associated with tenseness is actually expressed as voicelessness in the tense approximants. Although tense vowels do not have as much energy as the lax vowels (see figure 2), the voicing never actually disappears from the spectrogram, the way it does for the tense approximants (see figure 3). The main difference between /y/ and /ʏ/ is voicing, although there is also some aspiration associated with /ʏ/. The labio-velar approximant /w̬/ is not divided by native speakers into two

phonemes, even though it may occur as either voiced or voiceless, aspirated or unaspirated (see figure 4).

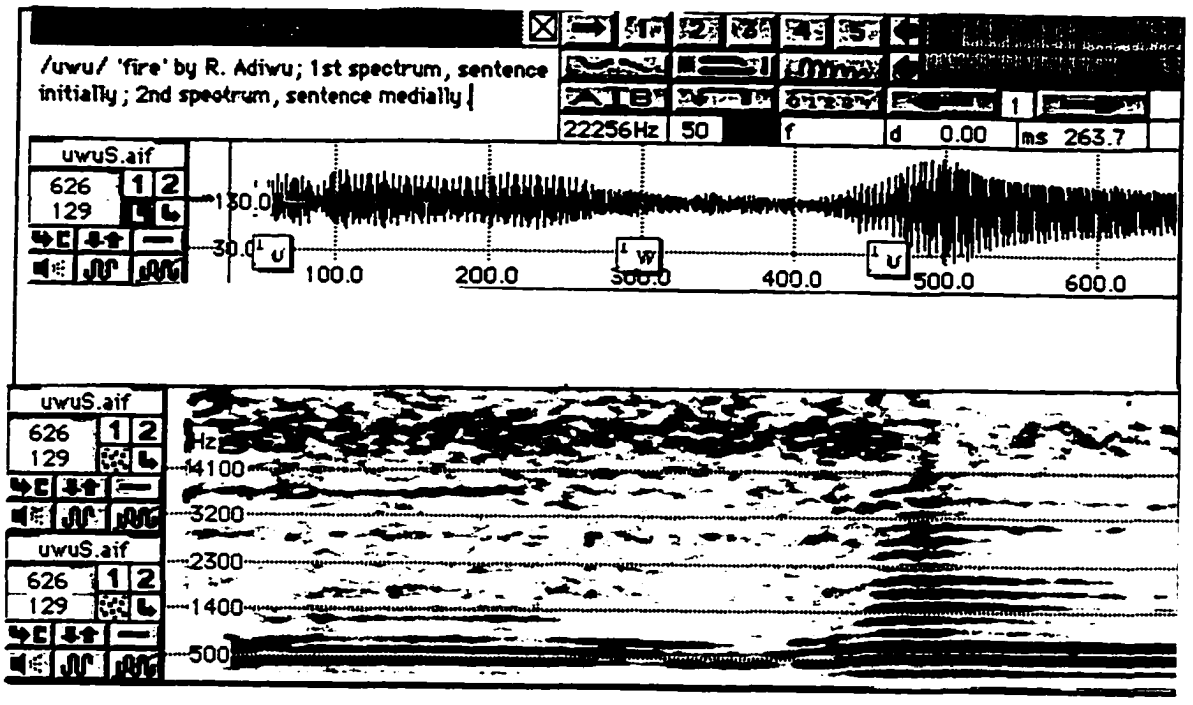


Figure 2. Formant structure of tense /u/ and lax /ʊ/. /uwʊ/ 'fire' contains both /u/ (word-initially) and /ʊ/ (word-finally). Note the many dark bands indicating energy at many different frequencies in /ʊ/. By way of contrast, the /u/ has only a few bands of energy and they are less intense.

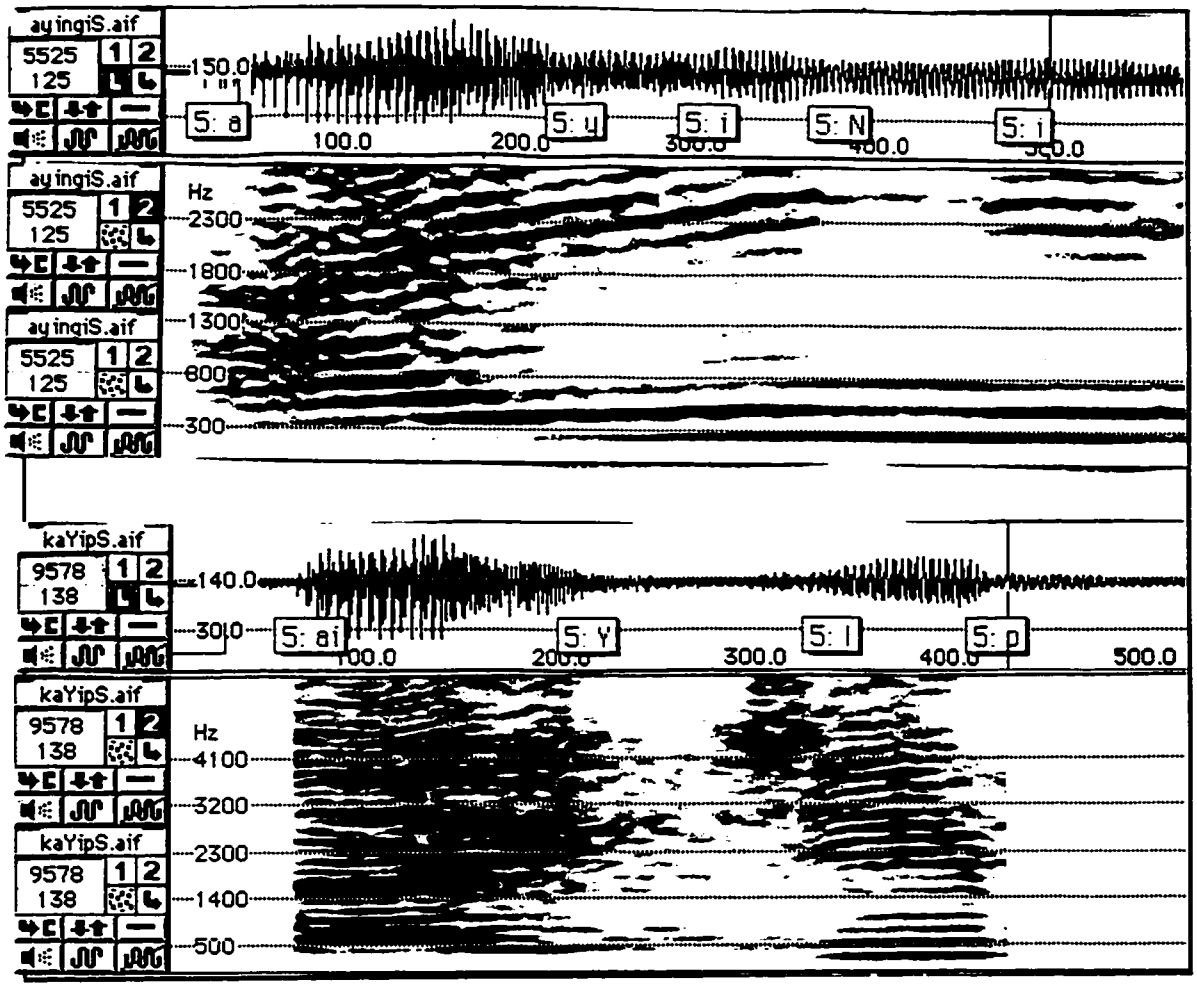


Figure 3. Formant structure of tense /ɤ/ and lax /y/. /y/ is articulated between 200 ms. and 300 ms. (time labels appear in the top panel). The second panel is the spectrogram, showing dark bands of energy near 300 Hz. and up around 2300 Hz. The lower panels represent /kaʏɪp/ 'arrow for sewing' with /ɤ/ between 200 ms and 300ms. The bottom panel shows the spectrogram, with bands of energy trailing off completely into white space as the voicing disappears during /ɤ/.

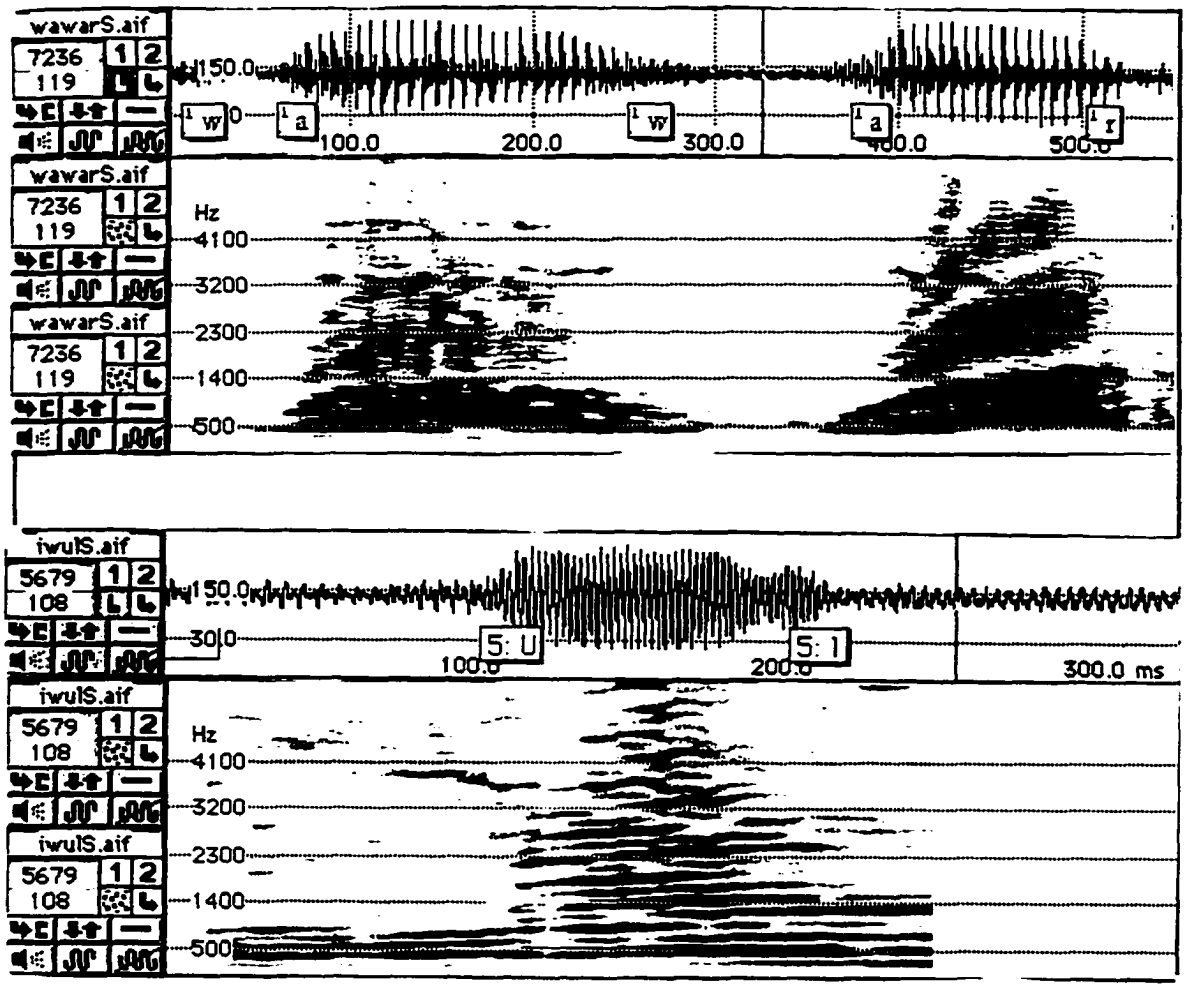


Figure 4. Two Instances of Formant Structure of Tense /ɰ̣/. In the spectrogram of /ɰ̣awɑ̣ɑ̃/ 'quickly' (second panal from the top), both /ɰ̣/'s disappear into voicelessness. The second recording should have been 'goat' /ɪɰ̣ɷol/, but the initial vowel was missed off the recording: the /ɰ̣/ continues from the beginning of the recording up to about 100 ms. Several bands of energy are apparent at around 500 Hz. (bottom panel). Both instances of /ɰ̣/ are considered the same phoneme by native speakers.

5.2.2 Generalizations

Evidently, the tense vowels are marked in Kuche, and the lax vowels are unmarked. Tense vowels occur in few words than lax vowels; in fact, there are no tense mid-vowels at all, only the lax /ɛ/ and /ɔ/. Even among the high and low vowels, the lax ones are much more common. Though there is no lax labio-velar approximant, /w̰/ (which is tense) does not occur in many lexical items; and the lax palatal approximant is much more common than either of the tense approximants. Since the tense vowels and approximants are evidently the marked ones, the observations concerning the tense/lax distinction are stated in terms of tenseness. Here, the most consistent generalizations are listed first and the less consistent ones come last:

5.33 Tense /ɐ/ never occurs in a syllable adjacent to a mid-vowel /ɛ/ or /ɔ/, not even when the phonetic realizations are closer to [e] and [o].

5.34 Tense /ɐ/ and tense /u/ occur in adjacent syllables.

5.35 Tense /ɐ/ and tense /ʏ/ occur in adjacent syllables (as adjacent segments).

5.36 *Tense* /w̰/ and *lax* /ɷ/ occur in the same syllable (as adjacent segments).

5.37 Tense /ɐ/ and tense /i/ occur in adjacent syllables.

5.38 Tense /i/ and tense /u/ occur in adjacent syllables.

The important generalization may be that the tense vowels occur in adjacent morphemes, rather than in adjacent syllables. Since morphemes tend to select a single vowel which is repeated throughout, there is not much opportunity for an additional harmony process except across a morpheme

boundary. The tense/lax harmony process can be seen at work between noun class prefixes and noun and adjective roots, as well as between subject concord prefixes and verb roots. Words that exemplify the above generalizations are:

5.39	/ɐ/ never with /ɛ/ and /ɔ/	bā-ʧɛ́:	'Bache people'
5.40	/ɐ/ never with /ɛ/ and /ɔ/	kām-pɔ̀tɔ̀k	'water canteen'
5.41	/ɐ/ with /u/	ē-hú	'mats'
5.42	/ɐ/ with /ʏ/	bē-ʏíp	'thieves'
5.43*	/ʉ̩/ with /ɷ/	ì-ʉ̩ɷ́l	'goat'
5.44	/ɐ/ with /i/	èŋ-kì	'hawk'
5.45	/i/ with /u/	ì-ʉ̩ū	'dog'

The first two generalizations (#5.33 and #5.34) are exceptionless. The third generalization (#5.35) has some exceptions, but only one or two. An exception is:

5.46	kāʏíp	'arrow for sewing'

The exceptional pronunciation of this word may be maintained in order to distinguish it from 'theft,' which is transcribed [kēʏíp] (but also [kēʏíp]).

Generalization #5.36 is very hard to explain and still maintain an argument of tense/lax *harmony*. It may be that #5.36 is not a generalization

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* The [w] in /ìʉ̩ɷ́l/ 'goat' is voiced, not voiceless; but it is phonemically the same as /ʉ̩/.

reflecting the harmony process, but just a statistical reality. The segment transcribed as [ʉ̟] or [w] in the appendix only occurs before /a/, /ɐ/, /u/, /ɷ/, and /ɔ/ (the allophone that occurs before /ɪ/ and /ɛ/ and /i/ is [ɥ]). It just so happens that not many lexical items contain /ʉ̟/, nor do many lexical items contain /ɐ/ or /u/. So the probablity of lexical items containing the sequences [ʉ̟ɐ] and [ʉ̟u] is low. However, I do not find this explanation very satisfying myself.

More satisfying, in fact, is speculation on historical process. I hypothesize that in the recent past, there were two /w/ phonemes--one voiced and one voiceless--and that they have coalesced. During data collection, it was nearly impossible to distinguish the phonetic difference between /y/ and /ʏ/ without a native speaker to inform me each time: I am sure it is just as hard to distinguish voiceless [w] from voiced [w]. It is very likely that this phonetic distinction is not made in the word list; had it been made, it would probably be discovered that voiced [w] occurs before lax /ɷ/ and voiceless [w] occurs before the less common /u/. But all this is material for further research.

Another reason for not accepting a merely statistical explanation is that the exeptions are so few and they may be motivated by the need to maintain lexical uniqueness. For instance:

5.47 ìʉ̟ū 'dog' ìʉ̟ɷ̃ɷ́ 'mosquito'

Although tone also distinguishes these forms from each other, the final vowel is the only other important difference. The difference in the initial vowel is probably not constrastive. I assume that harmony is con-

trolled by the vowel of the root, so that the tenseness of the prefix vowel is determined by the root vowel.

Exceptions to #5.37 and #5.38 are more frequent:

5.48	àm-pīp	'mildew in corn'
5.49	kūn-ʃīp	'carpentry'
5.50	ɷ̄-zí	'(my) friend'

In the last example /ɷ̄zĭ/, it is difficult to determine all morpheme boundaries; the word for 'his friend' is /ɷ̄zànà/. If indeed, /-i/ in /ɷ̄zí/ is a separate morpheme, then /ɷ/ and /i/ do not stand in adjacent morphemes; if the morpheme boundary is indeed the pertinent criterion, then /ɷ̄zĭ/ might not be an exception to harmony process.

5.2.3 Noun Prefixes

Since the word list in the appendix cites all nouns with their prefixes, the one morpheme boundary that is consistently documented there is the noun-prefix/noun-root boundary. It should be noted that the vowels in the noun class prefixes are the two low vowels and the four high vowels. Only an occasional feminine proper name begins with a mid vowel. It is not likely a coincidence that only the vowels occurring in the noun prefixes have both tense and lax versions. The noun class prefixes listed in table 2.1 (page 13) are repeated here; but here, in table 5.1, both versions of each prefix are listed.

TABLE 5.1
NOUN CLASS PREFIXES WITH ALTERNATIONS

Singular Classes		Plural Classes	
Class 1	ū ~ ɷ̄ à ~ è ɔ̄	Class 2	bā ~ bɛ̄
Class 1a	Ø	Class 2a	bān ~ bɛ̄n
Class 3	ū ~ ɷ̄	Class 4	i(N) ~ ɪ(N)
Class 5	kī ~ kī	Class 8	ā ~ ɛ̄
		Class 6	bà(N) ~ bè(N)
Class 7	à ~ è	Class 8	ā ~ ɛ̄
Class 9	ì ~ ì	Class 10	ī ~ ī
Class 11	kū ~ kɷ̄	Class 8	ā ~ ɛ̄
Class 12	ka ~ kɛ	Class 4	i(N) ~ ɪ(N)
Class 14	ū ~ ɷ̄	Class 15	kù ~ kɷ̀

It might be even more appropriate to cite the prefixes as containing archiphonemes--vowels specified for everything but tenseness. Then, three archiphonemes are the only vowels in the list of noun class prefixes (except for the /ɔ/ variant in class 1).

TABLE 5.2
NOUN CLASS PREFIXES WITH ARCHIPHONEMES

Singular Classes		Plural Classes	
Class 1	U/A/ɔ	Class 2	bA
Class 1a	Ø	Class 2a	bA(N)
Class 3	U/A	Class 4	I(N)
Class 5	kI	Class 8	A
		Class 6	bA(N)
Class 7	A	Class 8	A
Class 9	I	Class 10	I
Class 11	kU	Class 8	A
Class 12	kA	Class 4	I(N)
Class 14	U	Class 15	kU

A representation such as table 5.3 captures the generalization that each morpheme above is specified for every feature of every segment, except for the tenseness of the vowel. Tenseness is filled in to correspond with the tenseness of the noun root.

CHAPTER 6

ORTHOGRAPHY PROPOSAL

Phonological analysis is more than just categorizing and theorizing; it has practical applications. Among other things, phonological analysis lays the groundwork for a logical, accurate orthography. Without a standardized orthography, written liturature is seldom produced and children never have the benefit of learning to read in the language they speak best.

Up till now, the Bache people have had no program for teaching their language in Nigerian public schools. This situation is not unusual in Nigeria. Few of the 400 or so minority languages have any literacy program, even though the official view of educators is that primary education should be in the mother tongue of the pupil (Afolayan, 1980). Lack of funds and lack of trained personnel keep this goal from becoming reality. Illiteracy is a serious problem for Third-World countries; as a recent Nigerian minister of Education, Professor Babatunde Fafunwa, has observed, "Education may be expensive but ignorance costs even more" (Ayeni, 1990).

Although it will take more than an orthography to launch a mother-tongue literacy program in Kuche, an orthography is the essential first step. "Ideally the writing system should match the linguistic analysis of the language" (Van Dyken & Kutsch Logenga, 1993). The linguistic analysis

appears in chapters 1-5; this chapter outlines a tentative orthography based on that analysis.

The orthography proposed in this chapter differs from the old orthography of the 1930s and 40s in several ways:

6.1 The previous orthography did not mark tone, even though tone is crucial in distinguishing certain lexical items and grammatical categories. The current proposal suggests marking all tones (see Gudschinsky, 1973:123).

6.2 Long vowels were not indicated. It is a fairly simple matter to write long vowels as a sequence of vowels.

6.3 Some allophones were previously represented in the writing system. Specifically, [ʃ] is an allophone of /s/, but the two sounds are written "sh" and "s" in the older orthography. Also, [ɥ] is an allophone of /w̬/, but a digraph "yw" is used to distinguish [ɥ] from /w̬/. This proposal recognizes the allophonic variation, but recommends representing only phonemes in the orthography (see Gudschinsky, 1973:119).

6.4 The previous orthography did not distinguish tense vowels from lax vowels. Tense/lax vowels are common in West African languages, and there are several devices in use to represent these features (see Williamson, 1993:218). A fairly simple representation is proposed here.

6.5 The English digraph "ng" represents the velar nasal in the old orthography, and a trigraph "ngy" represents the palatal nasal. I recommend use of a diacritic to represent [ŋ] and a digraph for [ɲ].

6.6 Subject concord markers, tense/aspect markers, and object pronouns are all written separately from the verb in the old orthography. Also, the definite article is sometimes written separate from the noun. Grammatical criteria and phonological criteria suggest these items are affixes (see Van Dyken and Kutsch Lojenga, 1993).

Suggestions for indicating tone and vowel length are presented first. Following those suggestions is justification for writing verb aspect markers and certain pronouns as affixes. The proposed letters of a Kuche alphabet are listed on pages 112-116. Last of all are suggestions for dealing with the nasal vowels that tend to surface as nasal syllable codas.

6.1 Tone and Vowel Length

Words that are distinct in meaning and distinct in their phonetic realization need to be spelled differently (see Gudschinsky, 1973:124). Some Kuche words differ only in the length of the vowels or in the tone. For instance the words [ínt͡ɔ:] 'I see' and [ɪ̀nt͡ɔ̄] 'iron' are different in meaning; and, although the sequence of segments is the same, the phonetic realizations are different. In order for a reader to disambiguate the meaning, the orthography should differentiate the two words in print.

Two separate devices can help to differentiate "iron" from "I see." First of all, long vowels can be written as a sequence of two vowels. Then, 'I see' would be written "intoo" and 'iron' would be written "into." Marking tones also helps to differentiate similar words. Kuche has three tones, high, medium and low; I recommend marking at least the high and low tones; mid tone could be left unmarked. An acute accent marks high tone (á) and a

grave maks low tone (à); if mid tone were marked, a macron (ā) could be used. If the orthography includes tone marks, then 'iron' and 'I see' would be spelled "ìnto" and "ī̀ntoo."

In this particular case, it may be redundant to mark the tones, because 'I see' and 'iron' could be differentiated simply on the basis of the double 'o'. However, Kuche has other pairs of words that differ *only* in tone. For instance, many singular/plural noun pairs differ only in the tone of the first syllable. For example, one 'termite' is "ìyás" (low tone on the "i-" and high tone on the "-yas"), but more than one 'termite' is "īyás" (mid tone on the "i" and high tone on the "-yas"). Tones are also important in distinguishing the tense/aspect of verbs: the only difference between 'I will see' and 'I can see' is the tone pattern. The first syllable of 'I will see' is pronounced with a medium tone followed by a low tone: "īìntōo." The first syllable of 'I can see' is different, though; it is pronounced with a low tone followed by a medium tone: "ìīntōo." The difference between 'I can see' and 'I will see' needs to be indicated in the orthography.

6.2 Some Word Boundaries

I argue that, based on linguistic criteria outlined by Van Dyken and Kutsch Lojenga (1993), word boundaries should not be written between:

6.7 A noun and the definite article.

6.8 The subject concord and a verb.

6.9 The tense/aspect marker and a verb.

6.10 The modal marker and a verb.

6.11 A verb and the object pronoun.

Van Dyken and Kutsch Lojenga (1993) list twelve linguistic criteria for deciding if an utterence is one word or more than one word: three are semantic criteria, three are grammatical, three are phonological, and the last three refer to interaction among these three sets of criteria. The grammatical and phonological evidence indicates that all morphemes before the verb root are prefixes. The tense/aspect markers, the modal markers, and the definite article are affixes even on a semantic basis. However, the evidence for interpreting object pronouns as suffixes is less conclusive; writing them as suffixes is a tentative proposal. Further research may turn up evidence to support or reject it.

6.2.1 Semantic Criteria for Word Boundaries

The semantic criteria for interpreting an utterance as a word are (1) referential independence, (2) conceptual unity, and (3) minimal ambiguities. On the basis of referential independence, tense/aspect and modal markers cannot be separate words because they have no referential meaning (no denotational meaning) apart from the verb. Of all the criteria, referential independence is the "fundamental base," providing "the essential point of departure before applying other criteria" (Van Dyken & Kutsch Lojenga, 1993:7). This criterion indicates that it is highly unlikely for tense/aspect and modal markers to be independent words--unless there is compelling grammatical or phonological evidence to the contrary. But there is little evidence of any kind to the contrary; most of the grammatical and phonological evidence supports the same conclusion.

6.2.2 Grammatical Criteria for Word Boundaries

The grammatical criteria for separating utterances into words are (4) mobility, (5) separability, and (6) substitutability. None of the morphemes mentioned above (in 6.7-6.11) are mobile: they are never found anywhere in the sentence except adjacent to the noun or verb root. It is true that the subject concord can be separated from the verb by the tense/aspect morpheme. This is not evidence, though, that it is separable from the verb; it is merely evidence that tense/aspect and modality are more tightly bound to the verb than is subject concord. Prefixes may be separated from the root word by other prefixes, provided the prefixes always take their prescribed order. On the basis of criteria 4 and 5, the object pronoun is also an affix; however, criterion 6 presents evidence to the contrary.

Criterion 6 says that a grammatical morpheme "is also separated off as a distinct word when it can fill the same position in a sentence as other independent words defined by Criteria 1-3" (1993:10). The fact that the object pronoun can substitute for a lexical noun in a sentence gives weight to the argument that it is a separate word. In the following example, I have written the pronoun as a suffix, although the noun is a separate word.

6.12.	â-tús	kîŋ͜gbúŋ	â-túsî-kǐ
	she-plucked	(a) fig	she-plucked-it

Though the evidence is ambiguous, I propose writing the object pronoun as a suffix.

6.2.3 Phonological Criteria for Word Boundaries

The phonological criteria that help determine if an utterance is a word are (7) pronounceability in isolation, (8) phonological unity, and (9) phonological bridging. One morpheme that is difficult for native speakers to pronounce in isolation is the definite article, a suffix [-i]. This is evident in the old orthography. Examples 6.13 and 6.14 are from the early scripture translation; note that when the definite article is used with a consonant-final noun, it is written as a suffix (see 6.13).

6.13 Ana batuki ba shi ki ngye,
But days.the they are PROG come,
But the days are coming. (Gospel of Mark 2:20)

However, when the definite article is used with a word that ends in a nasal vowel, the definite article is written as a separate word, and it takes the placeless nasal consonant along with it (for discussion of the placeless nasal consonant, see section 4.4.1).

6.14 Ba yu kutara-iwo-iba Kuru **ngi**,
They came.out room-to.hear-matter God the,
(As) they came out of the synagogue, (Gospel of Mark 1:29)

The reason the definite article drags along the nasal consonant is that they form a single syllable. Either the word-final consonant forms a syllable with [-i] (as in 6.13), or the placeless nasal forms a syllable with [-i]. The definite article [-i] is never pronounced alone because it is bound phonologically to the preceding consonant: onset-less syllables can only occur word-initially in Kuche. The early missionary translators did not

recognize the placeless (dorsal) nasal consonant as being a part of the preceding noun, but they did recognize it as being phonologically bound to the vowel.

I maintain that verbs in Kuche are incomplete without a prefix, and criterion 8 supports this argument. According to this criterion, it is necessary "to identify the characteristics of that phonological unit which most closely corresponds with semantic and grammatical words" (1993:12). That is to say, it is necessary to determine the phonological shape of a word.

There are two mismatches between the phonological shape of verbs and the shape of other words in the language. First, words in Kuche may begin with either vowels or consonants; however, verb roots only begin with consonants. Secondly, the pattern of segment length is different in verb roots than in other words of the language.

Vowel and consonant length of segments in several Kuche words were measured by computer and also evaluated perceptually by Scott Randal (1995). He comments,

> The most bizarre thing about this word list is the fact that every consonant in the middle of a two-syllable word sounds long, but consonants in three-syllable words sound short. The only clear consonant length differences in two-syllable words seem to be related to the forms that begin with ( ).

The "forms [in the word list] that begin with ( )" are, for the most part, verb roots--the empty parentheses hold the place of the subject concord prefix. The simplest explanation for the difference in consonant length is that two-syllable verb roots are really truncated three-syllable words.

6.3 Segments and Letters of Kuche

Though other linguistic criteria are listed in Van Dyken and Lojenga, I have not applied them to the Kuche data at this time. For good or ill, factors other than linguistic criteria also weigh heavily in orthography decisions. Three very important non-linguistic issues that an orthography must address are (1) convenience, (2) conformity, and (3) acceptability (Barnwell, 1989:88). An overriding orthography question in Third-World countries--one that relates to the issue of convenience--is often: "Will we be able to type our language on a typewriter?"

Many of the segments of Kuche are common cross-linguistically: segments often written with the Roman alphabet. But a few of them are more or less unique: my informants kept remarking that there was no way to write 'bald-headedness' [babᵛ ɛ]. Unique segments call for unique solutions. Although the Roman alphabet may not really be adequate for every language in the world, an orthography that includes only symbols on the typewriter keys is an orthography that is likely to be used.

Below is a list of the vowel and consonant phonemes of Kuche. Where the segments are common and there are established alphabetic symbols, only one letter is proposed. Two or three options from the typewriter keyboard are proposed for the unique segments. Columns are labelled:

Column 1 The phonetic symbol for each segment (IPA).

Column 2 The symbols on a standard typewriter that could represent each segment.

Column 3 A word in Kuche that contains the segment.

Column 4 The English meaning of the Kuche word.

Column 5 A brief description of the segment. Rather than giving a technical, phonetic description, I have given an informal description. The phonetic symbol implies the appropriate formal description, but the orthography should be useful to people who know nothing of phonetics. The descriptions below are useful for Kuche-speakers who are bilingual in English and also for language-learners who might be interested in learning Kuche.

TABLE 6.1

SUGGESTIONS FOR LETTERS FOR THE KUCHE ALPHABET

IPA	Letter	Kuche Word	English Meaning	Description of the Sound
a	a	gbāngbā	truly	Similar to English "a" as in "father."
ɐ	a̲	gbá̲ngbá̲	long ago	Similar to English "schwa" sound, like the "a" in "ahead." Or like what is called a "short u," as in "luck."
bᵛ	V	bàVē	baldness	English has no similar sound. The bottom lip comes inside the top teeth and is pushed out, making a flapping sound.
	bv	bàbvē	baldness	A second option.
	b̲	bàb̲ē	baldness	A third option.
b	b	bānît	people	Like English "b" as in "baby."
ʧ	c	àcái	light	Like English "ch" in "chin" or Hausa "c" in "ci" (eat).

Table 6.1. Continued.

IPA	Letter	Kuche Word	English Meaning	Description of the Sound
	ch	àchái	light	This option follows English orthographic conventions rather than Hausa.
d	d	dēdēr	correct	Like English "d" as in "do."
ɛ	e	bàntèn	beard	More often pronounced like the English "e" in "bed" than the "e" in "eight."
f	f	fūúmfūtūk	sweaty-looking	Like English "f" as in "fat."
g͡b	gb	gbá̱ngbá̱	long ago	English has no sound like this, but several other Nigerian languages have it, like Igbo. It is a "g" and a "b" pronounced at the same time.
g	g	àgàrà	basket	Like English "g" as in "against."
h	h	bàhī	liquor	Like English "h" as in "hot."
ɪ	i	bānīt	people	More like the English "i" in "sit" than the sound spelled with "ee" as in "seen." This "i" is pronounced with the lips relaxed.
i	i̱	kī̱tī̱	face	Like the sound that is spelled "ee" in English, as in "feet." This "i̱" is pronounced with the lips spread as if in a tight smile.
ʤ	j	kīnjīk	uncultivated land	Like English "j" as in "judge."
k͡p	kp	àkpāàsū	hero, expert	English has no sound like this, but Mumuye, another Nigerian language, does: for example, "kpiti"means 'heavy' in Mumuye. The sound is made by pronouncing "k" and "p" at the same time.
k	k	kīkàn	gourd	Like English "k" as in "kiss."

Table 6.1. Continued.

IPA	Letter	Kuche Word	English Meaning	Description of the Sound
l	l	lák	very	Like English "l" as in "look."
m	m	kī mènè	small granary	Like English "m" as in"man."
n	n	āmfèn	yams	Like English "n" as in "not."
ŋ	ng	ngū	you	Like English "ng" as in "sing."
	n̲	n̲ū	you	A second option.
ɲ	ny	nyàm	on the edge of doing harm	English does not have this sound, but Spanish does. English has borrowed the Spanish word "cañon" (pronounced caɲon), and we pronounce it and spell it "canyon."
	ñ	ñàm	on the edge of doing harm	A second option.
ŋ͡m	ngm	ìngmālá	laughter	English does not have this sound, but other Nigerian languages have it. For example, in Abuan (a language of Rivers State), "ooŋma" means "house bat." This sound is made by pronouncing "ŋ" and "m" at the same time.
	n̲m	ìn̲mālá	laughter	A second option.
ɔ	o	ìmòsò	meeting	American English does not use this sound, really, but the British often pronounce "Lord" or "north" with a sound similar to this. The British pronounce these words without an "r" sound after the "ɔ," but with the lips less rounded than for "snow" or "boat."

Table 6.1. Continued.

IPA	Letter	Kuche Word	English Meaning	Description of the Sound
o	o	Oja	woman's name	This is the very rounded "o" that you hear in the English words "no" and "low." It may be that this is just another way of saying /ɔ/ (that is, the "o" just above that is not underlined). If it is indeed an allophone of /ɔ/, then there is no need to distinguish it in writing.
p	p	pípītīk	sharp	Like English "p" as in "pot."
r	r	àràndó	cow	Not like the English "r," but like the "r" heard in many other African and European languages. The tongue briefly touches the roof of the mouth, just behind the teeth, in nearly the same place where "d" is pronounced.
s	s	kīsāk	name	Like English "s" as in "sun."
ʃ	s	āánsī	eyes	When "s" comes before an "i" or an "e," it sounds like the initial consonant in the English word "she." Native speakers make the adjustment in pronunciation automatically, so there is no need to represent this segment as different from "s."
t	t	kūták	cave	Like English "t" as in "tell."
ɷ	u	-túp	to fix on the handle	Similar to the English sound often spelled "oo" as in "stood" or "wool,"but not the sound in "boot." It is pronounced with the lips more relaxed, less rounded than in "u." Sometimes it seems very similar to English "o" as in "boat" or "snow."

Table 6.1. Continued.

IPA	Letter	Kuche Word	English Meaning	Description of the Sound
u	u	-tūp	plant, sow	Similar to the English sound spelled "u" in "Luke" or "oo" in "boot." It is pronounced with the lips very rounded.
v	v	ìvìvì	finger	Like English "v" as in "very."
w̥	w	ūwōk	river	A little different than English "w" as in "water." Native speakers describe it as *harder* than the English or Hausa "w;" it is relatively voiceless and there is slight friction at the velum, the point of articulation of [g].
ɥ	w	ìwērē	ritual	When a "w" comes before an "i" or an "e," it surfaces as [ɥ]--which is like a [w̥] and a [ʏ] pronounced together. Native speakers make the adjustment in pronunciation automatically, so there is no need to represent this segment as different from "w."
y	y	-yīp	sell	Like English "y" as in "yes."
ʏ	yh	-yhīp	steal	A little like "y" only *harder,* as native speakers say. The tongue comes closer to the roof of the mouth than in the ordinary "y," resulting in slight palatal friction. It is generally voiceless.
z	z	āzá	legs	Like English "z" as in "zinc."

6.4 Nasal Sounds

The nasal consonant phonemes in the above list occur only as syllable onsets and as word-final, extraprosodic segments. As discussed in chapter

4, other phonetic realizations of the feature [+nasal] represent underlying nasal vowels. The nasal vowels always link to a consonant node, and generally surface as a nasal consonant homorganic with the following segment. Word-final nasal vowels surface either as oral vowels, or as vowels followed by the dorsal nasal consonant. Only when a nasal vowel precedes an /h/ does [+nasal] surface on vowels only.

It is almost as if [+nasal] were a separate phoneme of the language--associated, like tone, with the vowels. Since it is a phoneme, it should have one and only one symbol to represent it in the language (see Barnwell, 1989:88). However, pressure from educated, bilingual speakers of Kuche is likely to veto any such suggestion. (See Gudschinsky, 1973:118 for discussion of the pressure from bilinguals. See Barnwell, 1989:89 for discussion of the importance of an orthography's acceptability.) Kuche speakers who read and write English or Hausa are accustomed to other writing systems, systems where [+nasal] cannot be considered a single phoneme. If the orthography is difficult for the educated people to use, then less educated people may never even have an opportunity to see it, much less use it.

The next best solution is to write [+nasal] in just two different ways. I propose writing [n] before most consonants, but writing [m] before labial consonants. The dorsal [ŋ] could be left unmarked, like it is in English; reading students would need to learn that if "n" comes before "g" or "k" or "w," it is pronounced just like "n" (or "ng," or whatever orthographic convention comes to be accepted for [ŋ]). And, although silent letters may not be ideal in an orthography, a silent "n" before "h" probably makes good sense. My language informants consistently wrote sequences like [ũhũ] as

[uŋhu]; the adjustment in pronunciation may be more natural for native speakers than for language researchers.

Examples of some common words as they would be represented in the proposed orthography are shown in table 6.2.

TABLE 6.2
KUCHE WORDS WITH A NASAL SEGMENT IN THE MIDDLE

English Meaning	Proposed Kuche Spelling	Pronunciation--written in IPA alphabet
end of rainy season	ūnhù	ūhõ
sun	ūmvĭ	õŋvĭ
money	ĭnkáránhĭ	ĭŋkērēhĭ
teeth	ānyii	āɲyĭ:
clean seeds	ĭngbé	ĭŋmgbé
women	ìmbà	ìmbà
bows	kūndàr	kõndàr

6.5 Orthography Decisions

The substance of this orthography proposal has been delivered to the Bache people. This proposal gives several options for problematic issues, and justification for suggested solutions. If the analysis presented in the first five chapters is sound, and if the speakers of the language find the tentative orthography to be convenient and acceptable, then a tradition of writing may be established among the Bache. The final decisions about a writing system for their language belongs, ultimately, to them and not to anybody else.

APPENDIX

ALPHABETICAL WORD LIST

OF THE KUCHE LANGUAGE

APPENDIX

ALPHABETICAL WORD LIST OF THE KUCHE LANGUAGE

This list is a phonetic transcription of a word list compiled by native speakers of Kuche and the author. It represents the pronunciation of words in isolation. The transcriptions are at least phonemically accurate, and in some cases, the transcription reflects phonetic detail above and beyond the phonemes.

Multiple entries of the same word represent multiple repetitions of the same word on the tapes. Variation in transcription of the same word usually represents variation in pronunciation; occasionally it represents the inability to distinguish vowels and tones in the context of a list.

Entries that are preceded by an empty set of parenthesis are words that are basically incomplete without a prefix. They are either verbs, which need a subject pronoun prefix, or they are adjectives, which need a noun concord prefix. The verbs are more consistently written with parenthesis than are the adjectives.

APPENDIX

Word	Tones	English	#	Part of Speech
aba	M-M	this way		
abadaɪ	L-L-L	girdle	s	noun
abadaɪ	M-M-M	girdle	s	noun
abɐnʧi	L-LM-L	fly		noun
abatak	L-H-H	tin		noun
abatak	L-H-M	tin		noun
abazaza	L-L-L-L	hysterical		
abɛ	L-L	gardens by house	p	noun
abɛ:	M-ML	hedged gardens	p	noun
abɪbɪyɷ	L-M-L-H	small bird	s	noun
abɪbiyo	L-M-L-H	type of bird		noun
abɪŋgɛ	L-L-L	basket	s	noun
abiŋgʸɛ	L-L-L	basket		noun
abɪrɨʤɛ	L-M-M-M	expert	s	noun
abɪrʤɛ	L-M-M	expert	s	noun
abɔbɔt	L-M-M	grasshopper	s	noun
abɷi	L-H	person's name		noun
abɔk	L-L	repentance		noun
abɔk	M-M	repentance		noun
aboro	M-L-L	lie	s	noun
abɷrɷ	M-L-L	lie		noun?
agboro	M-L-L	lies	p	noun
abuk	L-L	flour		noun
abuŋ	M-H	heaps	p	noun
abut	M-L	huts	p	noun
aʧa	M-ML	walls of compound	p	noun
aʧadun	L-H-L	stranger; or, a person's name		noun
aʧaɪ	L-H	light		noun
aʧaga	L-H-L	he branches; or, a person's name		
aʧai	L-M	brightness/light		noun
aʧai	M-H	brightness/light		noun
aʧai	L-H	brightness/light		
aʧaʧaɪ	L-L-L	broom for sweeping rough ground		noun
aʧaʧɪ	L-H-H	keep going		
aʧakaba	L-H-H-H	rice		noun
aʧɛ:	M-HM	fireplace/stove		noun

Word	Tones	English	#	Part of Speech
aʧɛ:	M-ML	stove/fireplace	s	noun
aʧɛ:	L-LM	1 person of the Bache	s	noun
aʧɛp	M-L	goiters	p	noun
aʧɪp	M-L	goiters	p	noun
aʧɪp	M-H	cities	p	noun
aʧɷ:	M-HM	a cry to scare off birds		noun
adal	L-L	long ridge		noun
adɪndi	L-ML-M	wall		noun
adi:ndi	L-ML-M	wall	s	noun
adɔ	L-M	prayer	s	noun
adɔ:	L-ML	prayer	s	noun
adɔ:	L-M	prayer	s	noun
adɷŋkpʸɛt	L-L-M	termite		noun
adumkpɛt	L-L-M	termite	s	noun
aduŋkpɛt	L-L-M	termite	s	noun
adu	M-M	holes	p	noun
aduru	M-H-H	cleverness		noun
afalakpa	M-M-M-H	light outer covering (grain)		noun
afu:fuk	L-LM-L	foam		noun
aga	M-H	grass	p	noun
aga	M-L	branches	p	noun
agada	M-L-M	groundnut		noun
agaga-ɪkɷn	M-L-M-M-H	wooden cross		noun
agagak-ikɷn	M-M-M-M-H	wooden cross	s	noun
agagak	M-M-M	cross	s	noun
agagak	L-L-L	cross		
agaŋgak	L-L-L	drum		noun
agaŋgak	L-L-H	drum		noun
agara	L-L-L	big basket	s	noun
agɪndɷ	L-M-H	bed	s	noun
agɪp	L-L	ceiling		noun
agɛzɛ	M-L-L	meaning, reason		noun
agire	M-H-L	deceit		noun
agɔgɔk	L-M-M	watch, clock		noun
agɔrɔ	M-H-M	fight		noun
agɷrɷ	M-H-H	charm made of animal skin	p	noun
agun	M-M	burial ground/graves		noun
a:gba	ML-M	feast (marriage)		noun
a:gba	M-L	marriage feast		noun
agbat	L-ML	hillock	s	noun
agbat	M-M	hillocks	p	noun
agbat	M-HM	hillocks	p	noun
agbatak	L-M-M	larval locust	s	noun
agbatak	M-H-H	locust at 2nd stage of development		noun

Word	Tones	English	#	Part of Speech
agbɪk	L-H	stomach		noun
agbɪsa	L-M-H	cocoyam	s	noun
agbɷ:k	M-M	leaves used in dragging dirt		
agbɷk	M-L	leaves used to drag dirt		noun
agbɷrɷ	M-H-H	maturity		noun
agbɷrɷ	M-M-M	maturity		noun
ahɐ:hɐi	L-ML-M	caution		noun
ahama	L-L-L	ax		noun
ahɐu	L-M	opening		noun
ahɛ̄	M-H	debts	p	noun
āhē:	M-H	debts	p	noun
ahɛŋ	M-H	he/she showed up		verb
a:hɔk	L-H	I don't know		
ahɔk	L-H	I don't know		
adʒa	L-M	name		noun
adʒal	L-L	woman's name		noun
adʒandi	L-LM-L	woman's name		noun
adʒaŋko	L-M-H	man's name		noun
adʒaŋkɔ	L-M-H	man's name		noun
adʒandʒa	M-L-L	ankle rattle		noun
adʒasi	L-H-L	person's name		noun
a:ka	L-H	excrement	s	noun
aka	L-M	stool	s	noun
aka:	M-H	excrement		noun
akɐ:ku	M-HM-H	cotton		noun
akak	H-L	he/she refuses		verb
akamɔs:	M-M-H	papaya		noun
akan	M-L	goards	p	noun
akasɔ	L-L-H	market	s	noun
akɪfɛt	M-H-M	person's name		noun
akɔ	M-L	houses	p	noun
a:kɷ	MHM-H	favorite (wife)		noun
akɷkɷn	L-L-L	beni seed		noun
akɷm	M-H	corpses	p	noun
akɷm	M-M	corpses	p	noun
akɷŋkɷ:k	L-L-MH	tortoise	s	noun
akɷŋkɷk	L-L-MH	tortoise	s	noun
akɷŋkɷn	L-L-MH	shield	s	noun
akɷs	M-M	years	p	noun
akɷs:	M-M	years	p	noun
aku	M-M	deaths	p	noun
akpa	M-H	bodies/skin	p	noun
akpɐ:nu	M-HL-M	lips	p	noun
akpa:sɷ	L-ML-L	expert, hero, brave man		noun

Word	Tones	English	#	Part of Speech
akpa:sɷ	L-ML-M	hero/expert		noun
akpɪ	M-L	grass		noun
akpikpʸɛt	M-L-L	clippings	p	noun
akpyɪkpʸɛt	M-L-L	clippings		noun
a:la	LM-M	farming		noun
alɛ:	M-H	intestines	p	noun
alɛt	H-M	he hides it		verb
alɷ:lɷ	L-ML-M	web	s	noun
alɷ:lɷ:	L-ML-M	spider web	s	noun
alɔtɔk	L-L-L	narrow gap between 2 stones	s	noun
amampa	L-H-H	yam		noun
amampa	L-LM-M	type of yam		noun
ambal	M-M	blades	p	noun
ambɛ	L-L	male wall-gecko	s	noun
amfa	M-H	words	p	noun
amfɛ:nɷ	L-LM-L	glottis		noun
amfɛn	M-L	yams	p	noun
anfɛn	M-L	yams	p	noun
amfɪp	M-H	sand		noun
amfi	M-M	peas	p	noun
amfɷn	L-L	cloth	s	noun
amfun	L-L	cloth	s	noun
amfun	M-L	cloths	p	noun
amõ:	L-M	fattened, esp cow		
amɔk	M-M	judgment		noun
ampɐk	L-M	wild rat		noun
ampas	L-H	floor	s	noun
ampas	M-H	floor		noun
ampɛs	M-H	burning torches	p	noun
ampɛt	L-M	bottle	s	noun
ampɛt	M-M	reed used for music		noun
ampip	L-H	mildew in spoilt corn		
ampip	L-L	another kind of wild rat		noun
ampip	L-M	rat		noun
ampɔs	M-H	immature peanuts		noun
ampɔs	L-H	immature peanut		noun
ampuk	M-H	ridges	p	noun
anandat-awɷrɷ	L-L-M-L-L-L	rainbow		noun
anandut	L-L-M	type of bird		noun
anʧak	M-M	spoons	p	noun
anʧɷsɷk	M-M-L	potsherds	p	noun
anda	M-L	okra		noun
amda:	LM-MH	bush pig		noun
anda:	LM-MH	bush pig	s	noun

Word	Tones	English	#	Part of Speech
andam	L-M	certain leaf eaten raw		noun
andam	L-M	lizard	s	noun
andas:	L-M	mature		
andɛ	M-M	excuses	p	noun
a:ndi	L-L	chest		noun
andɪ	L-L	chest (of animal or person)		noun
andu	M-L	type of dance		noun
anɛ	M-L	bellies	p	noun
andʒɪk	M-H	uncultivated lands		noun
andʒɷ	M-L	mud wall-hooks; or cow horns		noun
andʒuk	M-H	tufts of hair	p	noun
a:nsa	M-M	stalks	p	noun
ansat	L-L	ropes	p	noun
a:nsat	M-H	ropes	p	noun
a:nʃi	MH-M	eyes	p	noun
antɛ	M-L	large water pots	p	noun
antɛn	M-L	chins	p	noun
antɪ	M-M	saliva		noun
anti	M-M	saliva		noun
antiʏɐ	L-L-M	regret		noun
antɷ	M-M	ears	p	noun
antɷ	M-M	black fruit		noun
anɷt	M-M	wounds	p	noun
anza	M-H	grits		noun
anzɪk	M-H	virgin lands	p	noun
anzi:	M-H	mortars	p	noun
andʒɪ	M-H	mortars	p	noun
aŋa:ŋak	L-ML-M	type of bird	s	noun
aŋgau	L-L	tick (insect)		noun
aŋgɷrɷ	M-L-L	cunning		noun
aŋgba	L-L	sling		noun
aŋgba	M-M	bananas	p	noun
aŋgban	M-L	drying places for grain	p	noun
aŋgbɷ	M-H	lumps	p	noun
aŋka:hɪ	L-ML-M	pumpkin	s	noun
aŋkala	M-H-M	charcoal		noun
a:ŋki	M-L	eagles	p	noun
aŋki	L-L	eagle	s	noun
aŋkɔ	L-L	air; wind		noun
aŋkɷ	M-L	bones	p	noun
aŋkpa	L-L	eagle	s	noun
aŋkpɔsok	L-H-H	frog	s	noun
aŋkpɔsɔk	L-L-L	rat	s	noun
aŋkpɷsɔk	L-H-H	frog		noun

Word	Tones	English	#	Part of Speech
aŋkpɷsɔk	L-L-L	rat	s	noun
aŋmala	M-M-M	he laughs		verb
aŋmɛk	M-M	he swallows		verb
aŋvɛ	M-M	toilet		noun
aŋakɷ	L-L-H	person's name		noun
aŋaŋkɷ	L-L-H	kind of bead		noun
aŋas:	L-L	being unkind		
aŋɛ	H-H	he came		verb
aŋɛbɛdun	L-M-L-L	name (meaning "he has come to visit")		noun
aŋɛndɪ	L-H-M	name (meaning "he came to work")		noun
aŋɔk	L-L	person's name		noun
aŋyi:	M-HM	teeth	p	noun
arandɛn	M-M-L	name of a village		noun
arandɔ	L-L-H	cow	s	noun
arando	L-L-M	cow	s	noun
arariɛ	L-L-LM	hook	s	noun
araɾɷ	L-M-L	a wild fruit		noun
aɾas	H-M	he joins		verb
aratak	M-M-M	scissors	p	noun
aratak	M-L-L	scissors		noun
aratak	L-L-L	pr of scissors		noun
arɔ:	M-HM	ankles	p	noun
arɷkɷŋkpa	L-H-L-M	fluid		noun
asan	L-H	brown squirrel		noun
asaŋa	M-L-L	both sides		noun
asaŋka	L-L-M	embrace		noun
asaŋkɔlɔ	L-L-H-M	weaved bog		noun
asaŋkʷi	L-L-H	small basket		noun
asɔ	H-H	he drinks		verb
aʃɛ	H-MH	here he is		verb
aʃɛk	H-L	he matches it		verb
aʃɛk	H-M	he/she scattered		verb
aʃɛn	M-H	song/songs		noun
aʃɛn	L-M	red one		noun
aʃɛn	L-H	person's name		noun
aʃɛnɪ	H-H-M	he/she hates me		verb
aʃɛnɷ	H-H-H	he/she hates him/her		verb
aʃɪk	H-M	he/she lifted (it) up		verb
aʃɪk	M-M	boils	p	noun
aʃɪkɪn	L-M-H	gratitude/thanks		noun
aʃɪʃɛn	M-H-H	red type		
aʃilɔŋ	M-H-M	he is bad		verb
aʃilɔŋ	M-H-L	he is bad		verb
aʃip	M-M	darkness		noun

Word	Tones	English	#	Part of Speech
aʃiʃit	M-M-M	black ones	p	noun
ata	H-M	he takes		verb
atɐ:ti	L-ML-H	leader	s	noun
ataɪ	M-H	stones	p	noun
atama	L-ML-M	the last		noun
atantan	L-ML-L	spider	s	noun
atara	M-M-L	rooms	p	noun
atasak	H-M-L	he beat him		verb
ataʃɛn	L-ML-L	name of village		noun
atatɷ	M-H-H	different		
atɛs	M-M	he's finished		verb
a:ti	MH-M	he does it		verb
a:ti	H-M	he does it		verb
atɪ	M-M	father	s	noun
ati	M-M	father	s	noun
atɪ-agɔ	M-M-M-L	grandfather	s	noun
ati-agɔ	M-M-M-L	grandfather	s	noun
atɪ-ɷgɔ	M-M-M-H	Lord	s	noun
ati-ɷgɔ	M-M-M-H	Lord	s	noun
ati-ugɔ	M-M-M-H	Lord	s	noun
atɪŋkɪ:	L-L-M	elephant	s	noun
atiŋki	L-L-M	elephant	s	noun
atɔ	M-M	necks	p	noun
atɷ	M-H	heads	p	noun
atɷ	M-H	heads	p	noun
atɷabɔ	L-M-L-M	leader of group of hunters	s	noun
atɷkɷn	M-H-H	logs of wood	p	noun
atɷtɷ	L-M-H			
awaɪ	L-M	this (one)		
awaɪ	H-HM	looking around (for someone looking at you)		
awasaɪ	H-H-HM	he/she is suffering		verb
awasak	L-L-M	person's name		noun
awɔk	M-H	hands	p	noun
awɷlɔ	L-L-L	person's name		noun
awɷrɷ	L-L-L	rain		noun
awɷsu	L-M-L	man's name		noun
aya	M-M	dreams	p	noun
aya:	M-M	dreams	s	noun
ayaŋ	H-HM	he left (transitive)		verb
ayaŋ	L-M	woman's name		noun
ayaŋ	M-HM	man's name		noun
ayap	M-L	signs	p	noun
ayɛn	M-H	tongues	p	noun
a:yi	MH-H	he eats		verb

Word	Tones	English	#	Part of Speech
ayi	H-H	he eats		verb
ayi	H-M	he eats		verb
ayiki	L-M-H	a person's name		noun
ayiku	L-M-M	man's name		noun
aymɪ	M-H-H	speeches (lectures)	p	noun
ayiŋi	M-H-H	talks	p	noun
ayiŋi	M-L-L	talks	p	noun
ayɔŋ	L-M	queue	s	noun
ayɐ	M-H	worlds	p	noun
ayɔk	M-L	dance		noun
ayɔk	L-M	a name (masc.)		noun
aza	M-H	legs	p	noun
azaŋkan	M-M-H	Fulani-type person	s	noun
azɐnziyɐ	L-L-H-M	hat	s	noun
azɪzɪ	L-L-L	worm	s	noun
azo:	L-ML	friend	s	noun
azɷp	M-L	large hoes	p	noun
ɐbɐnʃi	L-LM-L	fly		noun
ɐbuk	L-L	flour		noun
ɐbuŋ	M-H	heaps	p	noun
ɐbut	M-L	huts	p	noun
ɐdu	M-M	holes	p	noun
ɐduru	M-H-H	cleverness		noun
ɐfu:fuk	L-ML-L	foam		noun
ɐgɐ	L-L	communal labor		noun
ɐgɐ:	L-L	communal labor		noun
ɐgun	M-M	burial ground/graves		noun
ɐhu	M-H	mats	p	noun
ɐkɐti	L-L-M	type of food		noun
ɐkpinkpin	L-HM-H	toad		noun
ɐmpɐk	L-M	headless trunk		noun
ɐmpuk	M-H	ridges	p	noun
ɐmʃi	M-M	peas	p	noun
ɐ:nʃi	MH-M	eyes	p	noun
ɐntɪn	M-H	traps	p	noun
ɐntu	M-M	fruit (black)		noun
ɐntu	M-M	ears	p	noun
ɐntu	M-M	fruit		noun
ɐŋai	L-H	insect	s	noun
ɐŋɐi	L-L	insect	s	noun
ɐŋgɐi	L-L	insect	s	noun
ɐŋgɐi	L-H	flower	s	noun
ɐŋgɐi	M-H	flowers	p	noun
ɐŋgɐu	L-L	rat	s	noun

Word	Tones	English	#	Part of Speech
ɐŋki	M-L	eagles	p	noun
ɐŋki	L-L	eagle	s	noun
ɐŋkpuk	L-M	lizard	s	noun
ɐpuk	L-L	break down a dirt ridge		verb
ɐrɐriɐ	L-L-L-M	hook	s	noun
ɐrɐriyɐ	L-L-L-M	hook	s	noun
ɐsɐŋkɐli	L-M-L-M	sword	s	noun
ɐʃip	L-L	darkness		noun
ɐtɐ:ti	L-ML-H	leader	s	noun
ɐtɐ:ti	L-ML-M	leader		noun
ɐ:tul	H-H	(he?) removes		verb
ɐvu	M-M	leaves	p	noun
ba	M	with/and		conj.
ba:	ML	with/and		prep.
ba:bᵛɛ	L-M	bald-headedness		
ba:k	H	again		adv.
ba:k	HM	again		
bɐŋ	L	sluggishly		adv.
ba:nsa	LM-M	milk		noun
bɐ:nʃi	LM-M	tear		noun
ba:wɷ	M-HM	wizards	p	noun
ba:yaɷ	ML-M	be hard (wax, butter, oil)		verb
bɐbɐl	M-M	very white		
bɐbɐl	L-L	sparkling white		
babɷ:	L-LM	spreading of ridges		noun
babᵛɛ	M-H	baldheadedness		
babᵛe	L-M	bald-headedness		noun
babᵛeŋ	L-M	bald-headedness		noun
baʧɛ	M-H	Bache people	p	noun
baʧɛ:	M-H	Bache people	p	noun
baʧɛ:kɛ	L-L-H	old age		noun
baʧɪli	L-M-H	sweat		noun
baʧɛŋ	M-H	Bache people		noun
badan	L-L	swimming		noun
badɪk	L-H	cocoyam or sweetpotato used in seasoning porridge		noun
badɔk	L-H	poison		noun
badun	L-L	visit; discussion of mutual interest		noun
bɐdun	L-L	visit/discussion of mutual interest		noun
baɪ	M	count (imp. pl)		verb
bafɷl	M-L	they peeled(?)it		verb
bagɔ	M-H	many		
bagɔ:	M-MH	excl of satisfaction		ideophone
bagɔgɔ	M-H-H	big (ones)		
bagba	L-L	competition		noun

Word	Tones	English	#	Part of Speech
bɐgbɐ	M-H	far		
bahɪ	L-M	liquor		noun
bakɔ:	L-ML	love		noun
bako:	L-ML	love		noun
bakɷu	L-ML	love		noun
bɐku	L-L	boiled guinea corn		noun
bakpɪsɛk	M-L-L	Hausas		noun
bala:	L-MH	blacksmiths	p	noun
balaŋ	M-MH	damage		noun
balaŋ	L-LM	damage		noun
balɛt	H-M	they hide		verb
balɷ	L-L	instigation		noun
balo:	M-M	instigation		noun
balɷ:	M-M	instigation		noun
bɐlu	L-L	instigation		noun
baloso	H-L-L	?(they lie down)		verb
bɐmɪn	M-H	yours		pronoun
bɐŋ	L	sluggishly		
bɐnɐnɐ	L-L-L	flexible		
bɐnɐnɐ	L-L-L	flexible		
bɐnɐnɐ	L-L-L	flexible		
banaɷ	M-MH	males	p	noun
banɪt	M-M	people	p	noun
banʧɷ	L-M	places	p	noun
banɷ	M-H	others		
banta:	L-LM	argument		noun
banta:	L-MH	argument		noun
bantɛ	L-L	temptation		noun
bantɛ	M-M	temptation		noun
bantɛn	L-L	beard		noun
bɐnu	L-M	mouths	p	noun
banza	L-L	sun (heat)		noun
baŋkɐ	L-L	arrow bounces off		
bɐŋkɐ	L-H	arrow bounces off		
baŋyi:	L-M	urine		noun
baɾ̄	L	frightful trembling		ideophone
baras	M-L	?(they join)		verb
barɔ	M-L	evil spirit		noun
basɔk	M-M	they pick		verb
bɐsu	L-L	shade		noun
bɐsun	L-H	fruit		noun
baʃɛn	M-H	hatred		noun
baʃɛn	L-H	hatred		noun
baʃɛnɷ	H-H-H	they hate you		verb

Word	Tones	English	#	Part of Speech
baʃihuī	M-M-L	they are many		verb
baʃip	L-L	(dark?)		
bɐʃip	L-L	darkness		noun
baʃit	L-M	contempt that brings bad luck		noun
bɐʃit	L-M	contempt that brings bad luck		noun
baʃituī	M-M-L	they are many		verb
bɐtɐːtuk	L-ML-L	every day		
batat	M-H	3 others		
batınzık	L-H-M	competition		noun
batınzık	L-M-L	competition		noun
batɛs	M-H	they have finished		verb
batitɛt	L-M-L	gossip		noun
batɔk	L-L	potash		noun
batɔk	M-M	potash		noun
batoso	L-M-M	grass		noun
bɐtu	M-L	chiefs	p	noun
batuk	M-M	days	p	noun
bɐtuk	M-M	days	p	noun
bɐtuk	L-L	days	p	noun
bɐtul	H-H	?(they remove)		verb
bava	H-H	they pressed?		verb
bawɷ	M-H	evil spirits	p	noun
bayau	L-L	be hard (butter, oil, wax)		
bayɔː	M-HM	foreigners	p	noun
bavi	L-L	blood		noun
bɐvi	L-L	blood		noun
bɐvɪp	M-H	thieves	p	noun
bɐvip	M-H	theft		noun
bɐvʰip	M-H	thieves	p	noun
baɥılı	M-H-H	slaves	p	noun
bɐzɐl	L-L	higher up		
bazana	M-L-L	his friends	p	noun
bazı	M-H	my friends	p	noun
bɐzını	M-L-M	your friends	p	noun
bɐzısː	L-H	suffering		noun
bɐzin	M-L	(your) brothers		noun
bazini	M-L-M	friends	p	noun
bɐzini	M-L-M	friends	p	noun
bazɷt	M-L	(my) brothers	p	noun
bazu	L-L	omen		noun
bɐzuk	H-M	they drive		verb
bɐzuk	L-M	they drive		verb
bɛ	M	too		
bɛːbɐtɛk	MH-L-L	flexible		

Word	Tones	English	#	Part of Speech
bɛlɛlɛ	L-H-H	weak minds		
bɔt	L	dented		
bɔtɔk	L-L	rowdy		
( )baɪ	M	read/count		verb
( )baɾ̃	L	tremble in fright		verb
( )bara	L-L	give		verb
( )bɪː	H	pay/wait		verb
( )bɛn	L	show off		verb
( )bɛrɛ	H-M	be careful		verb
( )bin	H	greet		verb
( )bœː	H	spread (a ridge)		verb
( )bɔt	L	dented		adj.
( )bɔtɔk	L-L	rowdy		adj.
( )buː	H	cut open		verb
( )buːk	ML	search		verb
( )buk	M	search		verb
( )buːl	ML	open		verb
( )buːl	HM	open		verb
( )bul	ML	open		verb
( )bul	HM	open		verb
( )bun	L	stir		verb
( )buru	H-H	drop self down		verb
bᵛaŋ	MH	sound of slapping		ideophone
bᵛẽŋ	M	ringing sound		ideophone
ʧaɪ	H	stiffness during conversation		
ʧaɪ	L	brightness		
ʧai	H	clear		
ʧai	H	water squirting out		ideophone
ʧɐi	L	water squirting out		ideophone
ʧaʧak	H-H	straight		
ʧaʧak	L-L	smacking noise while chewing		
ʧak-ʧak	L-L	smacking noise while chewing		
ʧaʧɪ	H-H	keep going		
ʧakat	L-L	long & thin		
ʧaːp	LM	small, little		adj.
ʧap	L	small/a little		
ʧap	M	small		adj
ʧɪʧɪ	L-M	beautiful		
ʧɪk	L	really		
ʧɪn	M	leave it; stop it		verb
ʧɛɲɪ	ML-M	go (imperative pl)		verb
( )ʧas	H	pure		adj.
( )ʧɛ	M	go		verb
( )ʧɛː	ML	go		verb

Word	Tones	English	#	Part of Speech
( )ʧɪ	H	look good		verb
( )ʧɪk	M	beat		verb
( )ʧɪli	H-H	to sweat		verb
( )ʧɪp	H	cut into pieces		verb
( )ʧɷ:	HM	cry to scare off birds		verb
( )ʧɔk	H	make		verb
( )ʧɔkɛnu	H-M-M	chew		verb
( )ʧɷnʧɷ	H-H	deep		adj?
( )ʧu	M	stir		verb
dɐ:n	L	soft		
daɪ̄	L	unsteady walk		
dadat	L-L	obese		
daɪ̄	L	nearly to fall		adv.
dɛdɛk	L-L	soft		
dɛdɛr	M-M	correct		
dɛdɛɪ̄	M-M	true, correct		
dɛkɛyɛk	L-L-L	reluctantly		
dɛrɛrɛ	H-H-H	steady balanced		
dɛrɛrɛ	L-L-L	steady balanced		
didɪk	L-L	hot		
didik	L-L	hot		
dindi	M-M	firm/deep/fast		
dɔ:	M	hide		verb
dɔlɔlɔ	L-L-L	long		
dudut	L-L	bulging eyes		
dusuru	L-L-L	huge (man)		
( )daɪ̄	L	unsteady walk		verb
( )dan	L	swim		verb
( )dara	L-H	tarry		verb
( )dat	L	warm/heat up		verb
( )dɪk	L	get tired		verb
( )deŋ	M	press		verb
( )dɛŋ	M	press		verb
( )dɪri	H-H	turn		verb
( )dɛsɛ	M-L	press		verb
( )dɛsɛ	M-L	press		verb
( )di	M	tell		verb
( )di:	M	tell/call for		verb
( )di:	L	tell/call for		verb
( )diri	H-H	turn/answer		verb
( )diri	M-M	turn over		verb
( )diri	M-M	turn over		verb
( )disi	L-M	teach		verb
( )disi	M-H	teach		verb

Word	Tones	English	#	Part of Speech
( )dɔ:	M	hide		verb
( )dɔk	M	bend over		verb
( )dɔl	M	help		verb
( )dɔl	L	bend down		verb
( )dɔrɔ	M-L	straighten		verb
( )dɔrɔk	M-L	destroy		verb
( )dɔs	L	join together		verb
( )dɔs:	L	join		verb
( )dɔt	L	warm/heat up		verb
( )du:	MH	tell him/her		verb
( )duk	H	burn up		verb
( )dun	ML	visit		verb
( )dun	L	visit		verb
( )dup	L	mix		verb
( )dup	H	pull		verb
( )dup	L	pull		verb
( )dusu	H-L	burn up		verb
ɛ:	M	ok, yes		
fa:tak	L-L	close; fast tight		
fafaɷ	L-L	intensive of fau		
fafat	L-L	briskly, fast		
fakat	L-L	describes thick mud or clay or foofoo		
faŋfala	H-H-H	thin & flat (like paper)		
faɷ	L	describes how a person might grab something		
farara	L-L-L	hot		
fɐu	M	peace of mind		
fɛ:t	L	placed too deep to reach w/ hand		
fĩ̄	L	freely		
fifit	M-M	fast retreat (walking)		
fɷ:fɷtɷk	MH-M-M	sweaty-looking		
fɷ:t	L	thick (paste)		
fɔkɔkɔ	L-L-L	lightweight		
fɔnʧɔɪ	L-L	how person acts when angry		
fɔɷ:	M	peace of mind		
fɷ̃̄	L	the way a bird takes flight		
fɷt	L	all at once		
fu:ŋfunu	MH-L-L	thin cloth		
fuŋfunu	H-H-H	soft & smooth		
fuŋfunu	M-M-M	soft (cloth, skin)		
fũ̄	L	sound of snoring		
( )fak	M	chop off		verb
( )fak	M	scoop several times		verb
( )fara	H-H	take some		verb
( )fara	H-H	scoop		verb

Word	Tones	English	#	Part of Speech
( )fara	M-M	fetch		verb
( )fɷl	M	peel		verb
( )fɷl	L	peel		verb
( )fu	H	take		verb
( )fu	M	take by surprise		verb
( )fᵃra	(M)-M	scoop		verb
gbɛŋ	M	nonchallant; emotionally distant		
gbagbak	L-L	tightly covered		
gbaŋgba	M-M	truly, verily		
gbɛŋgbɛ	H-H	in the past/long ago		
gbarada	L-L-L	strong		
gbɛk	M	full		
gbɛndɛ	H-H	physically fit		
gbɪ:ʃɪ:	L-L	appearance of a swollen face		
gbɪgbɪk	M-M	encompassed		
gbɪrɪdɪ	L-L-L	sturdy		
gbɪʃ	L	confused mess		
gbɪt	M	short		
gbɪtɛk	L-L	dangling		
gbɷk	L	whole		
gbɷrɷ	H-H	mature		
( )gbā	M	try		verb
( )gbaŋ	H	try		verb
( )gbaŋ	L	dip it into (i.e. water)		verb
( )gbaya	L-L	sour		
( )gbɛ:	ML	underrate		verb
( )gbɛ̄r	M	be teary-eyed		verb
( )gbʸɛ̄r	M	be teary-eyed		verb
( )gbɪ̄r	M	throng		verb
( )gbɪs:	L	mess up		verb
( )gbɷ:k	L	drag		verb
( )gbɷ:k	M	drag		verb
( )gbɷɪ	L	puff (in anger)		verb
( )gbɔkɔkɔ	L-L-L	puff (in anger)		verb
( )gbɷ̄r	M	throng		verb
( )gbɷt	L	grow		verb
gɐgɐi	M-M	good		
gɐgɐi	H-H	good		verb
gagak	L-L	too wide (i.e. for a door)		
gakat	L-L	inconvenient		
gɐu	LM	rashly		
gɛ̄r	M	stubbornly		
gɪrɛrɛ	L-M-M	firm/stingy		
gɪrɪrɪk	L-L-L	round		

Word	Tones	English	#	Part of Speech
giririk	M-M-M	round		
girgi	M-M	train	s	noun
gutiguk	L-L-L	crooked		
gutuguk	L-L-L	crooked		
( )gan	L	hang		verb
( )gɐn	M	hung		verb
( )gaŋ	L	give way		verb
( )gap	M	share		verb
( )gap	L	share		verb
( )gara	M-H	pass		verb
( )ga:s:	L	jump over		verb
( )gas	L	jump over		verb
( )gasa	M-L	make a mistake		verb
( )gat	M	excel/overwhelm/overlap		verb
( )gɛr̃	M	insist/stubborn		verb
( )girɐ	M-L	deceive		verb
( )gɷ:	HM	scramble		verb
( )gɔn	L	bless		verb
( )gɔrɔ	L-L	knock down		verb
( )gɔrɔ	H-M	fight		verb
( )gɔrɔ	L-M	fight		verb
( )gɷrɷ	L-L	coat/paint		verb
( )gɷrɷ	M-L	paint		verb
( )gun	M	bend/fold		verb
( )gup	M	overwhelm in argument		verb
( )gup	H	overwhelm in argument		verb
ha	M	or		
haɪ	L	no		
haŋa:	M-ML	or you know what?		
hau	M	hollow/empty		
hau	L	not completely dry		
hɔbɔt	L-L	rowdy		
hɔɪ	M	blown up large		
hɔr̃	L	raspy breathing		ideophone
hɔr-hɔr̃	L-L	raspy breathing		ideophone
hɔrhɔr̃	L-L	description of coughing		
hɷntɷ	L-L	plump, huge (person)		ideophone
huɪ̃r̃	L	coming in great number		
huk	M	en mass		
huɪ̃r̃	L	many birds flying up (rustling) all at once		ideophone
hus	M	hazy (weather); not clear (face)		
hut	L	spread in great quantity		
( )hahap	L-L	stammer		verb
( )hak	L	2/or cut (w/knife)		verb

Word	Tones	English	#	Part of Speech
( )hak	M	2/cut w/knife		verb?
( )ham	H	close		verb
( )haŋ	ML	avenge		verb
( )haŋ	HM	avenge		verb
( )hara	M-L	constrict		verb
( )hat	M	put 2 things together		verb
( )hɐ:l	L	getting up		verb
( )hɐri	M-M	weed (pull weeds)		verb
( )hɐreru	L-L-L	hollow		adj
( )hɔrɔrɔ	L-L-L	hollow		adj.
( )hɛ	H	come out		verb
( )hɛ:	L	sow by spreading seed		verb
( )hɛ:k	L	feed		verb
( )hɛlɛ	M-L	return/go back		verb
( )hɪlɛ	M-L	return/go back		verb
( )hɛm	H	scrape bone		verb
( )hɛŋ	HM	show up		verb
( )hɪ:sɛk	H-H	postpone/prevent		verb
( )hɪsɛk	H-H	postpone/prevent		verb
( )hɔ̄	H	climb up		verb
( )hɔ̄:	HM	get burnt		verb
( )hɔlɔk	L-L	sink into something not firm		verb
( )hɔrɔ	L-L	pound		verb
( )hɔrɔ	M-M	escape		verb
( )hɷsɷ	M-L	raise up		verb
( )hɷsɷŋ	H-M	raise		verb
( )hul	H	heat up		verb
( )hulɐ	M-L	try		verb
( )huru	L-L	gulp		verb
( )hᵘrɔ	(M)-M	wrest		verb
ɪba	M-H	story		noun
ɪbak	L-L	adder		noun
ɪbɪba	L-M-M	truth		noun
ɪbiba	M-M-M	truth		noun
ɪbɪt	L-L	remnant (of food)		noun
ɪbɷ	L-L	alarm		noun
ɪbɷl	L-M	darkness		noun
ɪbɔ̄ra	L-L	brimstone		noun
ɪbra	L-L	brimstone		noun
ɪŋʃan	L-L	lymph node area of groin		noun
ɪŋʃan	M-L	many		
ɪŋʃɪs	L-H	foundation	s	noun
ɪŋʃɪs:	L-H	foundation		noun
ɪdaɪ	L-L	iron cutter		noun

Word	Tones	English	#	Part of Speech
ɪdaɷ	M-H	pleasant talk		noun
ɪdat	L-L	liquor		noun
ɪdɷp	L-L	a mix		noun
ɪdɔ̄r̄	L-MH	horse	s	noun
ɪdɔ̄r̄	L-M	horse	s	noun
ɪfɷːfɷtɷk	M-MH-M-M	person who's sweaty-looking		
ɪgak	M-M	shoulder		noun
ɪgasa	M-M-L	mistake		noun
ɪgɔn	L-L	blessing		noun
ɪgba	L-L	goard plant		noun
ɪgba	L-L	goard plant		noun
ɪgbɪt	L-H	shirt/gown		noun
ɪgbɷ̀l	L-L	hill		noun
ɪhaŋ	M-HM	vengeance		noun
ɪhɛl	L-LM	moon		noun
ɪhɔl	L-H	rest		noun
ī hām	M-M	certain tree		noun
ī̃hʸa	L-L	gecko	s	noun
ī̃hʸā	L-L	gecko	s	noun
ɪʤa	L-M	epidemic; or person's name		noun
ɪʤaːkɪ	L-MH-H	donkey	s	noun
ɪʤandɪ	L-L-L	kind of acca		noun
ɪka	L-M	baboon	s	noun
ɪka	L-L	ladder	s	noun
ɪkal	M-M	medicine		noun
ɪkazɪ	L-L-L	file		noun
ɪkɔ	L-H	chicken	s	noun
ɪkɔːk	L-LM	cough (illness)		noun
ɪkɔːk	L-MH	cough		noun
ɪkɷːk	L-LM	red earth		noun
ɪkɷːk	L-MH	red earth		noun
ɪkɷːnɷ	L-ML-M	sleep		noun
ɪkɔk	L-L	grinding		noun
ɪkɔl	L-H	rashes		noun
ɪkɷn	M-H	wood/trees		noun
ɪkɷn	L-L	tree	s	noun
ɪkɔs	L-H	vomit		noun
ɪkɔsː	L-H	vomit		noun
ɪkɷsɔ	L-L-L	tin		noun
ɪkɷsɷ	M-M-H	a fall		noun
ɪkɷsɷ	L-M-H	a fall		noun
ɪkpa	L-H	command/rule	s	noun
ɪkpɪ	L-L	thing/something	s	noun
ɪkpɪbɪsɷn	L-L-L-M	show-off		noun

Word	Tones	English	#	Part of Speech
ɪkpɪsɛk	M-M-L	Hausa		noun
ɪkpɛsɛrɛ	L-M-H-M	disturbance		noun
ɪkpɪsɔ	L-L-L	seat/chair	s	noun
ɪkpɷ:	L-MH	food		noun
ɪkpɷl	M-H	guinea corn		noun
ɪkʸɛ:n	L-M	running		noun
ɪkʸɛŋkʸɛ	L-ML-M	weed	s	noun
ɪlaɪ	L-H	granary/barn		noun
ɪlak	L-M	scorpion	s	noun
ɪlala	L-M-M	farming		noun
ɪlas:	L-M	courtyard	p	noun
ɪlasa	L-M-H	curse		noun
ɪlɛ:	L-H	reciprocity		noun
ɪlɪ:luŋ	L-ML-M	different kinds of food		noun
ɪlɔɪ	L-H	locust bean cake		noun
ɪma	L-L	water		noun
ɪmak	L-L	ring		noun
ɪmaŋ	L-M	salt		noun
ɪmara	M-H-H	relatives	p	noun
ɪmba	M-M	women	p	noun
ɪmba	L-L	insect		noun
ɪmbi	L-M	to come		
ɪmbuk	L-M	animal of pig family		noun
ɪmbus:	M-M	crumbs	p	noun
ɪmɪn	L-H	your		pronoun
ɪmɪs	L-L	peace		noun
ɪmɛs:	L-L	peace		noun
ɪmɔsɔ	L-L-L	meeting		noun
ɪmɔt	L-H	our		pronoun
ɪmpɷt	M-L	chicks	p	noun
ɪmpʸak	L-L	mud-goad for fire-fanning instrument		noun
ɪɱfa:	L-LM	grass		noun
ɪɱfɔ	M-L	phlegm		noun
ɪɱva	L-HM	eye discharge		noun
ɪn:da	H-M	let's go		verb
ɪna:	L-MH	an animal	s	noun
ɪnaŋ	L-H	sleepiness		noun
ɪnʧal	L-H	dish/plate	s	noun
ɪnʧam	L-H	type of edible flower		noun
ɪnʧɛ	L-M	calabashes	p	noun
ɪnʧɪ	L-M	smoke		noun
ɪnʧɪm	L-L	monkey	s	noun
ɪnʧɪm	M-H	monkeys	p	noun
ɪnʧi	L-L	wind		noun

Word	Tones	English	#	Part of Speech
ɪnʧɷp	M-H	written marks		noun
ɪnʧɷsɷk	L-M-L	any kind of grasshopper	s	noun
ɪnʧɷsɷk	M-M-L	grasshoppers	p	noun
ɪndaɪ	M-M	let's go		
ɪndaɪ	M-LM	let's go		
ɪndɛma	M-M-M	happiness		noun
ɪndi	L-M	multitude		noun
ɪndɔl	M-M	help		noun
ŋgau	L-M	cheek		noun
ŋgbɛ	M-H	clean seeds	p	noun
ŋgbʸɛ	M-H	seed, chaffed		noun
ŋgbɛs	M-L	germinated seed fallen or leftover from previous year		noun
ŋkas:	M-H	anklet		noun
ŋkɷ	L-M	war		noun
ŋkɔl	L-M	bush fowl	s	noun
ŋkpa:ʃɪ	L-LM-L	rashes		noun
ŋkpʸɛk	M-H	rolls of fat		noun
ɪnʤas	L-L	Jos (a city)		noun
ɪnʤɛrɛk	L-M-M	penis		noun
ɪ:nsa	L-M	shame		noun
ɪnsap	L-L	green leaves		noun
ɪnsap	L-L	green leaves		noun
ɪnsa	L-M	shy/shame		adj?
ɪnsa:	L-M	shy/shame		noun
ɪnʃi	L-M	date palm	s	noun
ɪnta	L-L	loin cloth	s	noun
ɪntɛ:ŋ	L-LM	guitar	s	noun
ɪntɛs	L-M	cricket	s	noun
ɪntɛ:t	M-HM	stars	p	noun
ɪ:ntɛt	M-M	stars	p	noun
ɪ:ntɛt	L-M	star	s	noun
ɪntɔ:	M-L	I see		verb
ɪntɔŋ	L-M	iron		noun
ɪntʸɛ:ŋ	L-MH	musical instr. made of grass		noun
ɪnvɛlɛk	M-H-M	top of tree		noun
ɪnvɷ	M-H	nose		noun
ɪnzo	L-ML	mushroom		noun
ĩŋkɛ̃rɛ̃hĩ	M-H-H-H	money		noun
ŋa	M-L	cactus; chain		noun
ŋa	L-M	cactus, chain	s	noun
ŋyas:	L-H	life		noun
ŋʏɪp	L-M	porridge		noun
ŋʏɪp	L-H	arrow for sewing		noun
ŋʏɔk	M-M	fish		noun

Word	Tones	English	#	Part of Speech
ŋʏɔk	L-M	I throw away		verb
ŋʏɔk	H-M			
ŋmala	L-M-H	laughter		noun
ɪpapat	M-M-M	busy		
ɪpapat	L-L-L	rascally-ness		noun
ɪra	L-M	hoof		noun
ɪru	L-MH	a shout/wail	s	noun
ɪru	M-H	shouts/wails	p	noun
ɪsaːsɷna	L-ML-M-M	faith		noun
ɪsak-ɪsɷna	L-M-M-M-L	faith		noun
ɪsan	L-L	(type of) tree		noun
ɪsandɷ	L-L-L	dried meat		noun
ɪsap	L-L	to worry		
ɪsɛn	L-L	liquor sieve		noun
ɪsɪso	L-M-H	drinkable		
ɪsɪsɔk	L-L-L	hoe	s	noun
ɪsɔɪnasː	L-M-L-M	forty		
ɪsɔɪtarasː	L-M-L-M-M	ninety		
ɪsɔŋ	L-MH	porcupine	s	noun
ɪsɷn	M-H	heart		noun
ɪsɔsɔk	L-L-L	hoe	s	noun
ɪsɷt	L-H	roof	s	noun
ɪʃaʔ	H-H	expression of surprise		
ɪʃɪ	L-M			
ɪʃɛn	M-H	beans	p	noun
ɪʃɛn	L-H	bean; or, the red one	s	noun
ɪʃiː	L-M	waking up		
ɪtaːk	L-LM	sheep		noun
ɪtaːk	L-MH	sheep	s	noun
ɪtakpɪrɛ	L-M-L-M	cockroach	s	noun
ɪtam	L-M	picking		noun
ɪtap	L-M	antelope	s	noun
ɪtɪ	L-M	doing		verb
ɪtɛs	L-L	to finish		
ɪtɛs	M-M	it finished		verb
ɪtɪs	L-H	foundation		noun
ɪtɪtɔ	L-M-L	thorn	s	noun
ɪtɔk	L-L	squirrel	s	noun
ɪtɷl	L-H	to remove		verb
ɪtɷl	L-L	type of leopard	s	noun
ɪvɪri	L-M-M	evening	s	noun
ɪːvɪvɪ	L-L-L	fingers	s	noun
ɪvɪvɪ	L-L-L	finger	s	noun

Word	Tones	English	#	Part of Speech
ɪwa	L-HM	snake	s	noun
ɪwan	M-H	sewing		
ɪwɷ:	L-MH	mosquito	s	noun
ɪwɷl	L-H	goat	s	noun
ɪwa	L-M	female		noun
ɪwɔk	L-L	kind of snake	s	noun
ɪya	M-M	supper		noun
ɪyak	L-M	bell	s	noun
ɪyak	M-H	bell		noun
ɪyɪn	M-H	pot	s	noun
ɪyɪn	L-L	pot	s	noun
ɪʏam	L-H	generosity		noun
ɪyaŋ	L-MH	cracks	p	noun
ɪyas	M-H	termite		noun
ɪyɔk	M-H	gambling		noun
ɪyɔn	M-M	deep pool of water (lake)		noun
ɪyɷp	L-L	thick (one)		
ɪʏat	L-L	hippo	s	noun
ɪʏɛ	M-M	mother	s	noun
ɪʏɪ:n	L-MH	one		
ɪʏɪlɪ	L-M-H	bedbug	s	noun
ɪʏɛnɛnɛ	L-L-L-L	cobra	s	noun
ɪʏɪɪɪ	L-M-M	ritual		noun
ɪʏik	L-H	to reach		
ɪʏɔ	L-L	hunger		noun
ɪʏɔgɔ	L-H-M	starvation (figurative)		noun
ɪʏɔm	L-L	rabbit	s	noun
ɪʏu:	L-LM	millet		noun
ɪzɪ	L-L	locust	s	noun
ɪzɪnɪ	L-L-L	girl/boyfriend	s	noun
ɪzɪp	L-H	brown antelope		noun
iba	L-H	story	s	noun
iba	M-H	a saying		noun
ibaŋ	M-H	something		
ibai	L-M	counting/reading		noun?
ibak	M-M	vipers	p	noun
ibak	L-L	type of snake	s	noun
ibi:n	L-L	poisonless snake	s	noun
ibin	L-L	poisonless snake		noun
ibɪn	L-H	greeting		noun
i:bin	L-H	greeting		
ibin	L-H	greeting		noun
i:bol	L-M	it is decaying		verb
ibɷ	L-L	alarm	s	noun

Word	Tones	English	#	Part of Speech
ibul	L-M	pitch darkness (no moon)		noun
iʧɪ	L-M	leopard	s	noun
iʧɪt	M-H	sex		noun
iʧit	M-H	act of sex		noun
iʧi:	L-MH	rite	s	noun
iʧis	L-H	foundation		noun
idai	L-L	iron cutter	s	noun
idau	M-H	gut		noun
i:di	L-M	communal labor		noun
idi	L-M	communal labor		noun
idɔ̃r	L-H	horse	s	noun
idu	L-M	fight/quarrel		noun
igak	M-M	shoulder	s	noun
igasa	M-M-L	mistake		noun
igɛzɛ	L-L-L	age group		noun
igo	L-L	big one		noun
igɔ:	L-ML	beam	s	noun
igungu	L-L-L	masquerade	s	noun
ĩhĩ:	L-L	testicle	s	noun
ĩhĩ	M-H	testicle		noun
ĩhʸã	L-L	lizard	s	noun
ihʸɛ:l	L-LM	moons/months	p	noun
ihit	L-H	he-goat	s	noun
ihul	L-H	swelling		noun
ihul	L-L	swelling		noun
ihus	L-L	insect		noun
ihʷi	L-H	multitude		noun
ika	L-L	ladder	s	noun
ika:	L-M	monkey(black)	s	noun
ikal	M-M	medicine		noun
iki	M-H	acca (a grain)		noun
iki:t	L-MH	dust		noun
iki:t	L-LM	dust		noun
iki:t	M-MH	dust		noun
ikit	L-L	dust		noun
ikilɐ	M-L-M			
ikɷ:nɷ	L-ML-M	sleep		noun
ikɷn	M-H	trees	p	noun
ikɷp	L-M	old		
ikɔrɔ	M-M-M	handle of hoe		noun
ikɔrɔ	L-L-L	handle of hoe	s	noun
iku	L-M	death		verb
ikul	L-L	lizard	s	noun
ikul	L-M	kneeling		noun

Word	Tones	English	#	Part of Speech
ikun	L-H	cry		noun
ikun	L-M	cry	s	noun
ikusu	L-M-M	a death		noun
ikut	L-H	crocodile	s	noun
ikut	M-H	crocodile	s	noun
ikpisɔ	L-L-L	stool/chair	s	noun
ilai	L-H	granary	s	noun
ilak	L-M	scorpion	s	noun
ilɛ	L-L	reciprocity		
ili:	L-M	reproducing		noun
ili:lu	L-ML-M	cookery		noun
ililu	L-ML-M	cookery		noun
ilɷ:	L-L	to instigate (inf)		verb
ilɷ:t	L-ML	bag	s	noun
ilut	L-L	bag	s	noun
ima:du	L-LM-M	water		noun
imba	M-M	women	p	noun
imba:	M-M	women	p	noun
i:mba	M-M	women	s	noun
imbi	L-M	come		verb
i:mbiri	L-M-L	soot		noun
imbiri	L-M-L	soot		noun
imbiri	L-M-L	soot		noun
imbolo	M-H-H	going		verb
imbuk	L-M	animal	s	noun
imbus	M-M	crumbs	p	noun
imɪn	L-H	yours		pronoun
imɛs	L-L	peace		noun
imi	L-H	flatulation		noun
imi:	L-M	fart	s	noun
impɛnɛnɛ	L-M-M-M	certain palm tree		noun
impɛnɛnɛ	L-M-M-M	type of plant		noun
impɛsɛk	L-M-M	lip turned out		
impɛsɛk	L-M-M	naturally turned-down lip		
imput	L-L	chick	s	noun
i:mput	M-L	chicks	p	noun
imput	M-L	chicks	p	noun
imut	L-H	fog		noun
imfɔŋ	M-L	nasal mucus		noun
imva:	L-ML	pus		noun
inai	L-M	widening		noun?
indɛma	M-M-M	happiness		noun
indi	L-M	multitude		noun
indol	M-M	help		noun?

Word	Tones	English	#	Part of Speech
indu	L-L	cover/cork/lid	s	noun
induru	M-H-M	pimples	p	noun
iŋgɐ	L-H	frustrated		
iŋgɐ	L-L	frustrated		
inʃi	L-L	wind		noun
i:nlak	ML-L	I slept		verb
i:nlat	HM-M	I slept		verb
insa:	L-M	shy		adj?
insɷ	L-M	chaff		noun
insusu	M-H-M	forgetting?		
inʃi	L-M	date palm	s	noun
insi	M-H	swearing		noun
inʃi	L-M	date palm		noun
inʃi	H-M	I swear		verb
inʃitik	H-H-M	I am black		verb
inta	L-L	loin cloth	s	noun
i:nta	H-M	taking		verb
i:ntara	ML-M-L	I stumble		verb
intɛ̄sɷ	L-M-H	cameleon	s	noun
intɔ:	L-M	iron		noun
invɷ	M-H	nose	s	noun
invɔ:	L-M	hole	s	noun
invɔrɔ	M-L-L	sign		noun
inzo	L-M	mushroom	s	noun
inzun	L-M	owl	s	noun
inzun	L-H	owl	s	noun
ĩŋkɛ̄rɛ̄hĩ	M-H-H-H	money		noun
iŋkpinimɷ:mɷ	L-L-L-ML-M	unnatural being	s	noun
iɲas	L-H	life		noun
iɲɛ	L-M	coming		noun
iɲɛni	L-L-L	dance		noun
iɲɛs	L-H	life	s	noun
iŋmala	L-M-H	laughter	s	noun
iŋmala	L-M-M	laughter		noun
iŋmɪn	M-H	children	p	noun
iʤa	M-M	trading		noun?
iʤasi	M-L-L	person's name		noun
ira	L-M	hoof	s	noun
ira:	L-M	hoof	s	noun
irɛ:	L-L	age group		noun
iri:	L-M	holding		noun
iru:	L-LM	shout/hail		
iru:	L-MH	shout/hail		noun
isap	L-L	worry		noun

Word	Tones	English	#	Part of Speech
isɔ	M-H	bees	p	noun
isɷ	L-M	bath-taking		noun?
isɷmɷ	L-L-L	remembrance		noun
isul	L-M	increase		noun
isun	L-H	sobbing		noun?
iʃɛ:	L-LM	sour leaves		noun
iʃɛ:k	L-ML	to scatter		
iʃɛ:m	L-L	election		noun
iʃɛn	L-H	bean	s	noun
iʃɛn	M-H	beans	p	noun
i:ʃɛn	M-H	beans	p	noun
iʃɪt	L-M	black		noun
iʃɪk	L-H	male youth	s	noun
iʃik	L-H	lad	s	noun
ita:k	L-MH	sheep	s	noun
itakpɪɾɛ	L-M-L-M	cockroach	s	noun
itakpɪɾe	L-M-L-M	cockroach	s	noun
itap	L-H	antelope	s	noun
itara	M-H-M	stumbling		noun?
itara	M-M-L	stumbling		noun?
i:tɪ	L-M	doing		verb?
i:yɔ	L-M	disease		noun
iti	L-M	side		noun
iti:tɔ	L-ML-L	thorn	s	noun
iti:tu	L-ML-H	pounding		noun?
itɔ:	M-ML	work		noun
itɔk	L-L	squirrel	s	noun
itɷrɷ	H-M-M	leaning		
itul	L-H	removing (something)		noun
itun	L-H	end	s	noun
itus	L-L	type of animal	s	noun
itus	L-H	to pluck		noun
ivɛlɛ	L-L-L	breathing/breath		noun
ivɪvɪ	L-L-L	finger	s	noun
ivu:	L-LM	animal	s	noun
ivu:	L-MH	type of animal	s	noun
iwa	L-M	female		noun
iwɷ:	L-LM	mosquito	s	noun
iwu	L-M	dog	s	noun
iya	M-M	supper	s	noun
iya	L-L	type of shrub	s	noun
iyak	L-H	bell	s	noun
iyak	M-H	bell	s	noun
iyas	L-H	termite	s	noun

Word	Tones	English	#	Part of Speech
iyas	M-H	termites	p	noun
iyɪn	L-L	pot	s	noun
iyɪn	M-H	pots	p	noun
iyi	M-M	grain		noun
iyi	L-L	grain		noun
iyik	L-M	ropes	p	noun
iyin	L-M	to lick		(inf.)
iyo	L-M	grass	s	noun
iyɔ	L-M	disease		noun
iyɔk	M-M	gambling		noun
iyɔk	M-H	gambling		noun
iyɔn	L-L	lake	s	noun
iyu	L-H	farmlands	p	noun
iyu	L-M	coming/going out		
iyu	L-H	farms	p	noun
iyu:k	L-MH	weevil	s	noun
iyuk	L-H	corn weevil	s	noun
iyuk	M-H	corn weevils	p	noun
iʏi:nʏo	L-ML-M	shadow	s	noun
iʏɔm	L-L	hare	s	noun
iʏɔ	L-L	hunger		noun
iʏu:	L-MH	millet		noun
iʏu	M-H	millet		noun
iʏu	L-M	millet		noun
iɥɛrɛ	L-M-M	ritual		noun
izai	L-M	entangling		verb?
izɐ:ki	L-ML-L	lion	s	noun
izɪp	L-H	brown antelope	s	noun
ʤaʤaĩ	M-M	clean		
ʤaʤas	L-L	plenty		
ʤɪmpɪt	M-M			
ʤɛnʤɛ	M-M	smart/clear		
ʤɛĩ	L	sound of water falling		
ʤɷkɷmpat	L-M-M	very sweet, nice, good		
ʤɔŋgɪ	L-L	tall & straight		
ʤuʤul	L-L	long-long		
( )ʤa	M	buy		verb
( )ʤaɪ	L	reddish-orange		
kaba	M-H	harvest time		noun
kabara	M-L-L	gift		noun
kabɪn	M-H	cover for rain		noun
kabɷ	M-H	bush		noun
kabɷ	M-ML	bush		noun
kaʧɛ	M-H	calabash	s	noun

Word	Tones	English	#	Part of Speech
kaʃɷ	M-M	place	s	noun
kaʃɷsɷk	M-M-L	center/middle		noun
kaʃɷsɷk	M-L-L	center/middle		
kada:	M-HM	ignore another's wrogdoing (letting them suffer consequences)		verb
kadasa	M-H-M	she		
kadɐsa	M-H-M	sheaf		noun
kadɛs	M-H	cubbyhole in wall	s	noun
kadɪs:	L-H	cubbyhole in wall for storage		noun
kago:	M-HM	scrumble (?)		
kagɷ:	M-HM	scrumble (?)		
kagbɛŋ	M-HM	under-rating		
kagbʸɛŋ	M-LM	under-rating		noun?
kaha:k	M-M	twice		
kahiŋ	M-H	field/arena	s	noun
kɐhiŋ	M-H	field;pitch		noun
kai	L	backward posture		
ka:katak	MH-M-M	inconsiderate		
kaka	M-M	quickly/fast		
kakap	L-L	hastily		
kakama?	H-H-H	exclamation of surprise		
kakɛk	M-H	name of village		noun
kakpɪrɛ	M-L-L	knife for harvesting millet		noun
ka:lɷ	MH-H	evening		
kam	M	blindly		
kama	M-M	back		noun
kamaha:	M-L-MH	back yard		noun
kamasa	M-M-L	imitating		noun
kambala	M-L-L	morning/tomorrow		
kampɔtɔk	M-L-L	hunter's water case		noun
kana:s:	M-M	four times		
kantɷ	M-M	heavy stone	s	noun
kaŋkai	ML-M	today		
kapantɔ	M-M-L	small pot		noun
kapantɔ	M-H-M	mat for rain coat		noun
kasakɷk	M-H-L	name of village		noun
kaʃɪp	M-L	victory celebration		noun
ka:t	H	expr. of pity or anger		
kat	H	exp of concern		
kata:kuru	M-ML-M-L	heaven		noun
kata:kuru	M-HL-M-L	heaven		noun
kata:ma	M-HL-M	behind		
katama	M-HM-M	behind		
kata:ti	M-ML-M	front		noun
kɐtɐ:ti	M-HM-H	front		noun

Word	Tones	English	#	Part of Speech
katai	M-L	six-times		
katasak	M-M-L	beating		noun
katat	M-H	thrice		quantifier
katat	L-L	on top		
katat	M-H	3 times		
kawɷ	M-L	a yawn; or a decision		noun
kaya	M-L	persuasion		noun
kaya	H-H	persuasion		noun
kaʏɪp	M-H	arrow for sewing		noun
kazɪsɐ	M-L-L	frightening		noun
kazɷ	M-H	feast by great-grandchildren on death of a grandparent		noun
kɐbinɐ	M-H-H	hooing		noun
kɐbuk	M-M	search		noun
kɐbuk	M-L	a search		noun
kɐbʸɐ	L-M	forever		
kabiyu	L-M-M	forever		noun
kadɪsɪ	M-M-H	teaching		noun
kɐdisi	M-M-H	teaching		noun
kɐdisi	M-M-H	teaching		noun
kɐf	H	short short		
kɐfit	H-H	short short		
kagbɪsɐ	M-L-L	container made of weeds		noun
kɐgbɪsɐ	M-L-L	dowry; or, little basket made of weed fig		noun
kɐgbisɐ	M-L-L	little basket made of weed fig; dowry		noun
kɐːm	L	blindly		
kɐmusuk	M-M-L	dribbling		
kɐnu	M-M	mouth	s	noun
kɐŋkɐ	L-L	haste		
kɐti	M-H	ahead		
kɐtitu	M-H-M	type of food		noun
kɐtuk	M-H	night; 24-hr day	s	noun
kɐyu	M-H	farm	s	noun
kɐʏɪn	M-H	one time		
kɐʏɪp	M-H	stealing/a theft		noun
kɛŋgɛ	M-M	shallow		
kʸɛk	H	innermost		
kʸɛɾ̃	L	lower		
kɛːt	H	very little drop	s	noun
kɪba	M-L	greed		noun
kɪbaŋ	M-L	greed		noun
kɪbɛː	M-L	kingdom	s	noun
kɪbɪt	M-H	half		
kɪdaŋgɷ	M-H-L	hip	s	noun

Word	Tones	English	#	Part of Speech
kɪdɛk	M-M	bread		noun
kɪgɔrɔ	M-H-H	charm		noun
kɪgba:t	M-HM	hillock	s	noun
kɪgbat	M-HM	hillock	s	noun
kɪgbɪt	M-H	log		noun
kɪhan	M-H	pot for storing porridge		noun
kɪʃɛ	M-H	land of the Bache		noun
kɪʃɛ:	M-H	land where Bache people live		noun
kɪʃɛŋ	M-H	land of Bache people		noun
kɪʃɛ	M-H	calabash	s	noun
kɪʃɛp	M-L	goiter	s	noun
kɪʃɪp	M-L	goiter	s	noun
kɪkan	M-L	goard	s	noun
kɪkara	M-H-L	head pad	s	noun
kɪkɛrɛ	M-L-L	laziness		noun
kɪkɔ	M-L	house	s	noun
kɪkɷm	M-H	corpse	s	noun
kɪkɷs	M-M	year	s	noun
kɪkɷs:	M-M	years	p	noun
kɪkpat	M-H	back of head	s	noun
kɪlɔ	M-L	sharpener		noun
kɪmbɔ	M-H	trumpet		noun
kɪmbɔk	M-L	cap	s	noun
kɪmɛnɛ	M-L-L	small granary		noun
kɪŋfa	M-H	word	s	noun
kɪŋfɛn	M-L	yam	s	noun
kɪmkpa	M-L	girdle	s	noun
kɪmpɛs	M-H	torch made of grass		noun
kɪnda	M-H	anthill		noun
kɪnɛ	M-L	stomach	s	noun
kɪndʒɪk	M-H	uncultivated land	s	noun
kɪndʒɷ	M-L	cow horn; or mud wall-hook		noun
kɪndʒuk	M-H	tuft of hair	s	noun
kɪnsɷ	M-H	flesh		noun
kɪ:nʃi	MH-M	eye	s	noun
kɪntam	M-H	lump	s	noun
kɪntɛn	M-L	chin	s	noun
kɪntɪn	M-H	trap	s	noun
kɪnzɪk	M-H	virgin land		noun
kɪŋbɷŋ	M-H	fig; crowded group of people; lumps of butter		noun
kɪŋgbɷ	M-H	fig; crowded group of people; lumps of butter	s	noun
kɪŋgbasa	M-L-L	root		noun
kɪŋgbɪs	M-L	crowded group of people/cluster		noun

Word	Tones	English	#	Part of Speech
kɪŋkɷ	M-M	hernia	s	noun
kɪŋkpan	M-H	spear		noun
kɪːpa	M-H	pound (sterling)		
kɪpa	M-HM	pound (sterling)		noun
kɪːsak	M-M	name		noun
kɪsak	M-M	name		
kɪsanʧɪ	M-L-H	name of village		noun
kɪsanʧi	M-L-H	name of a village		noun
kɪsɔ	L-L	sitting		noun
kɪsɔŋ	M-L	sitting		noun
kɪsɔrɔ	M-H-H	top of thatch		noun
kɪʃ	H	expr. of disgust		
kɪʃɪ	M-H	name of village		noun
kɪʃɪk	M-M	a boil	s	noun
kɪʃɛn	M-H	luck		noun
kɪtaɪ	M-H	stone	s	noun
kɪtɪs	M-H	abode reclaimed?		noun
kɪtɔ	M-M	neck	s	noun
kitɔ	M-M	neck	s	noun
kɪyɛn	M-H	tongue	s	noun
kɪzana	M-L-L	friendship		noun
kɪzɪ	M-HM	walk		
kiːli	MH-H	birth/reproduction		noun
kiːmbɔ	M-H	trumpet	s	noun
kiːmsa	MH-M	breast	s	noun
kiːmsaː	MH-M	breast	s	noun
kiːnʃi	MH-M	eye	s	noun
kiba	M-L	greed		noun
kibɛ	M-L	chiefdom/kingdom		noun
kibeː	M-L	chiefdom/kingdom		noun
kibuŋ	M-H	heap	s	noun
kibut	M-L	hut	s	noun
kidɛk	M-M	bread		noun
kidɪrɔ	M-M-M			
kidirɛ	M-M-M			
kifit	M-M	half filled		
kifit	M-H	tail/full		noun
kigɷrɷ	M-H-H	charm made of animal skin	s	noun
kigun	M-M	grave	s	noun
kihik	M-M	one of the 3 stones of the fire place		noun
kiʤasi	M-L-H	suffering		noun
kikan	M-L	bottle	s	noun
kikɛrɛ	M-L-L	laziness		noun
kikɔ	M-L	house	s	noun

Word	Tones	English	#	Part of Speech
kikɷs	M-M	year	s	noun
kiku	M-M	a death	s	noun
kilɔ	M-L	sharpener	s	noun
kiŋfa:	M-H	word	s	noun
kiŋfi	L-L			
kiŋfi	M-M	pea	s	noun
kimpɐk	M-M	headless body		noun
kimpuk	M-H	heap	s	noun
kimpuk	M-H	ridge	s	noun
kinʧi	M-L	body (trunk)		noun
kinʤik	M-H	uncultivated land		noun
kinsɷ	M-H	flesh		noun
kinʃi	M-M	date		noun
kintam	M-H	lump	s	noun
kintɛŋ	M-H	nagging		noun
kintin	M-H	trap/snare	s	noun
kiŋgbis	M-L	bunch/cluster		noun
kiŋgbis:	M-L	bunch/cluster		noun
kiŋkɛk	M-H	cover for penis	s	noun
kiŋki	M-M	faster		
kiŋki	M-M	always/often/every time		
kiŋki	H-H	always/often/every time		
kiŋku:	M-ML	bench	s	noun
kiŋyi:	M-HM	tooth	s	noun
kirɐ	M-L	little hill that has soil like ant hill		noun
kirmɐk	L-L	a large root crop		noun
kirɔ:	M-HM	ankle	s	noun
kisak	M-M	name	s	noun
kisɐ:su	M-HM-L	shade		noun
kiʃɪk	M-M	boil	s	noun
kiʃin	M-H	base		verb
kisɔ	M-H	rejoice		noun?
kitai	M-H	rock/stone	s	noun
kiti	M-H	face		noun
kiti:	M-H	lower back/waist	s	noun
kitiŋ	M-H	lower back/waist	s	noun
kɪtɷ	M-H	head	s	noun
kitɷ	M-H	head	s	noun
kɪtɷsɷ	M-L-H	bundle of grain	s	noun
kitɷsɷ	M-L-H	(sheaf of) millet	s	noun
kitu	M-H	girl	s	noun
kitũ	M-H	girl	s	noun
kituŋ	M-H	girl	s	noun
kiyɐn	M-H	tongue	s	noun

Word	Tones	English	#	Part of Speech
kiyɔ:	M-HM	foreign land		noun
kiyuk	M-M	type of spice		noun
kiʏɐ	M-H	world	s	noun
kiʏɛl	M-M	gap between ridges		noun
kizana	M-L-L	friendship		noun
kɷ̃hɛ̃ŋ	M-H	debts	s	noun
kɔk	L	hand	s	noun
kʷɔk	L	hand	s	noun
kɔ:k	L	hand	s	noun
kɷ:m:a	MH-H	foolishness		noun
kɷ:nɷ	ML-M	sleep		noun
kɷ:nsa	M-M	stalk	s	noun
kɔ:tɔk	L-L	gloomy look		noun
kɷban	M-L	rock (flat)	s	noun
kɷbɛ	L-L	garden by house	s	noun
kɷbɛ:	M-ML	hedged garden	s	noun
kɔɪ	M	withered, withdrawn		
kɷfɷ:t	M-ML	thickness		noun
kɷga	M-H	stalk/blade of grass	s	noun
kɷga	M-L	branch		noun
kɷgɛ̃	M-M	stubbornness/insistence		noun
kɷgɔ	M-H	big(ness)		noun
kɷgɔŋ	M-H	bigness		noun
kɷgbarada	M-L-L-L	strength		noun
kɷhak	M-M	twosome		noun
kɷhal	M-L	date palm tree	s	noun
kɷhɛ:k	M-L	given for feeding		noun
kɷhɔ	M-M	blindness		noun
kɷʧa	M-ML	wall of compound	s	noun
kɷʧɛ	M-H	Kuche language		noun
kɷʧɛ:	M-H	Kuche language		noun
kɷʧɛŋ	M-H	Kuche language		noun
kɷʧɪlɪ	M-H-H	path, road		noun
kɷʧɪp	M-H	city	s	noun
kɷʧɪp	M-H	yam		noun
kɷʧɪt	M-H	good health		noun
kɷkɷp	M-M	seniority		noun
kɷkpa	M-H	skin/body	s	noun
kɷkpʸɛrɛ	M-L-L	shin	s	noun
kɷla	M-H	blacksmithing		noun?
kɷla:	M-H	blacksmithing	s	noun
kɷlaŋ	M-H	blacksmithing		noun
kɷlɛ	M-H	intestine		noun
kɷlɛ:	M-H	intestine		noun

Word	Tones	English	#	Part of Speech
kɷmara	M-H-H	relative	s	noun
kɷmbɔs:	M-H	shrub		noun
kɷmɛsɛ	M-L-H	happiness/joy		noun
kɷŋfɛp	M-L	corn cob		noun
kɷmɔt	M-H	ours		pronoun
kɷnʃak	M-M	spoon	s	noun
kɷnʃɷsɷk	M-M-L	potsherd	s	noun
kɷntɷsɷk	M-L-L	broken pot		noun
kɷndar	L-L	bows	p	noun
kɷndar̄	M-L	bows	p	noun
kɷndara	M-L-L	type of tree	s	noun
kɷndɛn	M-M	door	s	noun
kɷnnɛp	M-L	sarcasm		
kɷnɷt	M-M	wound	s	noun
kɷnsa	L-M	stalk	s	noun
kɷnsa	M-M	stalk	s	noun
kɷnsɷ	M-L	toothless space	s	noun
kɷnta	M-L	gum		noun
kɷntɛ	M-L	large water pot	s	noun
kɷntɛ	M-L	clay		noun
kɷntɛŋ	M-M	clay		noun
kɷntɷ	M-M	ear	s	noun
kɷntɷ	M-H	honey		noun
kɷntɷŋ	M-H	honey		noun
kɷŋgɪ	L-M	arrows	p	noun
kɷŋgba	M-M	banana	s	noun
kɷŋgban	M-L	drying place for grains	s	noun
kɷŋgbɪs	M-H	clean place for threshing grain		noun
kɷŋgbɪs	M-L	clean place for drying or storing		noun
kɷŋkɔ	M-L	nitch/step (in a climb)		noun
kɷŋkɷ	M-L	bone	s	noun
kɷŋkɷ:k	L-MH	word of praise for good dancer		
kɷŋkɔl	M-H	armpit		noun
kɷŋkɷvɪ	M-L-L	fingernail	s	noun
kɷŋmʸɪn	M-L	place		noun
kɷpɛ:ŋ	M-HM	sheet	s	noun
kɷras	M-L	we just met		verb
kɷrgbɪk	L-L	dense (esp. forest)		
kɷro	M-M	holding on to keep from falling from a high place		verb
kɷsan	M-L	play/sport		noun
kɷsaŋa	M-L-L	side of human body	s	noun
kɷʃɛn	M-H	redness		
kɷʃɪp	M-M	carpentry		noun
kɷtak	M-H	cave		noun

Word	Tones	English	#	Part of Speech
kutak	M-H	cave	s	noun
kɷtara	M-M-L	room	s	noun
kɷtara	M-L-L	room	s	noun
kutara	M-M-L	room		noun
kɔtɔk	L-L	gloomy look		
kɷya	M-M	a dream	s	noun
kɷyap	M-L	sign	s	noun
kɷʏam	M-H	generosity		noun
kɷʏɔ	M-H	poverty		noun
kɷɥɛrɛ	M-M-M	place where rituals happen		noun
kɷza	M-H	leg/foot	s	noun
kuza	M-H	leg	s	noun
kɷzɛ:	M-M	boiled millet or guinea corn eaten with soup		noun
kɷzɷp	M-L	(large)hoe	s	noun
kubuŋ	M-L	uncleanness		noun
kudu	M-M	hole	s	noun
kuga	M-H	branch	s	noun
kugɛ̃	M-M	stubbornness		noun
kugo	M-H	festival	s	noun
kugo:	M-H	festival		noun
kugbɐŋ	M-H	emotional distance; nonchallance		
kuhɛ̃	M-H	debt	s	noun
kuhu	M-H	mat	s	noun
kūhū	M-H	pus		noun
kukul	L-L	surreptitious		
kukpɐ:kutuk	M-HL-M-M	buttocks	s	noun
kukpa:nu	M-ML-M	lip	s	noun
kukpɐ:nu	M-HL-M	lip	s	noun
kuluk	M-H	nest	s	noun
ku:luk	M-H	nest		noun
kumbɛ	M-L	winnowing tray	s	noun
kumin	M-H	yours		pronoun
kumu	M-L	sieve	s	noun
kumū	M-H	sand		noun
kumun	M-H	harvesting		noun
kundu	M-L	round flute	s	noun
kuŋgbis	M-H	cluster		noun
kuŋgbis	M-H	clean place for threshing grain		noun
kunʃɐ	M-L	wall	s	noun
kuŋku	M-H	bone; strength		noun
kundʒi	M-H	mortar	s	noun
kunzi	M-L	mortar		noun
kunzi	M-H	mortar	s	noun
kupit	M-H	righteousness/honesty/integrity		noun

Word	Tones	English	#	Part of Speech
kuɾ̄	L	loud motor noise		
kuri:	M-M	we hold; or name of village		noun
kuru	M-L	God		noun
kuʃɪp	M-M	carpentry		noun
kuʃihuɾ̄	M-M-L	we are many		verb
kuʃik	M-H	youth		noun
kuʃit	M-M	blackness		noun
kutu	M-H	beauty (female)		
kutuk	M-H	forest	s	noun
kuvu	M-M	leaf	s	noun
kuvu	M-M	leaf	s	noun
ku:ɰ̣ɷ	M-HM	witchcraft		noun
kuyuk	M-M	knee	s	noun
kʸɛk	H	innermost		
kʸɛkʸɛt	M-M	very cold		
( )ka:	ML	go round		verb
( )ka:t	H	distant		adj?
( )kada:	M-HM	ignore someone's wrongdoing/let them suffer consequences		verb
( )kak	H	separate		verb
( )kak	M	refuse/reject		verb
( )kak	L	refuse/reject		verb
( )kal	M	choose before anyone else does		verb
( )kan	M	lack		verb
( )kap	M	turn over		verb
( )kap	M	belch		verb
( )kɐɾ̄	L	tip (yourself); bend down a little		verb
( )kɛ:n	M	run		verb
( )kɛp	M	probe persistently/dig out carefully		verb
( )kɔ:	ML	to love		verb
( )kɔ:	ML	ride		verb
( )kɔɪ	L			
( )kɔk	M	put (person) on the ground		verb
( )kɔk	L	grind		verb
( )kɔl	H	scratch		verb
( )kɔs	H	vomit		verb
( )kɔt	M	hang		verb
( )kɷɪ	L	postpone		verb
( )kɷ:l	HM	kneel		verb
( )kɷn	M	shave		verb
( )kɷs	M	spend a year		verb
( )kɷsɔ	H-M	wrestle down		verb
( )kɷsɷ	M-H	fall		verb
( )kɷt	H	beg		verb
( )ku	H	die		verb

Word	Tones	English	#	Part of Speech
( )kuk	M	demolish		verb
( )ku:l	ML	bend down		verb
( )kul	LM	bend down		verb
( )kuluk	L-L	wear		verb
( )kumu	M-L	hit w/blunt object		verb
( )kun	H	cry		verb
( )kusuk	L-L	bury		verb
( )kutu	M-H	beautify		verb
( )kutũ	M-H	beautify (female)		verb
( )k(u)rɔ	(H)-H	peel		verb
kpakpak	L-L	haste/hastily		
kpakpasak	M-L-L	dry, very dry		
kpaĩ	M	sound of blowing; or, negatively outspoken		
kpasara	M-M-M	big, strong seeds		
kpɛtɛs:	L-L	able to be easily cut		
kpʸɛtɛs	H-H	able to be cut easily		
kpɪtɛtɛ	L-L-L	soft from being overcooked		
kpɪk	M	thud		
kpitis	L-L	rough		
kpɷkpɷk	L-L	sound from a boiling pot		ideophone
kpɷkpɷĩ	L-M	a little move		
kpɔĩ	L	sound of dragging something		
kpʸɛkpʸɛt	H-H	completely		
kpʸɛtɛrɛs	M-H-M	completely finished		
( )kpʸel	H	scratch		verb
( )kpa	H	catch		verb
( )kpaɪ	H	dip something out w/slotted spoon		veb
( )kpaŋ	H	compress		verb
( )kpʸɛl	H	peck		verb
( )kpʸɛrɛ	L-L	peck		verb
( )kpʸɛsɛrɛ	H-H-M	disturb		verb
lak	H	very		
lau	L	half asleep		
lɛɷ	L	tending to fall		
lɛp	H	from initial stages, process		
lɷlɷ	H-H	unimportant		
lulu	M-H	yet to		
( )la	H	plant/till		verb
( )lap	M	spread		verb
( )las	M	seal		verb
( )las:	M	seal		verb
( )lasa	M-H	abuse/curse		verb
( )lat	M	lie down		verb
( )lat	L	lie down		verb

Word	Tones	English	#	Part of Speech
( )lɛt	M	hide (trans.)		verb
( )lɪk	H	get up		verb
( )lɪlɪ	H-M	enter		verb
( )lɪsɪ	L-M	pour		verb
( )lɪsɪ	M-H	pour		verb
( )li:	H	give birth to		verb
( )lɔ	L	sharpen		verb
( )lɔk	M	weave/knit		verb
( )lɷ	L	instigate		verb
( )lɷ:	L	instigate		verb
( )lɷɪ	M	be annoyed		verb
( )lɷlɷ	H-H	cross over		verb
( )lu:	HM	cook		verb
( )luŋ	HM	cook		verb
( )luk	L	wear		verb
( )lup	L	mingle		verb
ma	M	with		
mala	M-M	perhaps		
mampɷk	H-H	fat		adj?
maŋ	H	sweet		
mɛmpuk	L-L	fat		noun
mɛmɛk	L-L	greedily		
mɔmɔk	L-L	greedily		
mɛrɛru	L-L-L	foolishly		adv.?
mɪsɛ	L-M	sweet/tasty		
mɔnʤɔ	L-L	amazed		
mɷmɷnɷ	H-H-H	soft		
( )mak	M	measure/throw		verb
( )maka	M-M	fit in		verb
( )masa	M-L	learn		verb
( )mɪ	H	answer		verb
( )me:ŋ	M	build		verb
( )mɛŋ	M	build		verb
( )mɛlɛ	M-L	be familiar with		verb
( )mɛsɛ	L-H	be sweet		verb
( )mɔɪ	L	embrace/grip		verb
( )mɔk	L	put on fire		verb
( )mɔlɔk	H-H	look for		verb
( )mɔrɷ	L-L	relapse		verb
( )mɔsɔ	L-L	gather		verb
( )mu:yu	L-L	surreptitiously probing		verb
( )mun	H	break (stick)		verb
( )musuk	M-L	break into many pieces		verb
na:naɪ	ML-M	now		

Word	Tones	English	#	Part of Speech
na:s:	M	four		
naɪ	M	like this		
n̩sɔ	L-L	beni seed		noun
nɷ:	ML	that, so		
( )nai	M	widen		verb
( )nak	H	curse		verb
( )nap	L	put forth/give out/stretch out		verb
( )nap	M	put forth/give out/stretch out		verb
( )nap	L	widen it		verb
( )nɪ:	L	give me		verb
( )nɪba	M-H	give them		verb
( )nɪk	M	give		verb
( )nɪyaʏɐ	M-H-M	give you (pl.)		verb
( )nɷ:	M	give him/her		verb
( )nuk	M	rub		verb
( )nuk	L	rub		verb
ŋa:	ML	you know what?		
ŋaɪ	H	pack many		
ŋɐf	H	an epithet		
ŋɷ	M	you	s	pronoun
ŋɷɪ	M	(the) you	s	pronoun
( )ŋa	H	open (mouth)		verb
( )ŋabɪ	H-HM	wait for me		verb
( )ŋabɪba	H-H-H	wait for them (before starting)		verb
( )ŋat	H	break		verb
ɲam	L	on edge of doing harm		
ɲɪmɪ	M-M	bared teeth		
ɲɛt	H	tiny		
( )ɲasa	M-L	place against		verb
( )ɲɪs:	M	massage		verb
( )ɲɔ:	MH	bite him/her repeatedly		verb
( )ɲɷmɷ:	H-H	bite him/her		verb
( )ɲɔk	M	bite repeatedly		verb
( )ɲɷmɷ	H-H	bite		verb
ŋmaŋmat	M-M	quietly		
ŋmɪn	H	keep quiet		
( )ŋmala	M-M	laugh		verb
( )ŋmʸɛk	H	swallow		verb
( )ŋmʸɛk	M	swallow		verb
ɔɪ	M	yes (fem response to being called)		
ɔʤaŋkɔ	M-L-L	woman's name		noun
ɔtɷʏɪlɪ	M-H-H-H	a name (fem.)		noun
ɔwɔk	M-M	river	s	noun
ɔʏala	L-ML-LM	a name (fem.)		noun

Word	Tones	English	#	Part of Speech
oʤa	M-M	woman's name		noun
oʤaŋko	M-ML-L	woman's name		noun
otu	M-H	one who dies (female)		
oyiku	M-H-M	woman's name		noun
pal	L	inattentive		
pal	H	casually & offensively		adverb?
paɷ	H	lightly covered		
papat	L-L	busybody/restless/rascally		
pau	L	flashy (small)		
pɐi	MH	thoroughly white		
pɐi	H	thoroughly white		
pɐmpɐ	H-H	white		
pɐmpɐ	M-M	sparkling white		
pɐmpitɐk	H-H-H	poor & miserable/wretched		
pampitɐk	H-H-H	poor & miserable/wretched		
pɐŋkɐ	M-M	lightweight		
pɐŋkɐ	L-L	lightweight		
pɐpɐsɐk	M-L-L	too brittle or breakable		
pɐ̄r	M	smart reaction		
pɐ̄r	H	"surprising" (of an action)		
pɐu	M	hollow		
pɪk	M	sound of something small falling		
pɐs	H	completely (i.e. dead)		adv?
pɐt	H	how something enters		
pɪpɪtɪk	H-H-H	very sharp		
piːr	H	nicely trimmed		
piːt	H	right		
piːt	M	right		
pɔːt	LM			
pɔːt	MH	easily pierced		
pɔŋ	L	ash-colored		
pɔtɔk	L-L	plump		
pɔtɔk	M-M	tall & empty		
pras	L	many		ideophone
puk	L	falling sound		
pupuku	M-M-L	state of being soft (ground)		
pupuku	MH-M-M	worn out		
pupuku	LM-L-L	worn out		adv?
puī	L	(ex: birds all fly up together)		
pusgik	M-M	bundled up		
pusgik	L-L	bundled up (of a person)		
put	M	how someone takes off instantly		
putiki	L-L-L	loose (e.g.ground)		
putugi	L-L-L	plenty of		

Word	Tones	English	#	Part of Speech
pʷɔk	M	sound of something falling		
pʸau	L	quickly through the air		adverb
( )papat	M-M	be busybody		verb
( )pɐ̄r	M	fly		verb
( )patak	H-H	put together		verb
( )patak	L-L	mix		verb
( )pɔŋ	L	ash color		adj.
( )pɔs	M	break		verb
( )puk	L	hit several times/beat severely		verb
rɐp	H	at the same time		
rɐrɐ	H-H	vascillatingly		
ri:	H	hold		verb
rididi	L-L-L	manner of falling		ideophone
rɷtɷtɷ	H-H-H	quiet		
( )ɾ̄as	L	join		verb
( )ras	L	join		verb
( )rɛ:	M	support w/dirt (e.g.,plant)		verb
( )ri:	H	hold		verb
( )rimɪ	H-M	hold me		verb
( )riŋ	H	hold (it)		verb
( )riŋɐ	H-H	hold for him/her		verb
( )riŋɐ:	H-H	hold for him/her		verb
( )riŋɐba	H-H-H	hold for them		verb
( )riŋamɪ	H-H-M	hold for me		verb
( )riŋemi	H-H-H	hold it for me		verb
( )riɷ	HH	hold him/her		verb
( )rɷsɔk	M-L	pluck (many at once)		verb
( )ruk	L	fall on knees		verb
( )ruruk	H-H	completely destroy		verb
sa	L	not		
sai	L	pain		
sakɪ	L-H	praise (imp. pl.)		verb
salala		irresponsible		
sambraka		well done		
samɪ	H-H	mix (imp. pl.)		verb
saŋkra		light		
sɐl	L	disturbance		
sɐs	M	wholly		
sɐs:	H	wholly		
sɐyɐ	L-L	anything causing sneeze		
sɐyɐ:	L-L	anything causing sneeze		
sɐ:yɐ	L-L	anything causing sneeze		
sɐ:yɐ:	L-L	itchy nose/abt to sneeze		
sɛyɛ	L-L	anything causing sneeze		

Word	Tones	English	#	Part of Speech
sɛŋke		tall & thin		
sɛ:ɪ̃	L	unsound (mind)		
se:t	L	limp of short-legged person		
sɛrɛrɛ		balanced/steady		
sɔɪ	MH	drink (imp. pl)		verb
surɔk	M-L	pound to remove chaff		verb
( )sak	M	praise		verb
( )sak	L	praise/put on fire		verb
( )sakɪ	L-L	praise me		verb
( )saku	L-M	praise him/her		verb
( )sam	H	mix		verb
( )sam	M	mix (food, etc.)		verb
( )sap	L	be weary		verb
( )sɐl	ML	disturb		verb
( )seɪ		derail (mental)		verb
( )sɛɪɛ		be choosy		verb
( )sɛm		choose		verb
( )sɛrɛk		be red		verb
( )si	H	swear		verb
( )si:		swear		verb
( )siri		be satisfied		verb
( )sɔ	L	sit/be seated		verb
( )sɔ	M	drink		verb
( )sɔk	M	take/carry		verb
( )sɔkɪ	H-M	carry me		verb
( )sɔl	H	to back (a baby)		verb
( )sɔl	M	to back (a baby)		verb
( )sɔŋ	L	sit		verb
( )sɔrɔ		move a bit		verb
( )sɔrɔk		remove chaff by use of a mortar		verb
( )sɔt	L	boil		verb
( )sɔu	M	carry him/her		verb
( )soi	MH	drink		verb
( )sokami	H-H-M	to take something		verb
( )sɷ	M	take a bath		verb
( )sɷlɷk		haul		verb
( )sɷmɷ	L-L	remember		verb
( )sɷɪŋ	L	watch over		verb
( )sɷsɷ	L-L	ambush		verb
( )sɷt	H	thatch		verb
( )sɷt	L	boil		verb
( )su:		sob		verb
( )su:l	ML	increase		verb
( )sul	HM	increase		verb

Word	Tones	English	#	Part of Speech
( )sun	H	sob		verb
( )sun	H	breed/produce fruit		verb
( )suŋ	ML	be filled		verb
( )susu	H-M	forget		verb
( )sᵘɪɔ	(M)-M	shift		verb
ʃaʃak	L-L	brisk (walk)		
ʃɛm	ML	slippery		
ʃɛmi	L-H	choose (imp. pl.)		verb
ʃɛnɷ	H-H	hate him/her (imp.)		verb
ʃɛɷ	L	cautiously		
ʃɪkɪn	M-H	thanks		
ʃip	L	dark		adj.
( )ʃa	M	revive		verb
( )ʃa	H	revive		verb
( )ʃam	L	make wet		verb
( )ʃɛk	M	scatter		verb
( )ʃɛm	L	select/choose/sort/sift		verb
( )ʃɛn	H	hate		verb
( )ʃɛm	H	hate		verb
( )ʃɛŋ	HM	put (it) in		verb
( )ʃɛʃɛ	L-L	try?		
( )ʃɪ	H	wake		verb
( )ʃɪ	M	wake		verb
( )ʃiː	H	wake up		verb
( )ʃɪk	M	remove/lift		verb
( )ʃik	M	lift		verb
( )ʃɪn	H	dig		verb
( )ʃin	H	dig		verb
( )ʃɪp	H	plant/transplant		verb
( )ʃɪp	M	carve		verb
( )ʃɪp	H	carve		verb
( )ʃɪp	H	rearrange		verb
( )ʃɪtɪk	H-M	be black		verb
( )ʃip	M	dark		adj?
( )ʃiʃi	L-L	get coid		verb
( )ʃɷk	M	perforate		verb
taɪ	MH	take (imp. pl)		verb
tai	L	six		
tai	ML	six		adj?
taːm	LM	drowsy		
tɐːm	LM	drowsy		adj?
tʸɪːm	ML	drowsy		
taːtʰ	H	three		numeral
tantam	H-H	bland		

Word	Tones	English	#	Part of Speech
taŋgbak	L-M	seven		
taɾ̄	L	sound of tearing		ideophone
taras	M-M	nine		numeral
tarat	L-L	eight		
tat	H	three		
taːt	HM	three		adj.
tɛs	H	sound made by crack		ideophone
tɛndɛ	M-M	w/flat buttocks		adj?
tɛːŋ	L	soft		
tɛtɛk	M-M	only, alone		
tɪlɛk	L-L	stand (wait)		verb
tɪmɪ	H-M	do it for me		verb
tirɛ	M-L			
tɔɪ	MH	too		
tɷt	H	we		pronoun
tuɾ̄	L	many, plenty		
( )ta	M	take/agree/believe		verb
( )ta	L	take/agree/believe		verb
( )tak	M	weave		verb
( )tam	M	pick		verb
( )tam	L	pick		verb
( )taŋa	H-H	chew		verb
( )tap	H	tap		verb
( )tap	H	rob bees		verb
( )taɾ̄	L	direct		
( )tara	L-L	touch		verb
( )tara	H-H	shoot		verb
( )tara	H-L	stumble		verb
( )taraɷ	M-MH	touch him		verb
( )tasak	M-L	beat		verb
( )tɛsak	M-L	beat		verb
( )tɛlɛk	H-H	finish what is almost finished		verb
( )tɛn	H	cut with axe/dig with hoe		verb
( )tɛrɛk	H-H	put out to dry		verb
( )tɛs	H	finish		verb
( )tɛs	M	finish		verb
( )tɛt	M	say/tell		verb
( )tɛːt	M	say/tell		verb
( )tɪːk	L	keep down		verb
( )tɪsɪ	H-H	look like		verb
( )tɔ	L	see		verb
( )tɔː	ML	look here		verb
( )tɷ	H	send		verb
( )tɷː	ML	hawl		verb

Word	Tones	English	#	Part of Speech
( )tɷmɷ	L-L	mention		verb
( )tɷn	H	deny		verb
( )tɷp	H	fix on the handle		verb
( )tɷp	H	bud		verb
( )tɷrɷ	H-M	lean		verb
( )tɷrɷ	H-H	pierce		verb
( )tɷrɷ	M-M	pierce		verb
( )tɷs	H	hem		verb?
( )tɷs	H	look over		verb
( )tɷsɔ	H-M	pour		verb
( )tu	H	pound		verb
( )tul	H	remove from		verb
( )tumɔ	L-L	mention		verb
( )tuŋ	H	cease		verb
( )tup	M	sow		verb
( )tus	H	pluck		verb
( )tusu	M-L	push		verb
( )tusu	H-M	push		verb
ɷbai	M-M	census		noun
ɷbai	M-ML	census		noun
ɷbak	M-H	compartment	s	noun
ɷbak	L-M	apartment	s	noun
ɷbɔri	M-M-M			
ɷʃara	M-L-L	lower part		noun
ɷdɷk	M-H	wage		noun
ɷdɔrɔ	M-M-M	go-between in courtships		noun
ɷgap	M-M	member of body	s	noun
ɷgɪndɷ	M-H-H	tax		noun
ɷgɛɾ̄	M-M	stubborn person		noun
ɷgɔ	M-H	big (man)		
ɷgɔn	M-L	blessing		noun
ɷgɔn	L-L	blessing		noun
ɷgbɷtak	M-L-L	growth		noun
ɷgbɷtak	L-L-L	growth		noun
ɷhɛl	M-H	moon	s	noun
ɷhɔ	M-M	blind person	s	noun
ɷhɔ	M-M	steam		noun
ɷhɔ̃	M-L	deep hole	s	noun
ɷhɷːk	M-M	eleven		numeral
ɷhɔɪ	M-ML	heat		noun
ɷhɷk	M-L	name of village		noun
ɷʤa	M-L	name of a village		noun
ɷʤaka	L-L-L	person's name		noun
ɷkala	M-M-L	good luck		noun

Word	Tones	English	#	Part of Speech
ɷkaŋga	M-M-L	illness		noun
ɷkaɷ	M-H	pocket	s	noun
ɷkavɷ	M-L-L	place	s	noun
ɷkɛp	M-M	earnest search	s	noun
ɷkɛrɛ	M-L-L	lazy person	s	noun
ɷkɷn	M-H	stick	s	noun
ɷkɷp	M-M	elderly person	s	noun
ɷkɷrɷk	M-H-M	orphan	s	noun
ɷkɔt	M-M	throat/voice		noun
ɷkpandɪ	M-H-M	eaves of grass roof		noun
ɷla	M-H	blacksmith	s	noun
ɷlas	M-M	courtyard	s	noun
ɷlɛt	M-M	hiding; secrecy		noun
ɷ:ma	MH-H	fool	s	noun
ɷmaŋ	M-H	hunger for		noun
ɷmasa	M-M-L	imitation		noun
ɷmba	M-L	time		noun
ɷmbɔl	M-H	decayed leftovers (i.e., meat)		noun
ɷmɛlɛ	M-M-L	familiarity		noun
ɷmi	M-H	bad luck		noun
ɷmparada	M-H-H-M	craze-inducing substance		
ɷmpɪp	M-H	mildew in corn		noun
ɷɲvɪ	M-M	sun	s	noun
ɷnvɪ	M-M	sun	s	noun
ɷnaɷ	M-MH	male	s	noun
ɷndar	M-L	bow	s	noun
ɷndar̃	M-L	bow	s	noun
ɷndas:	M-L	bow	s	noun
ɷndɛs:	M-H	type of yam	s	noun
ɷnɪt	M-M	person	s	noun
ɷnɷkɔt	M-M-M	sustainer in spiritual world		noun
ɷnsa	M-H			noun
ɷnsa:	M-H	broth		noun
ɷnsal	M-L	ridge	s	noun
ɷnsat	L-M	rope	s	noun
ɷnsat	M-H	rope	s	noun
ɷntɷsɷk	M-L-L	broken pot	s	noun
ɷntɷvɪn	M-H-M	type of edible leaf		noun
ɷntɷ	M-H	excrement		noun
ɷntɷ̃	M-H	excrement		noun
ɷntɷŋ	M-H	excrement		noun
ɷntɷp	M-M	paint		noun
ɷnvɛp	M-L	inside-out lip	s	noun
ɷŋka:	M-H	crust/burnt food	s	noun

word	Tones	English	#	Part of Speech
ɷŋkaɪŋ	M-H	crust/burnt food		noun
ɷŋkaŋ	M-H	crust/burnt food	s	noun
ɷŋkɔ	M-M	relative	s	noun
ɷŋkɔl	M-H	relative		noun
ɷra	M-M	narrow opening between rocks		noun
ɷːra	MH-H	gun?	s	noun
ɷrɔ	M-L	name of a rocky place		noun
ɷsak	L-M	increase		noun
ɷsak	M-H	increase		noun
ɷsɔk	M-H	12 {10}		
ɷsɷt	M-H	thatch		noun
ɷsɷt	L-H	roofing		noun
ɷta	M-H	who		
ɷtak	L-H	cave	s	noun
ɷtan	M-L	younger		
ɷtɷtɷ	M-HM-L	hair		noun
ɷtɷːtɷ	M-HM-M	hair		noun
ɷtɷːtɷ	M-HL-L	hair		noun
ɷvana	M-H-M	his/her sister	s	noun
ɷvandɷt	M-H-M	my sister	s	noun
ɷvɛlɛ	M-L-L	back door	s	noun
ɷvɪn	M-M	child	s	noun
ɷvɔ	M-M	a festival official	s	noun
ɷvoːɾi	M-H-L	brick?	s	noun
ɷwa	M-M	woman	s	noun
ɷw̰ɷ	M-L	fire		noun
ɷw̰ɔk	M-M	river	s	noun
ɷyaː	M-H	crack		noun
ɷyaŋ	M-H	a crack	s	noun
ɷyɷp	M-H	thick (person)		
ɷʏaː	M-H	leather string		noun
ɷʏɛn	M-H	traditional doctor		noun
ɷʏɪp	M-M	porridge		noun
ɷʏɔ	L-L	"humanized" rabbit in folk tales		noun
ɷzai	M-M	entanglement		noun
ɷzana	M-L-L	his/her friend	s	noun
ɷzɪ	M-H	my friend	s	noun
ɷzɷt	M-L	my brother	s	noun
ubin	M-H	disregard for one		noun
uboː	M-HM	dirt dug from hole by animal	s	noun
ubɷː	M-HM	heap of dirt from digging		noun
ubɔŋ	M-H	boast		noun
ubuː	M-H	pubic area		noun
udu	M-M	water hole	s	noun

Word	Tones	English	#	Part of Speech
ugɛr̄	M-M	stubbornly		
ugirgi	M-H-H	train		noun
uhɐri	M-H-H	weeding		noun
uhɐru	M-H-L	ash from burnt grass		noun
uhɛ	M-H	kind of snake	s	noun
uhɛl	M-H	moon	s	noun
uhik	M-M	support of a hoe	s	noun
ūhʸɐ̄	M-M	track	s	noun
uhok	M-M	eleven		
ūhō	M-L	end of rainy season		noun
ūhō̄	M-L	time between rainy & dry seasons		noun
ūhō̄:	M-HM	time just before harvest		noun
uhɷrɔ	M-L-L	common cold		verb
uhᵘrɔ	M-(M)-L	you have wrested		verb
ukɛrɛ	M-L-L	lazy person	s	noun
uku:k	M-H	barren		
ukuk	M-H	barren		
ukpak	M-H	single man	s	noun
ulɪɐ	M-H-H	boundary (farm)		noun
ulit	M-H	back of neck	s	verb
umbu	M-L	dirt in water		noun
umpɐsɐk	L-M-M	lip turned out		
uŋvulu	M-H-H	cold		
undar̄	M-L	bow	s	noun
undu	M-H	tail	s	noun
unɪt	M-M	person	s	noun
undʒuluk	M-L-H	foreskin	s	noun
undʒuluk	M-L-M	uncircumcised penis		noun
untuŋ	M-H			
uŋkɐŋ	M-H	big gourd	s	noun
uŋkɐʏɐ	M-H-H	type of berry		noun
uŋko	M-H	goard	s	noun
uŋkɷ	M-H	goard	s	noun
uŋkoŋ	M-H	large goard		noun
uŋkutuk	M-H-H	pestle	s	noun
uŋkpɐk	M-M	bird	s	noun
usɐl	M-ML	disturbance		noun
usu:l	M-HM	increase		noun
usu:l	M-ML	increase		noun
uʃɛnɷ	H-H-H	you hate him/her		verb
uʃin	M-H	investigation		noun
uʃit	M-M	dirt		noun
uʃitik	H-H-M	you are black		verb
utiɐŋ	M-ML	main		

Word	Tones	English	#	Part of Speech
utitɪ̄r	M-H-H	zebra	s	noun
utu	M-L	chief (king)	s	noun
utuntu	M-HM-M	blackberrry	s	noun
utuntu	M-H-M	blackberry		noun
utuntu:	M-H-MH	blackberry		noun
utusu	M-H-H	profit		noun
utusu	L-M-M	profit		noun
utusu	L-H-H	profit		noun
uvɛni	M-H-M	your sister	s	noun
uwa	L	then, so		
uwa	M-M	woman	s	noun
uwɑ̂:	M-H	fire		noun
uwu	M-H	fire		noun
uwɔ̂k	M-M	river	s	noun
uyi:k	M-M	rope	s	noun
uyik	M-M	rope	s	noun
uʏip	M-H	thief	s	noun
uɪri:	M-M	you will hold		verb
uɪrimɪ	M-M-L	you will hold it		verb
uɥlɪ	M-H-H	slave	s	noun
uɥɛn	M-H	native doctor	s	noun
uɥɛrɛ	M-M-M	whip		noun
u:zin	M-L	your brother	s	noun
uzin	M-L	(your) brother	s	noun
uzana	M-L-L	his/her friend	s	noun
uzɪni	M-L-M	(your) friend	s	noun
uzini	M-L-M	your friend	s	noun
uzini	M-L-M	your friend	s	noun
vaŋva	M-M	very tight		
vaɪ̄	L	way of turning away or throwing away, angrily		ideophone
vat	H	all		adverb
vau	L	expr. of anger		
vɪ̄r	L	way of turning away or throwing away, angrily		ideophone
vi:t	H	narrow at one end		
vit	H	narrow		
( )va:	M	paste		verb
( )vaɪma	ML-M	paste on		verb
( )vaŋa	ML-M	paste for him/her		verb
( )vaŋamɪ	ML-M-L	paste for me		verb
( )vasa	H-M	paste on several pieces		verb
( )vi	H	collect/gather		verb
( )vi:	H	collect/gather		verb
( )vi:t	H	remove		verb

Word	Tones	English	#	Part of Speech
( )vu	L	hold		verb
( )vu	M	catch		verb
( )vulu	M-L	blow at		verb
( )vusu	M-H	catch		verb
waɪ	M	that (one)		
wawalak	ML-L-L	long & thin		
wawalak	ML-M-M	long & thin		
wawaɾ̃	L-L	quickly		
wɷ	H	she/he		pronoun
wɷ	L	then, so		
wɷɪ	M	he/she (particular)		pronoun
( )wan	H	sew		verb
( )wasa	L-L	wash		verb
( )wɷt	H	slab?		verb
( )wɷɪ	L	begin, start		verb
( )wɷlɔ	M-L	call		verb
( )wɷrɔk	M-L	sweep, dust, clean		verb
( )wɷsɷ	M-L	roast		verb
( )wɷsu	H-L	roast		verb
ya	H	how?		
yaɷ	L	withering; or, slight a person		
yau	L	withering (said to offend a person)		
yɛːyɛ	H-M	without sense		
yɛːyɛ	H-L	without sense		
yɛyɛk	H-H	sparkling white		
yɔɪ	M	yes (masc. response to being called)		
yɔs	L	withered		
( )yasa	H-H	lick		verb
( )yayɪ	H-M	eat again		verb
( )yɪ	H	eat		verb
( )yɛn	M	hoe (grass)		verb
( )yɪn	M	lick		verb
( )yɪŋɪ	H-H	talk		verb
( )yɪp	M	sell		verb
( )yɛsɛ	H-M	sell		verb
( )yɪsɪ	H-M	ask		verb
( )yɪsɪba	H-M-H	ask them		verb
( )yɪsuː	H-MH	ask him/her		verb
( )yɔn	H	pull weeds		verb
( )yɔs	L	wither		verb
( )yu	H	go out; or, get married		verb
ʏaʏap	H-H	tattered		
ʏɛkamɷtɷk	L-L-L-L	inappropriately big (esp. clothes)		
ʏɪn	H	one		

Word	Tones	English	#	Part of Speech
ʏɛni	H-M	heal me (imp.)		verb
ʏɛɲɪ	M-M	you plural		pronoun
ʏɛʏɛl	L-L	whispering		
ʏoː	HM	expr of surprise		
ʏuː	L	shadowing		
ʏuɪŋ	L	color/shade		
( )ʏap	H	repound		verb
( )ʏɐmɐ	HM-M	refuse to give		verb
( )ʏɛn	H	heal		verb
( )ʏɪp	M	steal		verb
( )ʏip	H	steal		verb
( )ʏɪɪ	H-H	hold		verb
( )ʏɛʏɛk	L-L	lose		verb
( )ʏɔk	M	throw away		verb
( )ʏɔk	L	discard		verb
zaːyaː	L-L	fine, beautiful		
zɐl	L	up high		
zisɐ	L-L	frightening		
zɔkɔkɔ	L-L-L	thin/sharp		
zɷmpɛt	L-L	sharp & tall (abuse applied to person)		adj?
zɔɲ	L	overlapping		
zɔɪŋ	ML	overlapping		
( )zaː	MH	be early		verb
( )zaɪ	M	entangle		verb
( )zɐ̃	L	awaken		verb
( )zɐsɐ	L-L	frighten		verb
( )zɛ	L	sift		verb
( )zɛː	L	sift		verb
( )zɛɪ	H	trip		verb
( )zɪːʧɛ	ML-M	move (scoot) again		verb
( )zɪk	M	escort		verb
( )zɪɪ	H-H	climb down		verb
( )zɪs	H	suffer		verb
( )zɪsɪ	M-H	loosen/untie		verb
( )zi	M	change		verb
( )zî	H	turn over/turn/answer/reply		verb
( )ziː	H	turn over/turn/answer/reply		verb
( )ziɪŋ	M	turn over/turn/answer/reply		verb
( )ziŋ	M	turn over/turn/answer/reply		verb
( )ziːʃɪk	ML-M	shift		verb
( )zĩ	L	awaken		verb
( )ziri	H-H	to come down		verb
( )ziri	M-M	to come down		verb
( )ziri	H-H	climb down		verb

Word	Tones	English	#	Part of Speech
( )ziri	M-L	climb down		verb
( )zisi	M-H	loosen		verb
( )zɷsɷ	M-H	follow		verb
( )zuk	M	drive away		verb

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