



9
A PHONOLOGY OF KHMU LUE AT NAN PROVINCE

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Thesis
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ชื่อวิทยานิพนธ์ ระบบเสียงภาษาขมุ่ลื้อที่จังหวัดน่าน
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บทคัดย่อ

วิทยานิพนธ์นี้เสนอการศึกษาาระบบเสียงภาษาขมุ่ลื้อที่หมู่บ้านสบหาง ตำบลชนแดน
 อำเภอเชียงกลาง จังหวัดน่าน
 ภาษาขมุ่ลื้อถิ่นนี้มีคำนองเสียง 2 ประเภทคือ คำนองเสียงตก และคำนองเสียงขึ้น
 การลงเสียงหนักเบาของคำ มีลักษณะเป็น 3 ระดับคือการลงเสียงหนัก การลงเสียงเบา และ
 การไม่ลงเสียงหนักเบา ลักษณะพยางค์มี 3 ประเภท คือพยางค์หลัก พยางค์รอง และพยางค์หน้า
 และหน่วยเสียงมี 3 ประเภท คือ หน่วยเสียงพยัญชนะ 21 หน่วยเสียง หน่วยเสียงสระเดี่ยวสั้น
 9 หน่วยเสียง หน่วยเสียงสระเดี่ยวยาว 9 หน่วยเสียง หน่วยเสียงสระผสมสองเสียง(diphthong)
 3 หน่วยเสียง และลักษณะน้ำเสียง (register) 2 หน่วยเสียง

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ABSTRACT

This thesis presents the phonology of Khmu Lue, a sub-group of Khmu, Mon-Khmer sub-branch, Austro-Asiatic language family. It is spoken in certain villages of Nan province. The description is based on the Khmu Lue Phonology of Sob-Phang Village.

This Khmu Lue phonology is described as having : falling and rising contour, two types of stress groups: strong stress and weak stress, three types of syllable: major syllable, minor syllable and presyllable and three types of phoneme : twenty-one consonant, nine short and nine long single vowel, three diphthong and two register phonemes.

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LIST OF ABBREVIATIONS

C = consonant	V = vowel
p.= place	vl.= voiceless
vd.= voiced	h.v.=helping verb
f.p.= final particle	i.c.= initial consonant
f.c.= final consonant	S = strong stress
W = weak stress	U = unstress
pl.= plural	subd. = subdistrict
q.w.= question word	adv. = adverb
neg.= negative word	WW = word of warning
pron.= pronoun	class.= classifier
N = syllabic nasal	
() = optional	^ = high-falling pitch
\ = low pitch	/ = high-rising pitch
[] = used for phonetic transcription	
/ / = used for phonemic transcription	
' ' = definition	> = unreleased
+	= compound
,	=weak stress in minor syllable
✓	= occurrence
v·	= half long vowel
..	= breathiness
'	= strong stress in minor syllable

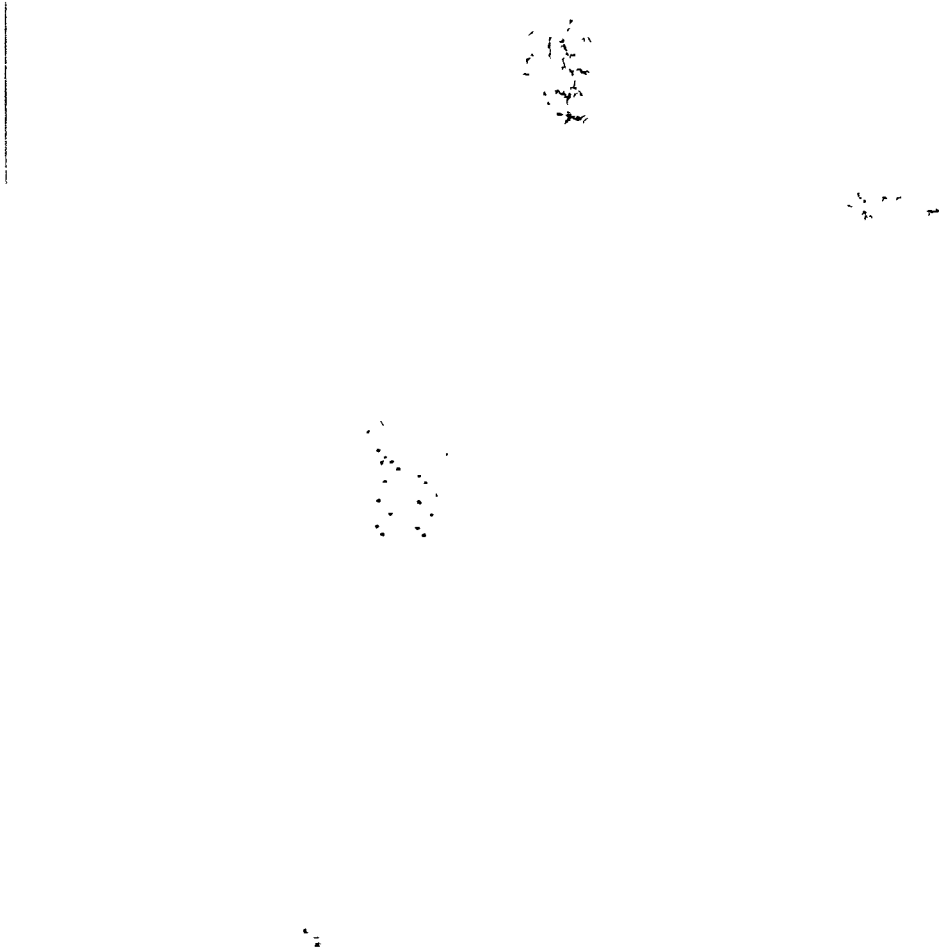


FIGURE 1 Entrance of Sob-Phang Village



FIGURE 2 Khmu Lue houses at Sob-Phang Village

FIGURE 3 Drinking well



FIGURE 4 Consuming stream

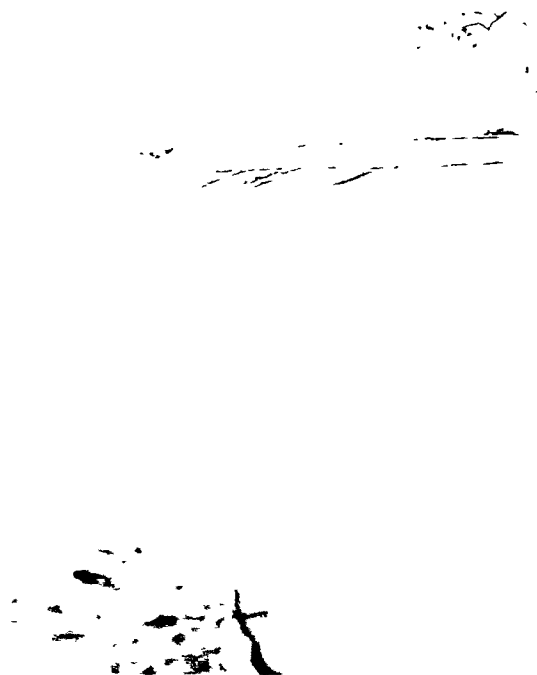


FIGURE 5 A Buddhist temple at Sob-Phang Village



FIGURE 6 Huay Klaep Village, another Khmu Lue Village in Chiang Klang

CHAPTER I

Introduction

1.1 Background Information

According to Frank M. Lebar (1965:1-2) 'The Khmu are a relatively unknown Mon-Khmer speaking people found primarily in Northern Laos. They are linguistically and culturally related to a large number of named groups of swidden-farming hilltribemen in Laos (where they are called by the generic term 'Kha'), in Vietnam (where they are called 'Moi'), and in Cambodia (where they go under the generic term 'Phnong')'.

Virginia Thompson (1967) also mentioned about the Khmu in 'People of Siam'.

'there were four major divisions of Mogol immigrants, of which the second to appear were the Mon-Khmers. They spread all over the country, cultivating with the hoe in the mountains and with the plough in the plains. From the valleys they drove out the older and more primitive Mogol immigrants, who took refuge in the hills, and the plains was thus left far more homogeneous than the mountain regions, which were filled with polyglot tribes. These tribes have survived to the present day and include the Kamuk, Tin, Cha-Nam, and Ishong tribes with larger groups in the north. The Mon-Khmers were left in possession of the plains.'

Later the same author also says about the Khmu that

'the Tins and Kamuks of the lower northeast mountains are related to the Khas of Indo-China, of which they are really only a lesser offshoot'.

1.2 Geographical Location

There are the Khmu in Vietnam, Laos, Burma, China, and Thailand. (Lebar, 1965)

In North Vietnam they are found in the Lai Chao area of North Vietnam and they have been reported as far east as upper Thanh Hoa province of North Vietnam. And they live in Son-la, Lai-chau and Nghia-lô (Dang Nghiem van 1973) in the Northern Vietnamese provinces.

Most of the Khmu in Laos live in the Northern provinces of Houakhong, Luang Prabang, Phong Saly, Houa Phan, Xieng Khouang, Vientiane, Sayabouri and Borikhane. A Carl and B. Seidenfaden said that the Khmu are located in the east of Khong River in Luang Prabang. They go to work in the city and live in the city.

In Burma they live near the Lao Border.

In China they live in eight villages in Mengla county and in two villages in Jinghong county, both in Sipsong Panna (Xi-shuang Banna) Dai autonomous prefecture in Yunnan province (LY Daoyong 1982).

In Thailand they immigrated across the Lao border into Chiangrai and Nan. In addition Frank M. Lebar says that the time when they entered in relatively large numbers appears at date about 1880 or 1890.

From the work of many linguists it can be concluded that the Khmu in Thailand live in Chiangmai, Chiangrai, Nan, Lampang, some around Kanchanaburi, Ubonratchathani and Uthaitani.

The Khmu in the northeastern of Thailand are found in Chaiburi (Amphoe Buengkan), Kaeng Sadok in the Khong River, Nakhon Phanom and Ubonratchathani. These Khmu called themselves 'Phuthueng' (from Kham Muan Province in Laos).

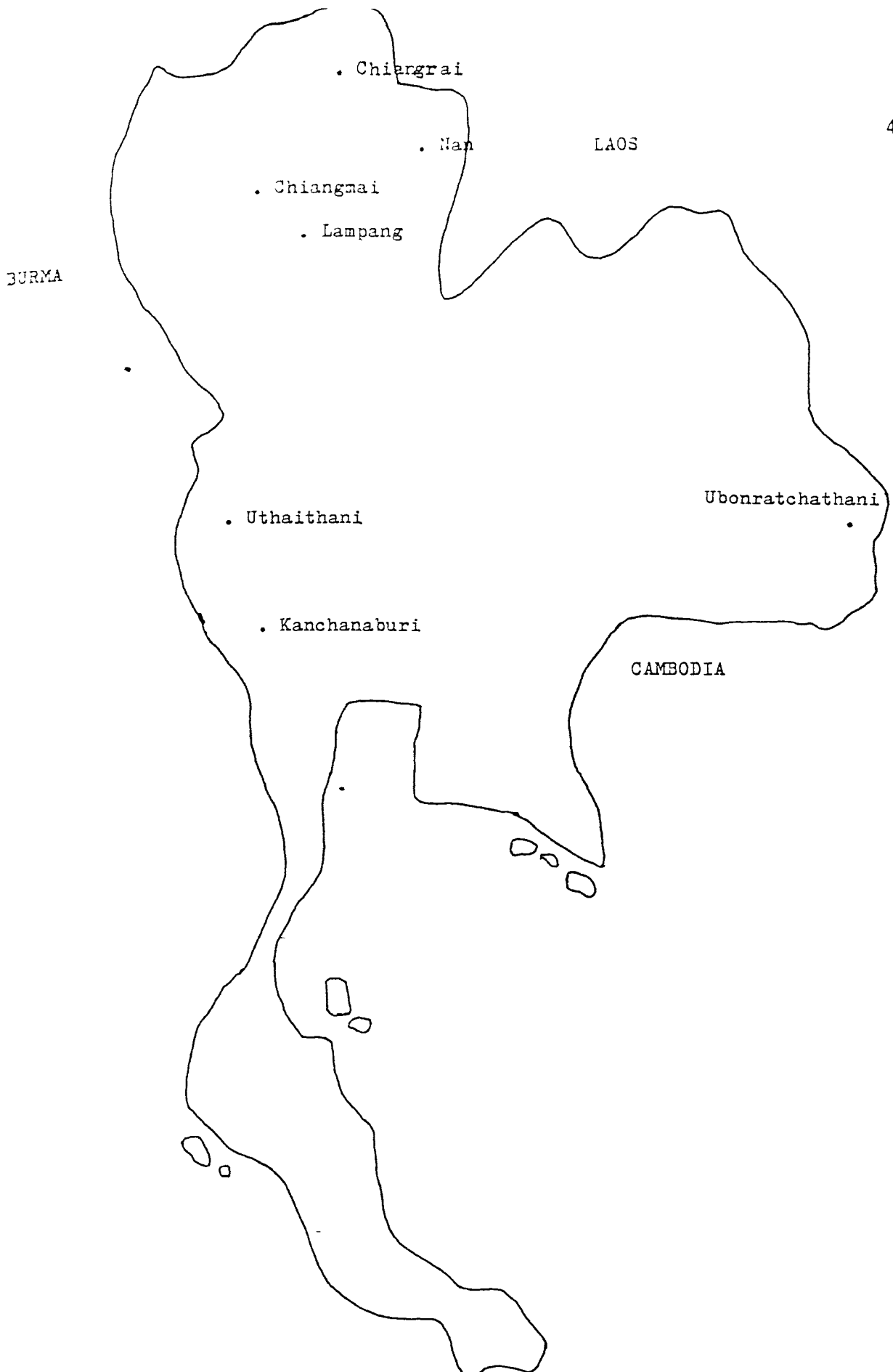


FIGURE 7 Map of Thailand showing provinces where the Khmu are found. (Adapted from 'A look at Thailand's Languages' Franklin E. Huffman 1983)

The Khmu in Nan province.

Nan province lies in the eastern part of northern Thailand and has an area of 11,694 square kilometers. It borders on Laos in the east and the north, Phayao in the west and on Prae and Uttaradit in the south. The city of Nan is about 741 kilometers from Bangkok. Only about a quarter of the whole area is usable for agriculture. Most parts are covered with hills and forests. The plains area parallels the main waterways, the Nan River and its branches.

According to Banjaj Sarup in cangwat Nan, the total population of Nan province is 364,000 (in 1985). This includes the indigeneous Northern Thai people as well as various hilltribes men: Meo, Yao, Khmu, Tin, and Mlabri.

The Administration of the province has been systematized by dividing into eight districts: Muang, Sa, Pua, Chiang Klang, Tha Wang Pha, Tung Chang, Mae Ca Rim, and Nanoi and three subdistricts: Ban Luang, Na Muen and Santisuk.

In Nan province the Khmu are mainly found in Tung Chang, Chiang Klang, Tha Wang Pha and Muang districts.

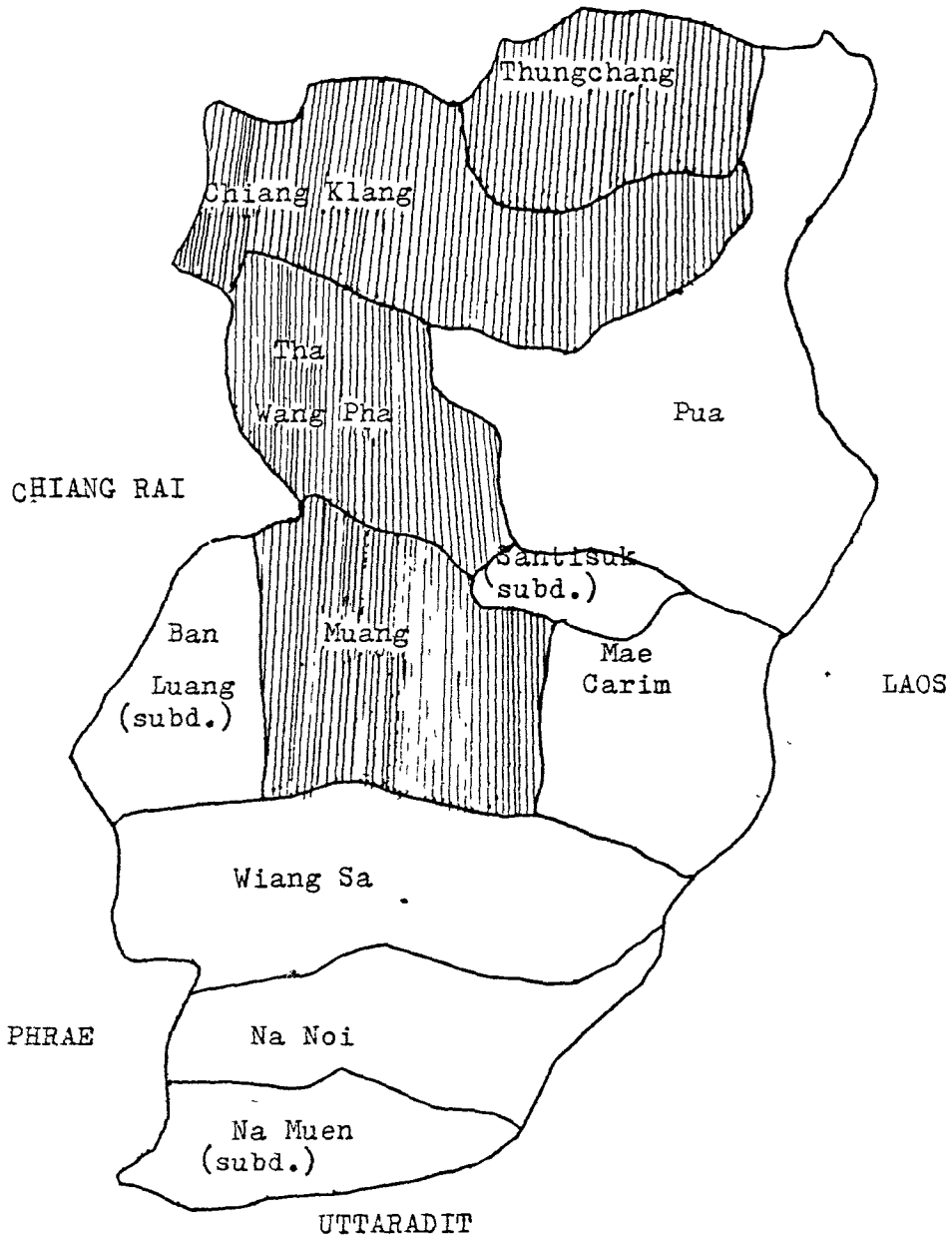


FIGURE 8 Map of Nan province showing districts where the Khmu live.
(Adapted from the map of Nan province in Thailand's post
book)

There are fourteen Khmu villages in Nan namely:Huay Sateng, Phu Kam,Huay Law,Nam Pan,Huay Klaep,Sob Phang,Huay Moy,Wang Pha, Nam Sot,Pang Saw,Nam Mong,Huay Puk,Pa Phae and Nam Lu.

There are various dialects of Khmu.The one I work on is that spoken in Sob Phang village,Chiang Klang district.The people are called Khmu Lue.They believe in spirit and Buddhism.They originally lived in Sob Tun village.Because of low agricultural product they moved to the present place.

1.3 Number of Khmu Population in Thailand

None can tell the exact number of the Khmu population in Thailand.

Frank M.Lebar in April 27,1965 reported that there are around 800-1,000 in Chiangmai.

1,500-2,000 in Chiangrai.

2,000-3,000 in Nan.

500-1,000 in Lampang.

200-300 elsewhere.Including Phrae,Maehongsorn and Mae Sariang area.(data in 1965).

According to the Hilltribe Development and Wefare Center of Nan in 1985,there are fourteen Khmu villages.The total of the number of Khmu people in Nan is 5,147 in 1985 which is larger than the number estimated by Lebar in 1965.

1.Thung Chang district

There are 160 at Nam Sot village,406 at Huay Sateng village and 144 at Phu Kam village.

2. Chiang Klang district

There are 158 at Huay Law village, 334 at Nam Pan village, 365 at Huay Klaep, 193 at Sob Phang village, 426 at Nam Lu village and 205 at Huay Moy.

3. Tha Wang Pha district

There are 268 at Wang Phang village, 468 at Pang Saw village and 482 at Nam Mong village.

4. Muang district

There are 487 at Huay Pok village, 472 at Huay Pa Pae village and 100 at Hat Pla Haeng village.

1.4 Language Affiliation

Mon-Khmer language is a subgroup of the Austro-Asiatic language family which are spoken by approximately 64,500,000 people (Gérard Diffloth:1981) scattered throughout Southeast Asia and eastern India. Khmu language belongs to the northern Mon-Khmer subgroup spoken in Northern Laos, Vietnam, Thailand and in Southern China.

According to Gérard Diffloth, 1973 the Mon-Khmer language family can be diagrammed as

- | | |
|---------------|--|
| a. Khasi | b. Palaungic |
| c. Monic | d. Khmuic (Laos, Thailand, number unknown) |
| e. Viet-Muang | |
| f. Katuic | g. Bahnaric |
| h. Pearic | i. Khmeric |
| j. Jahuic | k. Senoic |
| l. Semelaic | |

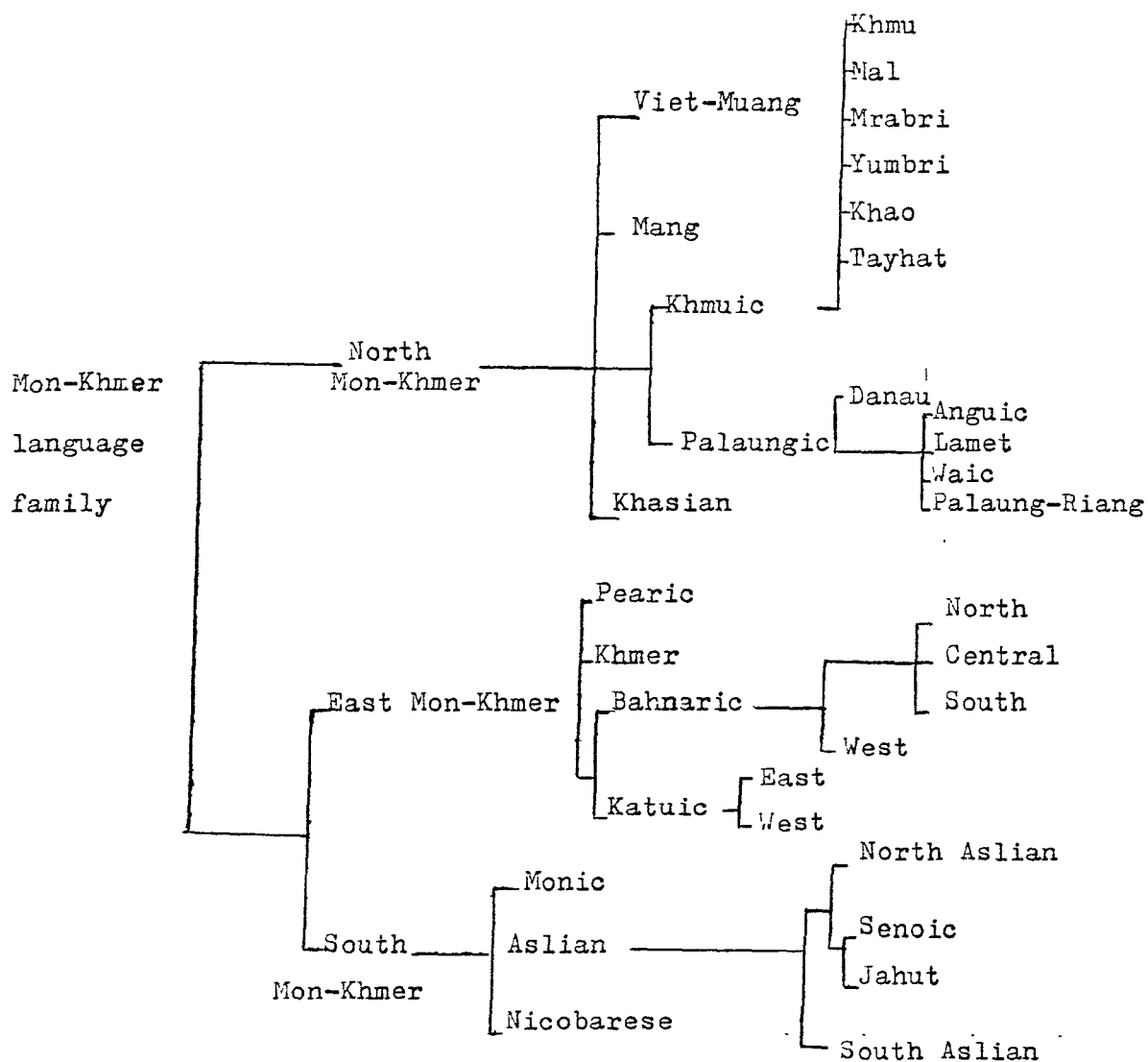


FIGURE 9 The map showing twelve branches of Mon-Khmer language family (Adapted from Gérard Diffloth, 1980)

1.5 Varieties of Khmu

According to Kristina Lindell, Jan-Olof Svantesson and Damrong Tayanin (1974)

'the Kammu recognize within themselves different subgroupings called tmɔɔj. The word tmɔɔj seems in itself to mean just 'quest' and we can find no better translation of the word. However, at certain occasions it is used in contrast to cɛ meaning 'Lao' or 'Thai' thus one speaks of kuŋ tmɔɔj meaning Kammu village without any further implication. When used together with certain names, eg. tmɔɔj Yuàn, tmɔɔj Khwɛ̀n, it designates the entire Kammu population of a somewhat vaguely defined geographical area. Also the Lamet (Rameet) are regarded as one tmɔɔj. The respective tmɔɔj name is also attached to the dialect or language spoken within the area.

The word tmɔɔj in Premsrirat's work (1986) is used to refer to the group Khmu who speak different dialects such as tmɔɔj hɔk, tmɔɔj p^huuluaŋ, tmɔɔj ?al.

Khmu Lue is a variety of Khmu mentioned by Jan-Olof Svantesson (1983). In certain villages in Nan such as Sob Phang, Huay Klaep etc., the people call themselves Khmu Lue.

According to the Khmu in Sob Phang village and in other villages I have met the term 'Khmu Lue' refers to the Khmu who are mixed with other ethnic groups. Historically they immigrated and lived with other groups. (Tai Lue, Meo, Yao etc.) They probably have mixed mainly with the Tai Lue people.

1.6 Data and Field Work

Mrs. Inkaew Palasi and Mr. Phut Khamdi were chosen to be my main informants.

The first informant was born in 1945 in Sob Phang village of Chiang Klang district, Nan province. She has completed Pathomsuksa 4. She was married at the age of 16 years old and has two children.

I firstly did my field work in Sob Phang village since my first informant was ill and could not work with me any more. I had to get another informant during my second field trip from 3-7 July 1985.

The second informant, Mr. Phut Khamdi is 44 years old. His father and mother are Khmu Lue people. He has completed Pathomsuksa 4. He has four sons. He lives at 30 Chon Daen subdistrict and Chiang Klang district in Nan province.

The third field trip was made in March 1986 and my back and forth trip was from 25 October-7 November 1986 which I checked my data with Mrs. Inkaew and with Miss Aree Palasi who is Mrs. Inkaew's niece.

1.7 Phonemic analysis approach

The procedure of analysis in this study has followed the Phonological hierarchy of the Tagmemic School and has set up four ranks: Intonation group, stress group, the syllable and the phoneme. (see FIGURE 10)

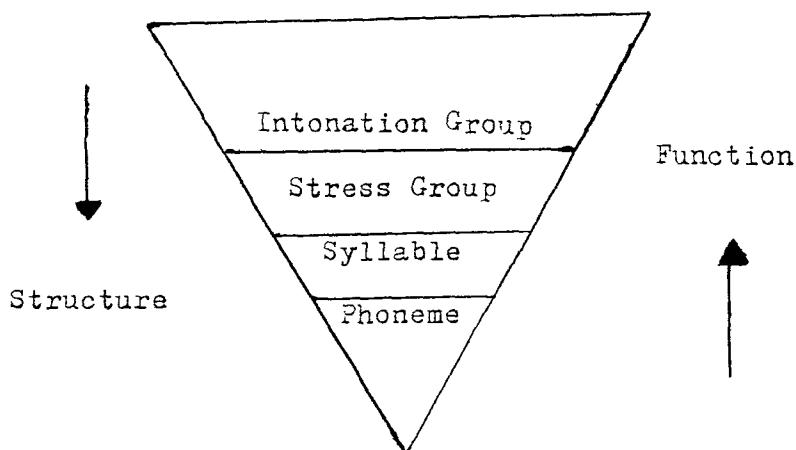


FIGURE 10 The Phonological Hierachy

Each rank functions in the rank above. The phoneme functions in the syllable. The syllable functions in the stress group. The stress group functions in the intonation-group. The intonation-group is the highest rank of the phonological hierarchy as presented here so it has no stable function. And each rank has a structure made up of the rank below it. The intonation-group has a structure made up of stress group. The stress group has a structure made up of syllables. The syllable has a structure made up of phonemes. The phoneme is the lowest rank so it has no stable structure.

I start with the intonation group and work down to the phoneme.

The phonetic symbols which are used in this thesis follow the IPA system.

1.8 Objectives and scope of the study

The objective of this study is to describe the Khmu Lue Phonology at Sob Phang village in Chon Daen sub-district, Chiang Klang district, Nan province. The phonological description is organized as follows: the intonation group, the stress group, the syllable, the phoneme and the register.

CHAPTER II

The Intonation Group


2.1 General Definition

The Intonation Group is the unit of the highest rank of phonology here presented, so its function in higher units is not discussed. The structure of the Intonation Group is stated in terms of the stress group.


2.2 Types of Intonation

Within the Intonation group in Khmu Lue, there are two types of intonation contours: i.e. Falling Contour and Rising Contour.


2.2.1 The Falling Contour

The Falling Contour is used for ordinary statements and commands. Phonetically it consists of a mid-high pitch over most of the intonation group with the last word lowered to mid-low. It is marked as  .

2.2.1.1 Statements

1. 
mah ho:c
eat already

'(I) have already eaten.'

2. 
na:j ?am: p^h ɔ: rɔ:t
sheriff come

'A sheriff comes.'

3. jɔ̃h ʔɔ̃h ʔom
go dip up water

'Go to dip up water.'

4. na: caʔ tɔ̃ruk
she will fall down

'She will fall down.'

5. ʔoʔ ʔa:l cuʔ ma:h
I neg. want eat

'I don't want to eat.'

6. pɪp jɔ̃h meʔ
see go again

'See you again.'

7. ʔcʔ cuʔ sih
I want sleep

'I want to sleep.'

8. hɛ:m pa: muan kwa: ki:
younger cousin you joyful than this

'Your cousin is more joyful than this(time).'

2.2.1.2 Commands

1. kɔʔ ja:m
WW cry

'Don't cry!'

2. juʔ jɔ̃h ndiʔ
stop go now

'Stop going now!'

3. wec lak ki:
 come at this
 'Come at this side!'
4. kluəŋ ho:ŋ kɔ? ku:t
 in room neg. enter
 'Don't enter in the room!'
5. jɔh mu:m ?om ndi?
 go bath water now
 'Go to bath now!'
6. jaŋ jɔh mu:m ?om ndi?
 yang go bath water now
 'Yang, go to bath now!'
7. jɔh mɔ:t ca:n ?an mɔ:j haj
 go put plate give one give
 'Get one plate for me!'
8. jɔh ki: ka:l
 go . . this . before
 'Come here!'
9. wec mah mah ka:l
 come eat food before
 'Come to eat first!'

2.2.2 The Rising Contour

This is used for both content and yes-no questions. The rise occurs on the final interrogative particle. Examples of final particles with interrogative force are $mɔ?$ and $mɔh$ for content questions and $lɛ?$ and $nɛ?$ for yes-no questions.

7. mu? pɔ: jɔh sɔp pⁿa:ŋ pɿan tɔkməh
 group you go Sob Phang adv. q.w.

'How do you come to Sob Phang?'

8. pɑ: jɔh ki: suan mɔ?
 you go this garden q.w.

'Who do you walk in the garden with?'

9. siki: pɑ: jɔh mɔh
 today you go q.w.

'Are you going today?'

2.2.2.2 Yes-No Questions

1. pɑ: ?a:l jɔh nɛ?
 you neg. go q.w.

'You don't go to the market, do you?'

2. saba:j nɛ?
 well q.w.

'Are you well?'

3. pɑ: ŋɔ:m taj kuŋ nɛ?
 you think of house q,w.

'Are you thinking of your house?'

4. pɑ: jət ?a:l saba:j nɛ?
 you are neg. well q.w.

'Aren't you well?'

5. muː pɔː mɔ̃h kamu? nɛ?
 group you are the Khmu q.w.

'Are you a Khmu?'

6. paː jat kaːŋ kiː nɛ?
 you live house this q.w.

'Are you in this house?'

7. paː jɔ̃h re? c^hi miː nɛ?
 you go field every day q.w.

'Do you go to the field every day?'

8. t^hra:k toː niː mɔ̃h k^hɔ̃ŋ paː nɛ?
 buffalo class. this is of you q.w.

'Is it buffalo yours?'

1. lɔ̃? miːaj lɛ?
 good tired q.w.

'Are you tired?'

2. cu? maːh mah lɛ?
 want eat food q.w.

'Do you want to eat?'

3. maːh mah c^hi niː? lɛ?
 eat food sun q.w.

'Do you eat lunch?'

4. muːm ʔom lɛ?
 bath water q.w.

'Have you taken a bath?'

lɛ? and nɛ? can be used interchangeably.

The falling intonation of the affirmative statement can be raised to indicate questions.

Examples:

1. me: jət saba:j
 you are well
 'Are you well?'

2. siki: pa: ?al saba:j
 today you neg. well
 'Aren't you well today?'

3. pa: ci? jɔh ka:t
 you will go market
 'Will you go to the market?'

4. pa: jɔh re?
 you go field
 'Are you going at the field?'

The intonation contour in Khmu Lue is therefore contrastive. The minimal pairs between rising contour and falling contour are shown in the following examples.

In this case the rising contour is marked by ↑ whereas the falling contour is unmarked.

yes-no question pa: jɔh re↑ (rising contour)
 you go field
 'Are you going to the field?'

affirmative statement pa: jɔh re? (falling contour)
 you go field
 'You go to the field.'

yes-no question me: jat saba:j↑ (rising contour)
 you are well
 'Are you well?'

affirmative statement me: jat saba:j (falling contour)
 you are well
 'You are well.'

Examples of intonation and rhythm in connected speech
 can be found in Appendix II.

CHAPTER III

The Stress Group

3.1 General Definition

The stress group is defined as the rank whose units function in the intonation group and have their structure stated in terms of syllables. The major syllable is always the nucleus which bears stress. It can be preceded by a peripheral syllable.

A stress group or a phonological word in Khmu Lue has component of stress.

The stress group in Khmu Lue may have from one to two syllables. It has only one stressed syllable as nucleus, and may have one preceding unstressed or weakly stressed as periphery. Strong stress, weak stress and unstress are indicated by ('), (,) and ().

3.2 The stress group structure

There are two types of stress groups divided according to their structure.

3.2.1 Stress group with just one stressed syllable. Its structure is strong stress (S). (pitch marking see p.96-97)

Examples:

['ť̩ɔ̌]	'foam'
['kř̩m:]	'a kind of flower'
['ki:]	'this'
['ť̩:1]	'narrow'
['rǐaŋ:]	'intestines'

3.2.2 Stress group with weak stress or unstress on the first and syllable and strong stress on the second syllable. Its structure is:WS and US. Weakly stressed syllable is called minor syllable and the unstressed one is called presyllable.

Examples:

WS	[, <u>tam</u> 'pá·ʔ]	'snapping turtle'
	[, <u>k^hi:k^hu:</u>]	'to heave'
	[, <u>sín</u> 'kɔ̃:ŋ:]	'curry'
	[, <u>tum</u> 'p ^h la·ʔ]	'stove'
	[, <u>lu:</u> j'la:j]	'egg of ant'

Examples:

US	[<u>si</u> 'nà:tʔ]	'gun'
	[<u>ka</u> 'cùg]	'to spit'
	[<u>si</u> 'klɔ̃:kʔ]	'to embrass'
	[<u>sa</u> 'li:]	'corn'
	[p ^h <u>ə</u> 'p ^h a·ʔ]	'wet'
	[<u>lu</u> 'lí·ʔ]	'tò bē naked'
	[<u>m</u> 'pɔ̃h]	'drain'
	[<u>m</u> 'p ^h lɛ̃pʔ]	'to blink'
	[<u>n</u> 'tɔ̃l]	'a kind of vegetable'
	[<u>ŋ</u> 'ká·ʔ]	'shame'
	[<u>ŋ</u> 'k ^h ru·ʔ]	'to growl'

3.3 The stress group function

There are no distinctions between stress groups in terms of their function in the intonation group, because any type of stress group can function in the contour position.

CHAPTER IV

The Syllable

4.1 General Definition

The syllable rank is defined as the rank whose units have a structure described in terms of phonemes, and which function in the stress group.

4.2 Syllable Structure

The structure of the syllable is described in terms of a nucleus consisting of one vowel, two vowels or syllabic nasal ($\underset{N}{\text{N}}$) and a periphery consisting of one or three consonants.

4.3 Syllable Type

There are three types of syllable; major syllable, minor syllable and presyllable.

4.3.1 Major Syllable

A major syllable is defined as a syllable which always takes strong stress. It can be either closed or open syllable.

There are seven different major subtypes, as follows:

a) 'CV:	['k $\underset{\cdot\cdot}{i}$:]	'this'
	[b \hat{i} :]	'a kind of money'
	[m $\underset{\cdot\cdot}{e}$:]	'you (mas.)'
	['t \hat{h} \hat{e} :]	'to bore'
	['n $\underset{\cdot\cdot}{a}$:]	'older sister'



b) 'CVC	['rɛɔ]	'to chase'
	['pə̀k]	'to break'
	['jup]	'thick'
	['re']	'field'
	['ʔɛh]	'boil'
c) 'CCV:	['plɑ:]	'to rap'
	['klɑ:]	'testicle'
	['t ^h r]	'fiddle'
d) 'CV:C	['jɔ:l]	'gibbon'
	['ni:p]	'spoon'
	['si:m]	'bird'
	['pi:n]	'to turn over'
	['ʔi:l]	'swallow'
e) 'CCVC	['plɪŋ]	'a kind of grass'
	['ple']	'fruit'
	['kre']	'husband'
	['ʔ ^h reh]	'sand'
	['k ^h rŋ]	'a kind of yam'
f) 'CCV:C	['p ^h li:ŋ]	'drum'
	['k ^h ri:r]	'a kind of insect'
	['klɛ:t]	'to lick'
	['k ^h wɛ:n]	'to alleviate'

g) 'CVVC	['ʔiáj]	'bad smell'
	['puáç]	'muntijac'
	['tiap>]	'to wrap'
	['liat>]	'short'
	['ʔiak>]	'to drink'

The maximum structure of major syllable may be written as 'C(C)V(:)(V)(C).

4.3.2 Minor Syllable

A minor syllable is defined as a syllable which always takes weak stress. It can be either closed or open syllable.

There are four different minor subtypes, as follow:

a) ,CVC	[,lam'li:]	'cigarette'
	[,sin'ki:]	'yesterday'
	[,pin'húp:]	'babble'
	[,kam'lo'ʔ]	'block'
	[,puk'pik>]	'to rub'
b) ,CV:	[,k ^h i:'k ^h u:]	'to heave'
	[,k ^h i:'pú:m:]	'a kind of tiger'
	[,pu:'mia]	'molly'
c) ,CVVC	[,c ^h uan'pa:n:]	'a kind of tree'
	[,cian'wa:ŋ:]	'mosquito'
d) ,CV:C	[,la:j'té'ʔ]	'monitor lizard of the Genus Varanus'
	[,k ^h a:m'k ^h wá'ʔ]	'a kind of tree'
	[,tɔ:ŋ'pɔh]	'a kind of thing for catching animal'

[, <u>la</u> :p'tá:p]	'butterfly'
[, <u>p</u> ^h <u>a</u> :n'ka ^h :j]	'hog deer'

The maximum structure of minor syllable can be as CV(:)(V)(C).

4.3.3 Presyllable

A presyllable is defined as a syllable which takes unstress. They occur preceding major syllable in disyllabic word.

There are 2 subtypes of presyllable.

4.3.3.1 Presyllable having the structure of CV. Its vowel is restricted to /i, a, ɛ, ə, u/.

Examples:

[<u>t</u> i'péh]	'fin'
[<u>pi</u> 'jə'ʔ]	'to send'
[<u>ta</u> 'muaq]	'a kind of tree'
[<u>pa</u> 'nú:ɔ]	'stinger'
[<u>tə</u> 'rúk]	'to fall'
[<u>pə</u> 'rəh]	'to lift'
[<u>t</u> ^h ɛ'mɛp:]	'star'
[<u>p</u> ^h i'p ^h ɛar]	'to have a nightmare'
[<u>su</u> 'kót]	'to pick up'
[<u>t</u> u' <u>t</u> i:]	'a kind of insect'

4.3.3.2 Presyllable having the structure of N

/m/

/mpi:l/	[<u>m</u> 'pí:l]	'pumpkin'
/mp ^h laʔ/	[<u>m</u> 'p ^h la'ʔ]	'wife'

/mti:p/	[m'ti:pʔ]	'a kind of trap'
/mpu:k/	[m'pu:kʔ]	'to rap'
/mpuəl/	[m'puəl]	'a kind of animal'
/n/		
/nci:/	[n'ci:]	'to point'
/ntu?/	[n'tu:ʔ]	'hole'
/nti:ŋ/	[n'ti:ŋ:]	'wild'
/nc ^h e:k/	[n'c ^h é:kʔ]	'a kind of grass'
/ncim/	[n'cim:]	'soft'
/ŋ/		
/ŋka:k/	[ŋ'ka:kʔ]	'to cross'
/ŋka:m/	[ŋ'ka:m:]	'husk'
/ŋkin/	[ŋ'kɪn:]	'woman'
/ŋkʔ:ŋ/	[ŋ'kʔ:ŋ:]	'high mountain'
/ŋko?/	[ŋ'ko:ʔ]	'pounded rice'

4.3.4 Since this Khmu variety has a lot of disyllabic words so I here present the co-occurrence between presyllable (subtype 4.3.3.1) and the initial consonant of the following syllable.

yllable \ I.C.	p	p ^h	b	t	t ^h	d	ŋ	ŋ ^h	kk ^h	ʔ	s	h	m	n	p	ŋ	r	l	w	j	pl	kl	kr	p ^h	r ^h	k ^h	r	
	ci	✓			✓			✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
ca	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						✓	
cə		✓							✓					✓	✓	✓	✓											
ci		✓						✓	✓	✓			✓	✓	✓		✓				✓		✓					
cu	✓			✓		✓	✓							✓				✓	✓					✓				

TABLE 1 The tables of the co-occurrence between presyllable and the initial consonant of the following syllable.

✓ = occurrence = non-occurrence

4.3.4.1 Presyllable with Stops

The stops (p, t, ,k, d, ʔ, p^h, t^h, ŋ^h) and cluster consonants (pl, p^hr, kr, kl, k^hr) can be preceded by presyllables as follows.

[p] has been found with the presyllables having i, a and u.

Examples:

- [ŋi'pɛh] 'fin of fish'
- [si'paŋ:] 'tomorrow'
- [ŋa'pɛ:ʔ] 'a kind of tree'
- [ta'pá:t>] 'a kind of small toad'
- [ka'pók>] 'bell'
- [ŋ^hu'pūŋ:] 'bamboo basket'

[t] has been found with the presyllables having i, a and u.

Examples:

[ti'tâ:m:]	'a kind of hammer'
[pa'té'·?]	'soil'
[ka'toŋ:]	'egg'
[ta'tí'·?]	'middle'
[t̃pa'té'·?]	'a kind of tree'
[tu'ti:t>]	'a kind of bird'

[t̃p̃] has been found with the presyllables having i, a and u.

Examples:

[t̃ ^h i't̃ ^h a:ŋ:]	'elephant'
[ki't̃ ^h e'·?]	'a kind of wood'
[ka't̃ ^h u:ç]	'to spit'
[pa't̃ ^h ã:r]	'cock's comb'
[t̃ ^h u't̃ ^h i:]	'a kind of insect'

[k] has been found with the presyllables having i, a, ə, ɪ and u.

Examples:

[si'kâm:]	'needle'
[t̃ ^h i'kɛ'p>]	'tong'
[pa'kak>]	'to stammer'
[t̃ ^h a'kɔ:ŋ:]	'spit'
[ta'kân:]	'a kind of insect'
[tə'kit>]	'to think'
[t̃ ^h i'kɔ'·?]	'wet'
[su'kròk>]	'to rap'

[d] has been found with the presyllables having a.

Example:

[ka'dɔ:p>] 'a kind of insect'

[ʔ] has been found with the presyllables having i, a and ɛ.

Examples:

[pi'ʔial] 'to slippery'

[p^hi'ʔeŋ:] 'to think'

[p^ha'ʔŋ:] 'tree'

[p^ha'ʔa:ŋ:] 'bone'

[pa'ʔo:m:] 'to speak'

[ka'ʔk>] 'arm pit'

[hi'ʔil] 'to smell'

[si'ʔim:] 'a kind of vegetable'

[p^h] has been found with the presyllables having ə and ɛ.

Examples:

[p^hə'p^ha:ʔ] 'wet'

[p^hɛ'p^hɛar] 'to have a nightmare'

[t^h] has been found with the presyllables having only a.

Example:

[ka't^hɔ:l] 'small toad'

[tʰ] has been found with the presyllables having a.

Examples:

[ka'tʰŋ:] 'a kind of mango'

[pa'tʰat] 'a kind of food'

[pɫ] has been found with the presyllables having i.

Example:

[si'pɫək] 'Friday'

[pʰr] has been found with the presyllables having a.

Example:

[ma'pʰraŋ:] 'part of house'

[kɫ] has been found with the presyllables having i.

Example:

[si'kɫək] 'to embrass'

[kr] has been found with the presyllables having u.

Example:

[su'krək] 'to rap'

[kʰr] has been found with the presyllables having i.

Example:

[si'kʰrat] 'flip'

4.3.4.2 Presyllable with Fricatives

The fricatives s, h can be preceded by presyllables as follows.

[s] has been found with the presyllables having i and a.

Examples:

[ʔi'sâl]	'galingale'
[ta'sâl]	'mad'
[pa'sâm:]	'to plant'
[ka'sû:p:]	'a kind of vegetable'

[h] has been found with the presyllables having a.

Examples:

[la'hâ:ŋ:]	'a kind of tree'
[ta'hât>]	'to spurt'

4.3.4.3 Presyllable with Nasals

The nasals m, n, ŋ, ŋ can be preceded by presyllables as follows.

[m] has been found with the presyllables having i, a and ɛ,

Examples:

[si'mo:j]	'the day after tomorrow'
[tʰi'mɛp:]	'star'
[ka'má:ʔ]	'rain'
[ta'mu:r]	'shower'
[sa'ma:]	'to excuse'
[tʰɛ'mɛp:]	'star'

[n] has been found with the presyllables having i, a, ə, ɪ and u.

Examples:

[si'nà:tʰ]	'gun'
[pa'nɪl]	'wing'
[ka'ne'ʔ]	'rat'
[tʰa'nim:]	'lac'
[pə'nim:]	'anthill'
[tə'nɛh]	'to lamp'
[pi'nɪl]	'wing'
[ku'nəh]	'chopping block'

[ŋ] has been found with the presyllables having i and a.

Examples:

[ti'ŋiəh]	'to shiver'
[ka'ŋɔ:m:]	'soft'

[ŋ] has been found with the presyllables having i, a, ə and ɪ.

Examples:

[si'ŋəh]	'to turn up'
[tʰa'ŋa:r]	'yellow'
[ta'ŋe'ʔ]	'to squint'
[lə'ŋu:tʰ]	'shadow'
[tʰi'ŋe'ʔ]	'to glance'

4.3.4.4 Presyllable with Trills and Laterals

The consonant r,l can be preceded by presyllables as follows.

[r] has been found with the presyllables having i,a and ə.

Examples:

[si'ráp>]	'the name of a Khmu day'
[tʰa'ró:p:]	'parched'
[sa'rə·ʔ]	'a kind of vegetable'
[ta'rəc>]	'to chase'
[tə'rúk>]	'to fall down'

[l] has been found with the presyllables having i,a, ə and u.

Examples:

[tʰi'ləh]	'to hunt'
[si'liəŋ:]	'a kind of grass'
[ta'lɔ:m:]	'liver'
[sa'li:]	'corn'
[pa'liə]	'fire'
[tʰa'la·ʔ]	'a kind of tree'
[tə'lɔ:j]	'banana'
[lu'li·i]	'naked'

4.3.4.5 Presyllable with Semivowels

The Semivowels j,w can be preceded by presyllables as follows.

[w] has been found with the presyllables having i, a,
 ɨ and u.

Examples:

[si'wə:ɟ]	'Wednesday'
[ʔ ^h i'wə:ɟ]	'a kind of mushroom'
[la'wə:ŋ:]	'sky'
[ka'wətʔ]	'to swing'
[ʔ ^h ɨ'wə:ŋ:]	'a kind of flower'
[su'wə:kʔ]	'out of shape'

[j] has been found with the presyllables having i
 and a.

Examples:

[ʔi'jɨ:kʔ]	'a kind of trap'
[ta'jə:kʔ]	'deer'
[ka'jʔ:ŋ:]	'to swim'

m	n	ŋ	Syllabic nasals initial consonants
✓			p
✓			p ^h
			b
	✓		t
	✓		t ^h
	✓		d
	✓		c
	✓		c ^h
		✓	k
		✓	k ^h
	✓		?
	✓		s
	✓		h
	✓		m
	✓		n
			ɸ
	✓		ŋ
	✓		l
			r
	✓		w
	✓		j

TABLE 2 Co-occurrence of the syllabic nasals with the initial consonants of the major syllable

✓ = occurrence

= non-occurrence

4.4 CV Co-occurrences

Consonants and vowels occur in the three types of syllable as follows:

1. In the major syllable, the initial consonant position may be filled by all consonant phonemes.

2. In the major syllables, the final consonant position may be filled by all single consonant phonemes except voiced aspirated stop consonants and clusters.

3. The major syllable vowels comprise all vowel phonemes. Short vowels do not occur in open major syllables.

4. The minor syllable initials comprise all consonant phonemes except /b, d, m, p, ŋ, w, j/.

5. Final consonants in minor syllable are /m, n, p, ŋ, p, k and j/.

6. The minor syllable vowel comprise /i, e, a, ɛ, ɔ, o, u, ɪ, ʌ, uə, a:, ɔ: and u:/.

7. The presyllable initial consonants are /p, t, k, c, ʔ, n, p, s, l, p^h, t^h, k^h and c^h/.

8. Only /i, a, ɔ, ɛ, u/ are vowels occurring in the presyllable.

4.5 syllable Function

A syllable functions in stress groups. There are two main classes of syllable divided according to its functions: nuclear syllable (stressed) and peripheral syllable (unstressed and weakly stressed).

4.5.1 Nuclear syllable

This syllable functions as nucleus of the stress group. This syllable class always occupies the final position in the stress group.

This syllable class is also called the 'major syllable'.

Examples:

['p ^h i:p:]	'to shoot'
['s ^h i:n:]	'ripe'
['t ^h ri:r]	'gold'
[,s ^h i'n'ló:ʔ]	'fish trap'
[ŋ'k ^h i:n:]	'woman'
[,k ^h am'ló:ʔ]	'block'

4.5.2 Peripheral Syllable

This syllable functions as periphery in the stress group, always occupying the first syllable position. The peripheral syllable can be subdivided into two sub-classes: a weakly stressed peripheral and unstressed peripheral syllable.

4.5.2.1 Weakly stressed peripheral syllable

Syllables in this sub-class can be of open or closed types. This type of peripheral syllable is also called the 'minor syllable'.

Examples:

[,t ^h ŋ'k ^h il]	'stump'
[,k ^h i:'k ^h u:]	'a kind of tiger'
[,c ^h uan'p ^h a:n:]	'a kind of tree'
[,l ^h a:j'té:ʔ]	'monitor lizard of the Genus Varanus'

4.5.2.2 Unstressed peripheral syllable

This sub-class of peripheral syllable are of structures. They are called 'presyllable'.

Examples:

a)CV	[la'wə:j]	'tiger'
	[pi'ʔial]	'to slippery'
	[ku'kriç]	'to quarrel'
b)N	[ŋ'kîr]	'stump'
	[n't ^h rɔ̃:j]	'rice broken'

So the structure of syllables with their functions in the stress group can be shown in the following patterns.

<u>'C(C)V(:)(V)(C)</u>	- major syllable
, <u>CV(V)(:)(C)</u> 'C(C)V(:)(V)(C)	- minor syllable
<u>CV</u> } C(C)V(:)(V)(C)	- presyllable
<u>N</u> }	

4.6 Syllable-boundaries and marking

Syllables are clearly marked in the data by three types of stress: strong stress, weak stress and unstress. The major syllable takes strong stress while the minor syllable takes weak stress and presyllable unstress. Therefore syllable breaks need not be marked in phonemic writing.

Note: I have found only one trisyllabic word in Khmu Lue.

Its structure is UUS.

[<u>h</u> _i <u>h</u> _i ŋi:ʔ]	'a kind of insect'
U U S	

CHAPTER V

The Phoneme

5.1 General Definition

The Phoneme rank is defined as the rank whose units function in the syllable. It is the lowest rank of the hierarchy and so has no stable structure, but the phonetic forms of the phonemes may be described.

The major functional classes of phonemes in the syllable are the vowel and the consonant.

5.2 Vowel Phonemes

A vowel is defined as the nucleus of a syllable.

In this language there are nine short single vowels and nine long single vowels /i, i:, e, e:, ɛ, ɛ:, ɪ, ɪ:, ə, ə:, a, a:, u, u:, o, o:, ɔ, ɔ:/ and three diphthongs /ia, ia, ua/.

5.3 Vowel occurrence in different syllable types

All the vowels may occur in major syllable. Only the vowel /i, a, ə, ɪ, u/ may occur in presyllable.

	Front		Central		Back	
	short	long	short	long	short	long
Close	i	i:	ɪ	ɪ:	u	u:
Mid	e	e:	ə	ə:	o	o:
Open	ɛ	ɛ:	ʌ	ʌ:	ɔ	ɔ:
diphthongs: ia ɪa ua						

TABLE 3 Vowel phoneme chart

/i/ [i],[i·]

[i] is a short close front unrounded vowel.

It occurs before all final consonants except
/ʔ,r,l,j/.

[i·] is a half-long close front unrounded vowel.

It occurs before /ʔ/.

Examples:

/pip/	[ˈpɪpʔ]	'to grasp'
/ʔit/	[ˈʔɪtʔ]	'to suppress'
/pic/	[ˈpɪc]	'to throw away'
/dik/	[ˈdɪkʔ]	'to dive'
/ʔiʔ/	[ˈʔɪ·ʔ]	'we'

/pi?/	['pị·?]	'to have enough'
/p ^h ri?/	['p ^h rị·?]	'forest'
/c ^h ri?/	['tʰrị·?]	'a kind of tree'
/ti?/	['tị·?]	'hand'
/kukris/	[ku'krịç]	'to quarrel'
/sih/	['sịh]	'to sleep'
/jim/	['jim:]	'red'
/pin'la:p/	[,pin'la:p:]	'pigtail'
/kip/	['kip:]	'full'
/?iŋ/	['?ịŋ:]	'to lean'
/ŋiw/	['ŋịw]	'a kind of plant'
/i:/	[i:] is a long close front unrounded vowel.	

It occurs before all final consonants
except /c, ?, p, s, h, j/.

Examples:

/hi:p/	['hị:p>]	'to sip'
/pi:t/	['pị:t>]	'to extinguish'
/ci:k/	['tʰị:k>]	'acidulous'
/si:m/	['sị:m:]	'bird'
/ti:n/	['tị:n:]	'to order'
/p ^h li:ŋ/	['p ^h lị:ŋ:]	'drum'
/mpi:l/	[m'pị:l]	'pumpkin'
/cri:r/	['tʰrị:r]	'gold'
/ki:w/	['kị:w]	'a kind of vegetable'

/e/ [e],[e·]

[e] is a short mid front unrounded vowel.

It occurs before all final consonants except
/s,r,w,j/.

[e·] is a half-long mid front unrounded vowel.

It occurs before /?/.

Examples:

/c ^h ep/	[ˈtʰɛ̃p̃]	'clothing'
/p ^h et/	[ˈp ^h et̃]	'a kind of vegetable'
/lec/	[ˈlɛc̃]	'to go through'
/kek/	[ˈkɛk̃]	'to cry'
/ʔeʔ/	[ˈʔɛ·ʔ]	'firewood'
/weh/	[ˈwɛ̃h]	'to avoid'
/lem/	[ˈlɛ̃m:]	'classifier for teeth'
/ten/	[ˈtɛ̃n:]	'to sit'
/kep/	[ˈkɛ̃p:]	'to stab'
/keŋ/	[ˈkɛ̃ŋ:]	'to tight'
/ŋel/	[ˈŋɛ̃l]	'to shiver'
/e:/	[e:] is a long mid front unrounded vowel.	

It occurs before /t,k,m,n,p,ŋ,l/.

Examples:

/p ^h e:t/	[ˈp ^h ɛ̃:t̃]	'spirit of those killed in an accident'
/plɛ:k/	[ˈplɛ̃:k̃]	'eel'
/ʔɛ:m/	[ˈʔɛ̃:m:]	'aunt'
/te:n/	[ˈtɛ̃:n:]	'to step on'

/tɛ:p/	['tɛ:p:]	'full'
/wɛ:ŋ/	['wɛ:ŋ:]	'to throw'
/kame:l/	[ka'mɛ:l]	'hammer'
/ɛ/	[ɛ],[ɛ:]	

[ɛ] is a short open front unrounded vowel.

It occurs before all final consonants except /m,n,p,s,j/.

[ɛ:] is a half-long open front unrounded vowel.

It occurs before /?/.

Examples:

/pɛp/	['pɛp]	'to press'
/cɛt/	['cɛt]	'sour'
/rɛc/	['rɛc]	'to chase'
/ntɛk/	[n'tɛk]	'little'
/tɛʔ/	['tɛʔ]	'to dance'
/plɛh/	['plɛh]	'tasteless'
/cɛŋ/	['cɛŋ:]	'to leak'
/cɛl/	['cɛl]	'dew'
/c ^h rɛr/	['c ^h rɛr]	'a kind of animal'
/k ^h rɛw/	['k ^h rɛw]	'a kind of trap'
/ɛ/	[ɛ:]	is a long open front unrounded vowel.

It occurs before all final consonants except /c,ʔ,p,s,h,j/.

Examples:

/tɛ:p/	['tɛ:p]	'shirt'
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/klɛ:t/	[ˈklɛ:tʔ]	'to lick'
/tɛ:k/	[ˈtɛ:kʔ]	'to measure'
/pɛ:m/	[ˈpɛ:m:]	'a kind of basket'
/c ^h lɛ:n/	[ˈtʰ ^h lɛ:n:]	'to cut'
/klɛ:ŋ/	[ˈklɛ:ŋ:]	'a kind of vegetable'
/hɛ:l/	[ˈhɛ:l]	'to clear'
/pɛ:r/	[ˈpɛ:r]	'to cut'
/c ^h ɛ:w/	[ˈtʰ ^h ɛ:w]	'a kind of flower'
/ɪ/	[ɪ]	is a short close central unrounded

vowel.

It occurs before all final consonants
except /c,ʔ,h,p,w,j/.

Examples:

/kɪp/	[ˈkɪpʔ]	'to boil'
/pɪt/	[ˈpɪtʔ]	'to open the book'
/tɪk/	[ˈtɪkʔ]	'to butt'
/ʔɪs/	[ˈʔɪs]	'loud'
/ʔɪm/	[ˈʔɪm:]	'to hold in the mouth'
/tɪn/	[ˈtɪn:]	'to stand'
/nt ^h rɪŋ/	[nˈt ^h rɪŋ:]	'horn'
/hiʔɪl/	[hɪʔɪl]	'to smell'
/hɪr/	[ˈhɪr]	'gun'
/i:/	[i:]	is a long close central unrounded

vowel.

It occurs before /p,t,n,ŋ,r/.

Examples:

/p̣i:p/	['ḷi:p̣]	'edge'
/ʔi:t/	['ʔi:ṭ]	'a kind of bird'
/hi:n/	['hi:ṇ]	'to crossbreed'
/ʔi:ŋ/	['ʔi:ŋ̣]	'bull frog'
/ti:r/	['ti:ṛ]	'to fly'
/ə/	[ə], [ə̣]	

[ə] is a short mid central unrounded vowel.

It occurs before all final consonants
except /c,ʔ,s,p,r,w,j/.

[ə̣] is a half-long mid central unrounded
vowel.

It occurs before /ʔ/.

Examples:

/ṛəp/	['ṛəp̣]	'fish net'
/kət/	['kəṭ]	'to think'
/dək/	['dəḳ]	'many'
/pəh/	['pəḥ]	'on'
/ʔəm/	['ʔəṃ]	'final particle'
/pəntə:l/	[p̣ən'tə:l]	'a kind of vegetable'
/ṛəŋ/	['ṛəŋ̣]	'askance'
/təl/	['təḷ]	'classifier for hat'
/ə:/	[ə:]	is a long mid central unrounded vowel.

It occurs before all final consonants
except /p,ʔ,p,s,h,w/.

Examples:

/k ^h ə:t/	[ˈk ^h ə:tʔ]	'a kind of tree'
/mə:c/	[ˈmə:cʔ]	'to crawl'
/wə:k/	[ˈwə:kʔ]	'a kind of bird'
/tə:m/	[ˈtə:m:]	'tame'
/ciŋə:n/	[tʃiˈŋə:n:]	'to stretch'
/nə:ŋ/	[ˈnə:ŋ:]	'to be leant'
/tə:l/	[ˈtə:l]	'narrow'
/tajə:r/	[taˈjə:r]	'sieve'
/wə:j/	[ˈwə:j]	'to dip'
/a/	[a],[a·]	

[a] is a short open central unrounded vowel.

It occurs before all final consonants except /ʔ/.

[a·] is a half-long open central unrounded vowel.

It occurs before /ʔ/.

Examples:

/təp/	[ˈtəpʔ]	'to cover'
/wat/	[ˈwátʔ]	'to throw'
/ləc/	[ˈləcʔ]	'to chase'
/pək/	[ˈpákʔ]	'to break'
/kaʔ/	[ˈká·ʔ]	'fish'
/təm/	[ˈtâm:]	'to hit'
/ʔən/	[ˈʔân:]	'to give'
/t ^h rap/	[ˈt ^h râp:]	'a kind of tree'

/caŋ/	[ˈt͡ʃaŋː]	'bitter'
/plas/	[ˈpláɕ]	'a kind of snake'
/tah/	[ˈtáʰ]	'to pick'
/taɭ/	[ˈtɔɭ]	'south'
/sar/	[ˈsɑː]	'a kind of animal'
/praj/	[ˈpráj]	'bamboo'
/baw/	[ˈbáw]	'classifier for cigarette'
/aː/	[aː] is a long open central unrounded vowel. It occurs before all final consonants except /ʔ, h/.	

Examples:

/ka:p/	[ˈká:pʔ]	'chin'
/ca:t/	[ˈt͡ʃá:tʔ]	'a kind of fish'
/la:c/	[ˈlɑːcʔ]	'to peel'
/ta:k/	[ˈtá:kʔ]	'to emit'
/k ^h ra:s/	[ˈk ^h rɑːɕ]	'laugh'
/pa:m/	[ˈpɑːmː]	'cricket'
/wa:n/	[ˈwɑːnː]	'a kind of tree'
/ma:p/	[ˈmɑːpː]	'to ask'
/kla:ŋ/	[ˈklɑːŋː]	'a kind of bird'
/ka:l/	[ˈká:l]	'before'
/ma:r/	[ˈmá:r]	'salt'
/kwa:j/	[ˈkwaːj]	'yam'
/ca:w/	[ˈt͡ʃá:w]	'comb'

/u/ [u], [u·]

[u] is a short close back rounded vowel.

It occurs before all final consonants
except /c,ʔ,l,w,j/.

[u·] is a half-long close back rounded vowel.

It occurs before /ʔ/.

Examples:

/ŋu:p/	['ŋu:p]	'to bean'
/ʔut/	['ʔut]	'sweat'
/tuk/	['túk]	'to lie'
/cuʔ/	['cu·ʔ]	'sick'
/tu:s/	['tu:s]	'foam'
/puh/	['puh]	'to wash'
/tu:m/	['tu:m:]]	'body'
/pu:n/	['pu:n:]]	'navel'
/pinhu:p/	[,pin'hú:p:]]	'babble'
/ku:ŋ/	['ku:ŋ:]]	'village'
/hu:r/	['hu:r]	'to blow'

/u/ [u:] is a long close back rounded vowel.

It occurs before all final consonants
except /ʔ,ŋ,w,s,h/.

Examples:

/siŋku:p/	[,siŋ'ku:p]	'to lie flat on one's stomach'
/pu:t/	['pu:t]	'cloud'
/pu:c/	['pu:c]	'rice wine'
/p ^h lu:k/	['p ^h lu:k]	'cloth'
/ku:m/	['ku:m:]]	'to winnow'

/ŋu:n/	[ŋu:n:]	'a kind of tree'
/tu:p/	['tû:p:]	'spotty'
/ʔu:l/	['ʔû:l]	'spinach'
/ŋku:r/	[ŋ'kû:r]	'hard wind'
/l̥u:j/	['l̥u:j]	'abdomen'
/o/	[o],[o·]	

[o] is a short mid back rounded vowel.

It occurs before all final consonants
except /c,ʔ,s,p,w/.

[o·] is a half-long mid back rounded vowel.

It occurs before /ʔ/.

Examples:

/top/	['tópʔ]	'to fold'
/plot/	·['plótʔ]	'to pick up'
/pok/	['pókʔ]	'to bite'
/koh/	['kóh]	'to slice'
/pom/	['póm:]	'to hit'
/k ^h on/	['k ^h ón:]	'simple skirt'
/koŋ/	['kón:]	'a kind of pig'
/kɔl/	['kɔl]	'to bend'
/kɔr/	['kɔr]	'to scratch'
/paʔoj/	[pa'ʔóʔj]	'a kind of insect'
/koʔ/	['kó·ʔ]	'to put on'

/o:/ [o:] is a long mid back rounded vowel.

It occurs before all final consonants
except /ʔ, s, h, w/.

Examples:

/po:p/	[pó:pʔ]	'to cry'
/po:t/	[pó:tʔ]	'to torn'
/ro:c/	[ró:cʔ]	'shell'
/po:k/	[pó:kʔ]	'a kind of bird'
/paʔo:m/	[pa'ʔó:m:]	'to speak'
/pɔ:n/	[pɔ:n:]	'to put on'
/c ^h aro:p/	[ʰa'ró:p:]	'parched'
/k ^h o:ŋ/	[k ^h ó:ŋ:]	'cage'
/ʔijɔ:l/	[ʔi'jɔ:l]	'gibbon'
/k ^h o:r/	[k ^h ó:r]	'to whisper'
/mɔ:j/	[mɔ:j]	'one'
/ɔ/	[ɔ],[ɔː]	

[ɔ] is a short open back rounded vowel.

It occurs before all final consonants
except /ʔ, p, w/.

[ɔː] is a half-long open back rounded vowel.

It occurs before /ʔ/.

Examples:

/k ^h ɔp/	[k ^h ɔpʔ]	'saddle'
/pɔt/	[pɔtʔ]	'strong heart'
/mɔc/	[mɔcʔ]	'to snatch'
/cɔk/	[ʰɔkʔ]	'to tickle'

/sɔʔ/	['sɔʔʔ]	'dog'
/lɔs/	['lɔs]	'to sew'
/jɔh/	['jɔh]	'to walk'
/ʔɔm/	['ʔɔmː]	'daughter in law'
/k ^h ɔnkɔm/	[,k ^h ɔn ^h 'kɔmː]	'a kind of snake'
/lɔŋ/	['lɔŋː]	'side'
/ŋkɔl/	[ŋ'kɔl]	'classifier for banana'
/pɔr/	['pɔr]	'curse word'
/kalɔj/	[ka'lɔj]	'flower of coconut'
/ɔ:/	[ɔː]	is a long open back rounded vowel.

It occurs before all final consonants
/ʔ,w,s,h/.

Examples:

/kadɔp/	[ka'dɔp]	'a kind of insect'
/pɔt/	['pɔt]	'a kind of insect'
/mɔc/	['mɔc]	'to stroke'
/pɔk/	['pɔk]	'to burn'
/tɔm/	['tɔmː]	'to beg'
/ʔɔn/	['ʔɔnː]	'cataract'
/k ^h ɔp/	['k ^h ɔpː]	'a kind of tree'
/ntɔŋ/	[ŋ'tɔŋ]	'big stick'
/k ^h ɔl/	['k ^h ɔl]	'to whistle'
/ŋɔr/	['ŋɔr]	'way'
/rɔj/	['rɔj]	'fly'

Diphthongs

There are three diphthongs /ia,ia,ua/.

/ia/ occurs before all final consonants except /c,k,s,h,
p,w,j/.

Examples:

/tiap/	['tiap̩]	'to wrap'
/liat/	['liat̩]	'short'
/k ^h iaʔ/	['k ^h iaʔ]	'a kind of tree'
/c ^h liam/	['c ^h liam:]	'a kind of vegetable'
/liɑn/	['liɑn:]	'out'
/kiaŋ/	['kiaŋ:]	'elbow'
/kiaɭ/	['kiaɭ]	'cucumber'
/ʔiar/	['ʔiar]	'cock'

/ia/ occurs before all final consonants except /p,c,ʔ,p,
w/.

Examples:

/diat/	['diat̩]	'to bounce'
/ʔiak/	['ʔiak̩]	'to drink'
/lias/	['lias̩]	'timber'
/jiah/	['jiah̩]	'root'
/ʔiam/	['ʔiam:]	'fever'
/k ^h ian/	['k ^h ian:]	'up'
/c ^h iaŋ/	['c ^h iaŋ:]	'pig'
/ʔiaɭ/	['ʔiaɭ]	'a kind of skin disease'
/hɪar/	['hɪar]	'to vomit'

/ʔiaj/ [ˈʔiːaj] 'bad smell'

/ua/ occurs before /t,c,s,m,n,ŋ,l,r/.

Examples:

/ʔuat/	[ˈʔuat̚]	'to be tired'
/c ^h imp ^h ruac/	[ʔ ^h im'p ^h ruac̚]	'to vomit'
/puas/	[ˈpuaŋ]	'muntjac'
/puam/	[ˈpuam:]	'phlegm'
/muam/	[ˈmuam:]	'pimple'
/kluam/	[ˈkluam:]	'in'
/ntual/	[n̩ˈtuːal]	'neck'
/nuar/	[ˈnuːar]	'bear'

	p	t	c	k	ʔ	s	h	m	n	ɲ	ŋ	l	r	j	w
i	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓
i:	✓	✓		✓				✓	✓		✓	✓	✓		✓
e	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			
e:		✓		✓				✓	✓	✓	✓	✓			
ɛ	✓	✓	✓	✓	✓		✓					✓	✓	✓	✓
ɛ:	✓	✓		✓				✓	✓		✓	✓	✓		✓
a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
a:	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
ə	✓	✓		✓	✓		✓	✓				✓	✓		
ə:		✓	✓	✓				✓	✓			✓	✓	✓	✓
ɨ	✓	✓		✓		✓		✓	✓			✓	✓	✓	
ɨ:	✓	✓							✓			✓	✓	✓	
ɔ	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
ɔ:	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
o	✓	✓		✓	✓		✓	✓	✓			✓	✓	✓	✓
o:	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
u	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓		
u:	✓	✓	✓	✓				✓	✓	✓		✓	✓	✓	
ia	✓	✓			✓			✓	✓			✓	✓	✓	
ia	✓		✓		✓	✓	✓					✓	✓	✓	✓
ua		✓	✓	✓		✓		✓	✓			✓	✓	✓	

TABLE 4 The table of the co-occurrence of vowels and final consonants of major syllable

✓ = occurrence

□ = non-occurrence

5.4 Vowel co-occurrence restrictions

5.4.1 The co-occurrence of vowels and final consonants in the chart shows that in the data collected.

1. Short vowels never occur in open syllables.
2. Only /i, i:, ɛ, ɛ:, a, a:/ occur before /w/.
3. /i, i:, e, e:, ɛ, ɛ:, ə, ɨ, ɨ:, u, ia, ua/ do not occur before /j/.
4. /i, e, e:, ə/ never occur before /r/.
5. /i, ɨ:, u/ do not occur before /l/.
6. /u:/ does not occur before /ŋ/.
7. Only /i, e, e:, a, a:, ɔ:, o:, u, u:/ occur before /ɲ/.

8. /ɛ/ does not occur before /n/.
9. /ɛ, i:/ do not occur before /m/.
10. Only /i, e, ɛ, a, ə, ɔ, o, u, ia/ occur before /h/.
11. Only /i, a, i, ɔ, a:, u, ia, ua/ occur before /s/.
12. Only /i, e, ɛ, a, ə, ɔ, o, u, ia / occur before /ʔ/.
13. /i:, ia/ do not occur before /k/.
14. Only /i, e, ɛ, a, a:, ə:, ɔ, ɔ:, o:, u:, ua/ occur before /c/.
15. All vowels can occur before /t/.
16. Only /e:, ə:, ia, ua/ do not occur before /p/.
17. All long vowels and diphthongs can occur in open syllables.

	i	i:	e	e:	ɛ	ɛ:	ɪ	ɪ:	ə	ə:	a	a:	u	u:	o	o:	ʊ	ʊ:	ia	ia ^h	ua
p	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
t	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
c	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
k	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ʔ	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
h	✓		✓	✓			✓		✓		✓	✓		✓							✓
p ^h		✓		✓							✓	✓	✓	✓				✓	✓	✓	✓
t ^h			✓		✓						✓	✓	✓	✓				✓	✓	✓	✓
h	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓	✓	✓	✓
ch	✓	✓	✓		✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
kh	✓	✓	✓		✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b	✓	✓	✓			✓					✓		✓		✓			✓	✓		
d	✓	✓	✓	✓		✓			✓		✓	✓	✓	✓	✓			✓		✓	✓
s	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓
h	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
m	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
n	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ɲ	✓				✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ŋ	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
r			✓		✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
w	✓	✓	✓	✓	✓	✓				✓	✓	✓			✓			✓			
j	✓					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

TABLE 5.1 The table¹ of the co-occurrence of vowels and initial single consonant of major syllables.

✓ = occurrence

= non-occurrence

5.4.2 The chart of the co-occurrence of vowels and initial consonants shows that in the data collected all vowel phonemes can occur with initial consonants, but in different environments as follows.

1. All vowels except /e:/ occur after /p/.

2. All vowels occur after /t/, /l/.

3. All vowels except /e:, ə:/ occur after /c/.

4. All vowels except /i:, ia/ occur after /k/.

5. All vowels except /ə:/ occur after /ʔ/.

6. Only /i, e, e:, i, ə, a, a:, u:, ia/ occur after /p^h/.

7. Only /i:, e:, ɛ:, a, a:, u, u:, ə, ə:, ia, ia/ occur after /t^h/.

8. All vowels except /ə:, u:, ɔ/ occur after /c^h/.
9. All vowels except /e:, i:, i:, ə/ occur after /k^h/.
10. Only /i, i:, e, ɛ:, a, u, o, ɔ, ɔ:/ occur after /b/.
11. All vowels except /ɛ, i, i:, ə:, o:, ɔ, ia/ occur after /d/.
12. All vowels except /ɛ, ə:, o:, ua/ occur after /s/.
13. All vowels except /ɛ, ia/ occur after /h/.
14. All vowels except /ɛ:/ occur after /m/.
15. All vowels except /ia, ia, ua/ occur after /n/.
16. Only /i, ɛ, ə, a, a:, u, u:, o, o:, ɔ, ɔ:, ia, ua/ occur after /p/.
17. All vowels except /e:, i:, i:, ia, ua/ occur after /ŋ/.
18. All vowels except /i, i:, e:, ɛ:, i, i:, ə:/ occur after /r/.
19. All vowels except /i, i:, ə, u, u:, o:, ɔ, ia, ia, ua/ occur after /w/.
20. All vowels except /i:, e, e:, ɛ, ə, i:, ia, ua/ occur after /j/.

5.5 Vowel contrasts

The following examples demonstrate minimal or near minimal contrast between vowels.

5.5.1 Position contrasts of short vowels

/i/, /e/, /ɛ/

/tiʔ/	[ˈtɪʔ]	'hand'
/teʔ/	[ˈtɛʔ]	'to put'
/tɛʔ/	[ˈtɛʔ]	'to dance'

/i/, /e/

/cip/	[ˈcɪp]	'to dip'
/cep/	[ˈcɛp]	'to select'

/lic/	['lic̣]	'to expose'
/lec/	['léc̣]	'to go through'
/kip/	['kîp̣]	'full'
/kep/	['kêp̣:]	'to stab'
/tik/	['tiḳ]	'to proceed'
/tek/	['téḳ]	'to press'
/tih/	['tîh]	'mushroom'
/teh/	['téh]	'to pick up'
/i/,/ɛ/		
/pip/	['pîp̣]	'to grasp'
/pɛp/	['pɛ̣p̣]	'to press'
/i/,/ə/		
/ʔim/	['ʔîṃ:]	'warm'
/ʔəm/	['ʔə̣ṃ:]	'final particle'
/ə/,/a/		
/kət/	['kəṭ]	'to think'
/kat/	['káṭ]	'cold'
/kəʔ/	['kə̣:ʔ]	'to blazed'
/kaʔ/	['kạ́:ʔ]	'fish'
/ʔəh/	['ʔə̣h]	'to do'
/ʔəh/	['ʔə̣h]	'meat'
/pəj/	['pə̣j]	'to blow'
/paj/	['páj]	'to twine'
/o/,/ɔ/		
/kok/	['kóḳ]	'olive'
/kɔk/	['kɔ̣ḳ]	'crippled'

/koʔ/	['kó:ʔ]	'to put on'
/kɔʔ/	['kɔ̀:ʔ]	'to wait'
/toʔ/	['tó:ʔ]	'at'
/tɔʔ/	['tɔ̀:ʔ]	'a kind of stool'
/tɔh/	['tòh]	'to undo'
/tɔh/	['tɔ́h]	'chisel'
/taloh/	[ta' lóh]	'male'
/talɔh/	[ta' lɔ̀h]	'cooking pot'
/ʔom/	['ʔóm:]	'water'
/ʔɔm/	['ʔɔ́m:]	'daughter-in-law'
/lɔŋ/	['lɔ̀ŋ:]	'small stick'
/lɔŋ/	['lɔ́ŋ:]	'side'
/u/,/o/		
/tuh/	['tùh]	'old'
/tɔh/	['tòh]	'to undo'
/kɔŋ/	['kɔ̀ŋ:]	'village'
/kɔŋ/	['kɔ́ŋ:]	'a kind of pig'
/kɔr/	['kùr]	'fat'
/kɔr/	['kɔ̀r]	'to scratch'
/puk/	['púkʔ]	'a kind of tree'
/pok/	['pókʔ]	'to bite'
/tuk/	['túkʔ]	'to tie'
/tɔk/	['tòkʔ]	'a kind of mushroom'
/muk/	['múkʔ]	'cricket'
/mok/	['mókʔ]	'mountain'
/kɔʔ/	['kù:ʔ]	'to like'
/koʔ/	['kó:ʔ]	'to put on'

/tuʔ/	[tù·ʔ]	'to run away'
/toʔ/	[tó·ʔ]	'at'
/puʔ/	[pú·ʔ]	'to fluffy'
/poʔ/	[pó·ʔ]	'and'
/i/,/ɨ/		
/tik/	[tíkʔ]	'to proceed'
/tɨk/	[tɨkʔ]	'to butt'
/plɨŋ/	[plɨŋ:]	'a kind of grass'
/plɨŋ/	[plɨŋ:]	'a kind of grass'
/e/,/ə/		
/pateʔ/	[pa'té·ʔ]	'soil'
/patəʔ/	[pa'tə·ʔ]	'smoke'
/teʔ/	[tè·ʔ]	'to put'
/təʔ/	[tə·ʔ]	'bad'
/leʔ/	[lé·ʔ]	'porcupine'
/ləʔ/	[lə·ʔ]	'to disappear'
/keʔ/	[ké·ʔ]	'female organ'
/kəʔ/	[kə·ʔ]	'to blazed'
/ɛ/,/a/		
/kɛp/	[kɛpʔ]	'to cut (hair)'
/kap/	[kápʔ]	'handle'
/mɛt/	[mɛtʔ]	'to stole'
/mat/	[mátʔ]	'eye'
/c ^h ɛk/	[c ^h ɛkʔ]	'to cut'
/c ^h ak/	[c ^h akʔ]	'to hook'
/wɛk/	[wɛkʔ]	'sickle'

/wak/	['wakʔ]	'to hang'
/tɛʔ/	['tɛ·ʔ]	'to dance'
/taʔ/	['ta·ʔ]	'grandfather'
/ʔɛh/	['ʔɛh]	'boil'
/ʔah/	['ʔah]	'meat'
/ə/, /o/, /ɔ/		
/təʔ/	['tə·ʔ]	'shabby'
/toʔ/	['to·ʔ]	'at'
/tɔʔ/	['tɔ·ʔ]	'a kind of stool'
/kəʔ/	['kə·ʔ]	'to blazed'
/koʔ/	['ko·ʔ]	'to put on'
/kɔʔ/	['kɔ·ʔ]	'to wait'

5.5.2 Length contrasts

/i/, /i:/		
/hip/	['hipʔ]	'to imitate'
/hi:p/	['hi:pʔ]	'to sip'
/cip/	['cipʔ]	'to dip'
/ci:p/	['ci:pʔ]	'to crouch'
/tik/	['tikʔ]	'to proceed'
/ti:k/	['ti:kʔ]	'to put'
/p ^h riʔ/	['p ^h riʔ]	'chili'
/p ^h ri:k/	['p ^h ri:kʔ]	'a kind of rice'
/e/, /e:/		
/p ^h et/	['p ^h etʔ]	'a kind of vegetable'
/p ^h e:t/	['p ^h e:tʔ]	'spirit of those killed in an accident'

/t _{ɛ̃} n/	['t _{ɛ̃} n:]	'to sit'
/t _{ɛ̃} :n/	['t _{ɛ̃} :n:]	'to stop on'
/t _{ɛ̃} p/	['t _{ɛ̃} p:]	'rash'
/t _{ɛ̃} :p/	['t _{ɛ̃} :p:]	'full'
/ɛ/,/ɛ:/		
/sint _{ɛ̃} p/	[,sin't _{ɛ̃} p>]	'to lean'
/t _{ɛ̃} :p/	['t _{ɛ̃} :p>]	'shirt'
/t/,/t:/		
/p _{i̇} p/	['p _{i̇} p]	'to see'
/p _{i̇} :p/	['p _{i̇} :p>]	'edge'
/ə/,/ə:/		
/t _{ə̃} l/	['t _{ə̃} l]	'classifier for hat'
/t _{ə̃} :l/	['t _{ə̃} :l]	'narrow'
/a/,/a:/		
/k _a p/	['k _a p>]	'handle'
/k _a :p/	['k _a :p>]	'chin'
/t _a t/	['t _a t>]	'to sleep'
/t _a :t/	['t _a :t>]	'highland'
/l _a t/	['l _a t>]	'a kind of fish'
/l _a :t/	['l _a :t>]	'gold bracelet'
/l _a c/	['l _a c>]	'to chase'
/l _a :c/	['l _a :c>]	'to peel'
/w _a k/	['w _a k>]	'to hang'
/w _a :k/	['w _a :k>]	'earthworm'
/t _a k/	['t _a k>]	'to abuttal'
/t _a :k/	['t _a :k>]	'to emit'

/pak/	['pákʔ]	'to break'
/pa:k/	['pá:kʔ]	'ladle'
/taj/	['táj]	'to'
/ta:j/	['tá:j]	'elder cousin'
/u/,/u:/		
/sut/	['sútʔ]	'to burn'
/su:t/	['sù:tʔ]	'to ask'
/ʔut/	['ʔútʔ]	'sweat'
/ʔu:t/	['ʔù:tʔ]	'a kind of insect'
/kun/	['kún:]	'kind'
/ku:n/	['kú:n:]	'a kind of snake'
/pinhup/	[pin'húp:]	'babbie'
/pinhu:p/	[pin'hú:p:]	'to annoy'
/hur/	['húr]	'to blow'
/hu:r/	['hú:r]	'rotten'
/o/,/o:/		
/ʔom/	['ʔóm:]	'water'
/paʔo:m/	[pa'ʔó:m:]	'to speak'
/pok/	['pókʔ]	'to bite'
/po:k/	['pó:kʔ]	'a kind of bird'
/koŋ/	['koŋ:]	'a kind of pig'
/ko:ŋ/	['kó:ŋ:]	'a kind of dog'

/ɔ/,/ɔ:/

/k ^h ɔp/	['k ^h ɔpʔ]	'saddle'
/k ^h ɔ:p/	['k ^h ɔ:pʔ]	'Khanna'
/pɔt/	['pɔtʔ]	'strong heart'
/pɔ:t/	['pɔ:tʔ]	'a kind of insect'
/mɔc/	['mɔc]	'to snatch'
/mɔ:c/	['mɔ:c]	'to stroke'
/kɔk/	['kɔkʔ]	'crippled'
/kɔ:k/	['kɔ:kʔ]	'a kind of insect'
/pɔr/	['pɔr]	'curse word'
/pɔ:r/	['pɔ:r]	'a kind of bird'

5.5.3 Position contrast of long vowels

/i:/,/e:/

/ti:n/	['tí:n:]	'to order'
/te:n/	['tê:n:]	'to step on'

/e:/,/ɛ:/

/se:t/	['sé:tʔ]	'leaving'
/sɛ:t/	['sɛ:tʔ]	'a kind of vegetable'

/ə:/,/a:/

/kə:/	['kə:]	'older brother'
/ka:/	['ka:]	'to go up'
/wə:k/	['wə:kʔ]	'a kind of bird'
/wa:k/	['wá:k]	'to torn'

/u:/,/o:/

/pu:t/	['pú:tʔ]	'cloud'
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/po:t/	['pó:tʰ]	'to be torned'
/ku:p/	['kú:pʰ]	'to roast'
/ko:p/	['kó:pʰ]	'to hold'
/tu:l/	['tu:l]	'a kind of tree'
/to:l/	['tò:l]	'wood'
/k ^h u:r/	['k ^h ú:r]	'hair'
/k ^h o:r/	['k ^h ó:r]	'to whisper'
/o:/, /ɔ:/		
/p ^h ro:t/	['p ^h ró:tʰ]	'to donate'
/p ^h rɔ:t/	['p ^h rɔ:tʰ]	'to pluck'
/hə:c/	['hó:c]	'already'
/hɔ:c/	['hò:c]	'to shape'
/po:k/	['pó:kʰ]	'a kind of bird'
/pɔ:k/	['pɔ:kʰ]	'to burn'
/rɔ:j/	['rò:j]	'ghost'
/rɔ:j/	['rɔ:j]	'fly'
/ia/, /ɪa/		
/mian/	['mian]	'to chew'
/mianwa:j/	['mian:(wa:j)]	'a kind of grass'
/ɪa/, /ua/		
/ɲiam/	['ɲiam:]	'heart'
/ɲuam/	['ɲuam:]	'phlegm'
/ntɪal/	['n'tɪal]	'bat'
/ntual/	['n'tual]	'neck'
/hiar/	['hiar]	'to vomit'
/huar/	['huar]	'bear'

5.6 Consonant Phonemes

Consonants function as syllable periphery. The consonant phonemes are /p, p^h, b, t, t^h, d, c, c^h, k, k^h, ʔ, s, h, m, n, ŋ, r, l, w, j/. The consonant chart is shown in FIGURE 15.

There are no contrasts between short and long consonants. So length of consonant is not phonemic.

1. The aspirated stops do not occur in word-final position, just as no clusters occur in word-final position.

2. The aspirated stops p^h, t^h, c^h, k^h are interpreted as one phoneme.

3. The aspirated stops p^h, t^h, c^h, k^h plus liquid l, r or w are two phonemes.

manner of articulation	point of articulation	Labial	Alveolar	Palatal	Velar	Glottal
Stops:vl.unasp. vl.asp. vd.		p	t	c	k	ʔ
		p ^h	t ^h	c ^h	k ^h	
		b	d			
Fricatives			s			h
Nasals		m	n	ɲ	ŋ	
Liquids:Trill Lateral			r			
			l			
Glides		w			j	

TABLE 6 - Phoneme table of Khmu Lue consonants

These consonants function in the strongly stressed, weakly stressed and unstressed syllables.

Consonants can be divided into three sub-classes in terms of their distribution in the syllable single initials, initial clusters and final consonants.

The single initial consonants functioning in all types of syllable.

5.7 Description of consonant phonemes

5.7.1 Stops

/p/. [p],[pʰ]

[p] is a voiceless unaspirated bilabial stop.

It occurs in the initial position.

It is unreleased [pʰ] in the final position.

/pic/	['píc]	'to throw away'
/pih/	['pih]	'wood oil'
/cipɛh/	[ʔi'péh]	'fin of fish'
/tapa:t/	[ta'pá:tʰ]	'a kind of small toad'
/təp/	['təpʰ]	'barn'
/kʰɔp/	['kʰɔpʰ]	'saddle'

/p^h/ [p^h] is a voiceless aspirated bilabial stop.

It occurs in the initial position.

/p ^h et/	['p ^h etʰ]	'a kind of vegetable'
/p ^h ek/	['p ^h ekʰ]	'to imitate'

/tump^hlaʔ/ [tʊm^h'p^hla'ʔ] 'stove'

/p^həp^haʔ/ [p^hə'p^ha'ʔ] 'wet'

/b/ [b] is a voiced bilabial stop.

It occurs in the initial position.

/beŋ/ ['beŋː] 'to stick up'

/bit/ ['bitˀ] 'to twist'

/c^humbut/ [t^hum^h'bútˀ] 'papaya'

/t/ [t],[tˀ]

[t] is a voiceless unaspirated apico-alveolar stop.

It occurs in the initial position.

It is unreleased [tˀ] in the final position.

/tʰ/ ['tʰ] 'old'

/tʰa:w/ ['tʰa:w] 'a kind of tree'

/tʰiti:t/ [tu'tiːtˀ] 'a kind of bird'

/kitiʔ/ [ki'ti'ʔ] 'a kind of stool'

/pat/ ['pátˀ] 'duck'

/sukot/ [su'kótˀ] 'to pick up'

/t^h/ [t^h] is a voiceless aspirated apico-alveolar stop.

It occurs in the initial position.

/t^hra:k/ ['t^hra:kˀ] 'buffaló'

/t^han/ ['t^hánː] 'equal'

/d/ [d] is a voiced apico-alveolar stop.

It occurs in the initial position.

/di:t/ ['di:tˀ] 'to kick'

/dɪk/ ['dɪkˀ] 'to dive'

/kada:ŋ/ [ka'dâ:ŋ:] 'incompetent'

/kadat/ [ka'dátʔ] 'pineapple'

/c/ [t̪], [cʔ]

[t̪] is a voiceless unaspirated lamino-prepalatal affricated stop.

It occurs in the initial position.

It is unreleased [cʔ] in the final position.

/cot/ [ʔótʔ] 'to pinch'

/cipɛh/ [t̪i'pɛh] 'fin'

/pacat/ [pa't̪átʔ] 'a kind of vegetable'

/k^hucɔ:/ [k^hu't̪ô:] 'magic'

/lɔc/ [lɔcʔ] 'to chase'

/mɔc/ [mɔcʔ] 'to snatch'

/c^h/ [t̪^h] is a voiceless aspirated lamino-prepalatal affricated stop.

It occurs in the initial position.

/c^hɛp/ [t̪^hɛpʔ] 'clothing'

/c^halɛ:/ [t̪^ha'le:] 'to sway'

/pac^hat/ [pa't̪^hatʔ] 'rattan'

/kac^hɔ:/ [ka't̪^hô:] 'a kind of mango'

I have also found that /c^h/ and /s/ are sometimes in variations from five examples. It is noticeable that their occurrence is conditioned by the age of the speakers. The old speakers tend to use /s/ but the young speakers tend to use /c^h/.

Examples:

the old speakers

/silú:t/

/sinə:t/

/silék/

/si?éŋ/

/siwəŋ/

the young speakers

/c^hilú:t/ 'deaf'

/c^hinə:t/ 'gun'

/c^hilék/ 'a kind of
vegetable'

/c^hi?éŋ/ 'to think'

/c^hiwəŋ/ 'a kind of
mushroom'

/k/ [k],[kʔ]

[k] is a voiceless unaspirated dorso-velar stop.

It occurs in the initial position.

It is unreleased [kʔ] in the final position.

/kəʔ/	['kə:ʔ]	'to blazed'
/kʔ:ŋ/	['kʔ:ŋ:]	'to cook'
/sikam/	[si'kām:]	'needle'
/siŋkɛ:l/	[,siŋ'kɛ:l]	'to recline'
/pi:k/	['pì:kʔ]	'to turbid'
/pak/	['pákʔ]	'to break'

/k^h/ [k^h] is a voiceless aspirated dorso-velar stop.

It occurs in the initial position.

/k ^h ɛp/	['k ^h ɛpʔ]	'slippers'
/k ^h i:mi:n/	[k ^h i: 'mî:n:]	'a kind of tree'
/k ^h i:k ^h u:/	[k ^h i: 'k ^h u:]	'to heave'
/siakk ^h -rə:ʔ/	[,siák ^h 'k ^h rə:ʔ]	'a kind of vegetable'

/ʔ/ [ʔ] is a glottal stop.

It occurs in the initial position.

/t̪i̪a/	[ʔi̪a]	'sweet'
/ʔi̪ŋheʔ/	[ʔi̪ŋ'hé·ʔ]	'vein'
/caʔi:p/	[ʔaʔi:p]	'centipede'
/kaʔa:k/	[kaʔa:k]	'crow'
/waʔ/	[waʔ]	'small monkey'
/sʔʔ/	[sʔʔ]	'dog'

5.7.2 Nasals

/m/ [m],[m:],[m̥]

[m] is a voiced bilabial nasal.

It occurs in the initial position.

[m:] is a long voiced bilabial nasal.

It occurs in the final position.

[m̥] is a syllabic nasal.

/mec/	[méc]	'to know'
/mat̥/	[mat̥]	'eye'
/kamaʔ/	[ka'maʔ]	'rain'
/tamat/	[ta'mat]	'to pluck'
/nam/	[nãm:]	'big'
/pɛ̃:m/	[pɛ̃:m:]	'a kind of basket'
/mpʔ:k/	[mpʔ:k]	'bark'

/n/ [n],[n:],[n̥]

[n] is a voiced apico-alveolar nasal.

It occurs in the initial position.

[n:] is a long voiced apico-alveolar nasal.

It occurs in the final position.

[n̥] is a syllabic nasal.

/nanlɛ:/	[,nan'1ɛ:]	'bruised'
/ni:p/	['ni:pʰ]	'spoon'
/panɛl/	[pa'nɛl]	'wing'
/kanu:n/	[ka'nu:n:]	'knee'
/ʔan/	['ʔan:]	'to give'
/ncim/	[n'cim:]	'soft'

/p/ [p],[p:]

[p] is a voiced fronto-velar nasal.

It occurs in the initial position.

[p:] is a long voiced fronto-velar nasal.

It occurs in the final position.

/pukpik/	[,puk'pikʰ]	'to rub'
/pa:m/	['pa:m:]	'cricket'
/tipiah/	[ti'piah]	'to shiver'
/kapɔ:m/	[ka'pɔ:m:]	'soft'
/ɲip/	['ɲip:]	'dark'
/t ^h rap/	[t ^h rap:]	'a kind of tree'

/ŋ/ [ŋ],[ŋ:],[ŋ]

[ŋ] is a voiced dorso-velar nasal.

It occurs in the initial position.

[ŋ:] is a long voiced fronto-velar nasal.

It occurs in the final position.

[ŋ] is a syllabic nasal.

/ɲip/	['ɲip:]	'dark'
/ŋel/	['ŋel]	'to shiver'
/ciŋeʔ/	[ciŋeʔ]	'to glance'

/taŋeʔ/	[ta'ŋè·ʔ]	'to squint'
/jaŋ/	['jâŋ:]	'black'
/kɔ̃:ŋ/	['kɔ̃:ŋ:]	'curry'
/ŋkin/	[ŋ'kîn:]	'woman'

5.7.3 Fricatives

/s/ [s] is a voiceless apico-dental grooved fricative.

It occurs in the initial position.

/sa:p/	['sá:p]	'smell'
/si:n/	['sî:n:]	'ripe'
/ʔisal/	[ʔi'sâl]	'galingale'
/tasal/	[ta'sâl]	'mad'

[ç] is a voiceless palatal fricative.

It occurs in the final position.

/k ^h ra:s/	['k ^h rá:ç]	'to laugh'
/plas/	['pláç]	'a kind of snake'

/h/ [h] is a voiceless glottal fricative.

It occurs in the initial and final positions.

/he:k/	['hé:kʔ]	'to cut'
/hip/	['hípʔ]	'to imitate'
/laha:ŋ/	[la'hâ:ŋ:]	'a kind of tree'
/tahat/	[ta'hátʔ]	'to spurt'
/ʔah/	['ʔàh]	'meat'
/p ^h h/	['p ^h h]	'dust'

5.7.4 Trills

/r/ [r] is a voiced alveolar trill.

It occurs in the initial and final positions
and as a second member of the cluster.

/rɛc/	[ˈrɛc̥]	'to chase'
/reʔ/	[ˈré.ʔ]	'field'
/siruaŋ/	[siˈruaŋ:]	'the name of a Khmu day'
/c ^h aro:p/	[t̪ ^h aˈrô:p:]	'parched'
/maɾ/	[ˈmaɾ]	'snake'
/ʔiar/	[ˈʔi̯aɾ]	'cock'

5.7.5 Laterals

/l/ [l] is a voiced apico-alveolar lateral.

It occurs in the initial and final positions
and as a second member of the cluster.

/lic/	[ˈlic̥]	'to expose'
/lawɑ:ŋ/	[laˈwɑ:ŋ:]	'sky'
/siliaŋ/	[siˈliãŋ:]	'a kind of grass'
/sali:/	[saˈli:]	'corn'
/ʔi:l/	[ˈʔi̯:l]	'swallow'
/pal/	[ˈpâl]	'to roll up'

5.7.6 Semivowels

/w/ [w] is a voiced labio-velar semivowel.

It occurs in the initial and final positions
and as a second member of the cluster.

/wɛ:t/	[ˈwɛ:t̪]	'to buy'
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/wec/	[wécʔ]	'to come'
/kawɣh/	[ka'wɣh]	'leg'
/lawe:p/	[la'we:p:]	'curl'
/ki:w/	[ki:w]	'a kind of vegetable'
/pla:w/	[pla:w]	'coconut'

/j/ [j] is a voiced fronto-palatal semivowel.

It occurs in the initial and final positions.

/juʔ/	[ju:ʔ]	'grass'
/jat/	[jət]	'to live'
/tajɔ:r/	[ta'jɔ:r]	'sieve'
/ʔiɔaʔ/	[ʔi'jəʔ]	'bag'
/lawə:j/	[la'wə:j]	'tiger'
/lu:j/	[lu:j]	'abdomen'

-p	-t	-c	-k	-ʔ
-m	-n	-ɲ	-ŋ	
	-s			-h
	-r			
	-l			
-w		-j		

TABLE 7 The table of 15 final consonants of Khmu Lue.

Examples:

/tap/	['tápʔ]	'barn'
/pat/	['pátʔ]	'duck'
/lác/	['lácʔ]	'to chase'
/wak/	['wákʔ]	'to hang'
/kaʔ/	['ká·ʔ]	'fish'
/plas/	['plác]	'a kind of snake'
/ʔaḥ/	['ʔaḥ]	'meat'
/tam/	['tám:]	'to hit'
/ʔan/	['ʔán:]	'to give'
/t ^h rap/	['t ^h ráp:]	'a kind of tree'
/jaḥ/	['jáḥ:]	'black'
/wə:r/	['wə:r]	'a kind of tool'
/ka:l/	['ká:l]	'before'
/ŋiḥw/	['ŋiḥw]	'a kind of plant'
/c ^h uj/	['c ^h uj]	'slow'

Consonant Cluster

The 16 cluster consonants of Khmu Lue are /pr,pl,p^hr,p^hl,t^hr,t^hl,sr,cr,c^hr,c^hl,kr,kl,kw,k^hr,k^hl,k^hw/.

C ₁ \ C ₂	Trill	Lateral	Glide
Labial:vl.unasp.stops	pr-	pl-	-
vl.asp.stops	p ^h r-	p ^h l-	-
Alveolar:vl.unasp.stops	-	-	-
vl.asp.stops	t ^h r-	t ^h l-	-
vl.fricative	sr-	-	-
Palatal:vl.unasp.stops	cr-	-	-
vl.asp.stops	c ^h r-	c ^h l-	-
Velar: vl.unasp.stops	kr-	kl-	kw-
vl.asp.stops	k ^h r-	k ^h l-	k ^h w-

TABLE 8 The table of consonant clusters of Khmu Lue

Examples:

/prɔ̃:ŋ/	['prɔ̃:ŋ:]	'rattan'
/pliŋ/	['pliŋ:]	'a kind of grass'
/p ^h riʔ/	['p ^h riʔ']	'chili'
/p ^h li:ŋ/	['p ^h li:ŋ:]	'drum'
/t ^h re:ŋ ʔiar/	[t ^h re:ŋ ʔi ^h ar]	'a kind of grass'
/t ^h li:r/	[t ^h li ^h :r]	'to throw'
/sruat/	['sruatʔ]	'morning'
/cranok/	[ʔra'ŋókʔ]	'valve'
/c ^h riʔ/	[ʔ ^h riʔ]	'to relax'
/c ^h lɛ:n/	['c ^h lɛ:n:]	'to cut'
/kri:ʔ/	['kri:ʔ]	'to be wrong'
/klɛ:t/	['klɛ:tʔ]	'to lick'
/kwɛ:n/	['kwɛ:n:]	'to know'
/k ^h ri:r/	['k ^h ri:r]	'a kind of insect'
/k ^h lɔ̃:ŋ/	['k ^h lɔ̃:ŋ:]	'branch'
/k ^h wɛ:n/	['k ^h wɛ:n:]	'to alleviate'

These clusters function in the initial position of strongly stressed syllable.

5.8 Consonant Contrasts

/p/,/b/	
/pet/	'to cut'
/bet/	'fishhook'
/pɔ̃ʔ/	'twin'
/bɔ̃ʔ/	'a kind of tree'
/pɔ̃:/	'a kind of tree'
/bɔ̃:/	'well'

/p̥t̥:/	'to win'
/b̥t̥:/	'sound of cow'
/b/,/m/	
/bit/	'to twist'
/mit/	'friend'
/bok/	'to fallow'
/mok/	'mountain'
/bʝʔ/	'a kind of tree'
/mʝʔ/	'crossbow'
/bet/	'fishhook'
/met/	'seed'
/b/,/w/	
/bit/	'tò twist'
/wit/	'to jump'
/bʝ:/	'well'
/wʝ:/	'mad'
/t/,/s/,/n/	
/tiʔ/	'hand'
/siʔ/	'to instigate'
/niʔ/	'this'
/tih/`	'mushroom'
/sih/	'to sleep'

/tec/	'to sell'
/sec/	'sharp'
/nec/ ..	'to hit'
/d/,/s/	
/di:t/	'to kick'
/si:t/	'to inject'
/n/,/l/	
/nam/	'big'
/lam/ ..	'side'
/nɛ:ŋ/ ..	'a kind of trap'
/lɛ:ŋ/ ..	'tasteless'
/t/,/d/	
/tik/	'to proceed'
/dik/ ..	'to dive'
/tu?/ ..	'to run away'
/du?/ ..	'diligent'
/d/,/n/	
/det/	'delicious'
/net/	'keen'
/di:t/	'to kick'
/ni:t/ ..	'to overlap'

/t/,/l/,/s/

/tek/ 'to press'
 /lek/ 'iron'
 /sek/ 'to saw off'
 /te?/ 'to put'
 /le?/ 'porcupine'
 /se?/ 'louse'

/s/,/r/,/l/

/se?/ 'louse'
 /re?/ 'field'
 /le?/ 'porcupine'
 /rɔ̣:c/ 'shell'
 /lɔ̣:c/ 'stillborn offspring'
 /si:n/ 'ripe'
 /li:n/ 'to lead'

/c/,/p/

/tec/ 'to sell'
 /tep/ 'rash'
 /cək/ 'to pull'
 /pak/ 'to put'
 /cip/ 'to dip'
 /pip/ 'to grasp'

/c/,/s/

/mɔ̣c/ 'to snatch'
 /mɔ̣s/ 'a kind of mushroom'

/k/,/ŋ/,/j/	
/kʔ?/	'to wait'
/ŋʔ?/	'rice'
/jʔ?/	'together'
/ʔ/,/h/	
/jʔ?/	'together'
/jʔh/	'to walk'
/ʔo?/	'I'
/ho?/	'that'
/p/,/k ^h /	
/pip/	'to grasp'
/k ^h ip/	'to cut hair'
/h/,/c/	
/hi:p/	'to sip'
/ci:p/	'to crouch'
/ʔ/,/w/	
/ʔit/	'to suppress'
/wit/	'to jump'
/p/,/d/	
/pi:t/	'to extinguish'
/di:t/	'to kick'

/p/,/l/,/h/	
/pic/	'to throw away'
/lic/	'to expose'
/hic/	'to hit'
/d/,/t/	
/dik/	'to dive'
/tik/	'to proceed'
/p/,/t/,/c/	
/oi:k/	'to turbid'
/ti:k/	'to put'
/ci:k/	'acidulous'
/t/,/n/	
/ti?/	'hand'
/ni?/	'this'
/kati?/	'a kind of tool'
/kani?/	'mark'
/p/,/t/,/?/	
/pi?/	'not hungry'
/ti?/	'hand'
/?i?/	'we'
/p/,/t/,/s/	
/pih/	'wood oil'
/tih/	'mushroom'
/sih/	'to sleep'

/s/,/c/	
/si:m/	'bird'
/ci:m/	'to taste'
/ʔ/,/l/	
/ʔiŋ/	'to lean'
/liŋ/	'to leap'
/p/,/p ^h /	
/pli:ŋ/	'sea slug'
/p ^h li:ŋ/	'drum'
/c ^h /,/k ^h /	
/c ^h ua/	'to try'
/k ^h ua/	'to fry'
/c/,/k/	
/ce:p/	'to select'
/kep/	'to pick up'
/m/,/w/,/t/,/k/,/l/	
/mec/	'to know'
/wec/	'to come'
/tec/	'to sell'
/kec/	'to put on'
/lec/	'to go through'

/w/,/r/	
/weʔ/	'left'
/reʔ/	'field'
/p/,/k/	
/peŋ/	'full(moon)'
/keŋ/	'to tight'
/c/,/c ^h /	
/cɛ:/	'dwarfed'
/c ^h ɛ:/	'to lore'
/k/,/k ^h /,/p/	
/kɛp/	'to cut'
/k ^h ɛp/	'slippers'
/pɛp/	'to press'
/t/,/t ^h /	
/tɛ:p/	'shirt'
/t ^h ɛ:p/	'the name of money'
/c/,/m/,/j/	
/cɛt/	'sour'
/mɛt/	'to stole'
/jɛt/	'to live'

/p/,/w/	
/pɛ:t/	'to squeeze'
/wɛ:t/	'to buy'
/s/,/h/	
/sɛ:t/	'a kind of vegetable'
/hɛ:t/	'to call'
/ŋ/,/r/	
/ŋɛc/	'dot'
/rɛc/	'to chase'
/c ^h /,/w/	
/c ^h ɛk/	'to cut'
/wɛk/	'sickle'
/n/,/l/	
/lɛ:n/	'a kind of animal'
/lɛ:l/	'a kind of insect'
/h/,/w/	
/hɛ:l/	'to clear'
/wɛ:l/	'a kind of vegetable'
/ŋ/,/n/	
/ŋa:/	'ivory'
/na:/	'old sister'

/t/,/k/,/c ^h /	
/tap/	'barn'
/kap/	'handle'
/c ^h ap/	'to tattoo'
/ŋ/,/s/	
/ŋa:p/	'to yawn'
/sa:p/	'smell'
/ŋ/,/w/	
/ŋat/	'dry'
/wat/	'to throw'
/t/,/c/	
/ta:t/	'highland'
/ca:t/	'a kind of fish'
/h/,/j/,/p/	
/hak/	'to remain'
/jak/	'excrement'
/pak/	'to put'

5.9 Consonant Phoneme Distribution

5.9.1 In major syllable

Major syllables may contain one to two initial consonants. The patterns of the major syllables are $C(C)V(:)(V)(C)$ so the consonant position classes in the major syllable are C_1, C_2, C_3 and C_4 .

C_1 position, can be filled by all of the consonants.

$\underset{2}{\mathcal{C}}$ position, can be filled by /l,r,w/.

$\underset{3}{\mathcal{C}}$ position, can be filled by all consonant phonemes except /b,d,p^h,t^h,c^h,k^h/.

Examples of major syllable

/pɪp/	'to shoot'
/plɪŋ/	'a kind of grass'
/t ^h rɔ:ŋ/	'throat'
/ciap/	'to find'
/cɔ:/	'a kind of dog'

5.9.2 In minor syllables

Minor syllables have the pattern $\underset{4}{\mathcal{C}}V(:)(V)(\underset{5}{\mathcal{C}})$

$\underset{4}{\mathcal{C}}$ position, can be filled by all consonant phonemes except /b,d,m,n,ŋ,w,j/.

$\underset{5}{\mathcal{C}}$ position, can be filled by all consonant phonemes except /t,d,p^h,t^h,c^h,k^h,s,c,ʔ,h,l,w/.

Examples of minor syllables

/puk pɪk/	'to rub'
/sɪŋ sɪh/	'grass mat'
/la:i tʔ/	'monitor lizard of the genus Varanus'

5.9.3 In presyllables

5.9.3.1 The presyllables with the pattern CV.

$\underset{6}{\mathcal{C}}$ position, can be filled by /p,t,k,c,ʔ,m,n⁶,p,s,l,p^h,k^h,c^h,h/.

Examples of presyllable ($\underset{6}{\mathcal{C}}V$)

/pijəʔ/	'to send'
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/tɪ ^h ɪah/	'to shiver'
/kaceʔ/	'a kind of wood'
/cuci:/	'a kind of insect'
/ʔisal/	'galingale'
/mɪaŋwa:j/	'a kind of grass'
/nanlɛ:/	'bruised'
/pukpɪk/	'to rub'
/silɛ:ŋ/	'a kind of vegetable'
/luluʔ/	'naked'
/p ^h ɪpɪar/	'to have a nightmare'
/k ^h i:mi:n/	'a kind of tree'
/c ^h ɪpuŋ/	'a kind of basket'
/hiʔɪl/	'to smell'

5.9.3.2 The presyllables with the pattern Ṇ (or C̣ position)

Ṇ or C̣ position, can be filled by /m, n, ŋ/.

Examples of presyllable

/mp ^h la:j/	'worm'
/nwɛl/	'to go round'
/ŋkaʔ/	'shame'

5.10 Summary of consonant categories

The following consonant categories are arranged according to their distribution in each syllable type.

		major syllable		minor syllable		presyllable
		Q	Q	Q, Q	Q	Q
vl.stops	p	✓		✓	✓	✓
	t	✓		✓	✓	✓
	k ^h	✓		✓	✓	✓
	p ^h	✓			✓	
	t ^h	✓			✓	
	k ^h	✓			✓	
vd.stops	c ^h	✓		✓	✓	✓
	c	✓			✓	
	?	✓		✓	✓	
nasals	b	✓				
	d	✓				
	m	✓		✓	✓	✓
	n	✓		✓	✓	✓
fricatives	ɲ	✓		✓	✓	
	ŋ	✓		✓		✓
	s	✓		✓	✓	
liquids	h	✓		✓	✓	
	l	✓	✓	✓	✓	
semivowels	r	✓	✓	✓	✓	
	w	✓	✓	✓		
	j	✓		✓		

TABLE 9 The table of consonant categories

✓ = co-occurrence = non-occurrence

The distribution shows that:

Q which are p, t, k, p^h, t^h, k^h, c, c^h, ?, b, d, m, n, ɲ, ŋ, s, h, i, r, w, j and can occur in major syllable.

Q which are l, r, w and can occur in major syllable.

ᶑ which are p,t,k,c,ʔ,m,n,ɸ,ŋ,s,h,l,r,w,j and can occur in major syllable.

ᶒ which are p,t,k,p^h,t^h,k^h,c,c^h,ʔ,n,s,h,l,r and can occur in minor syllable.

ᶓ which are p,t,k,c,ʔ,m,n,ɸ,ŋ,s,h,l,r,w,j and can occur in minor syllable.

ᶔ which are p,t,k,p^h,t^h,k^h,c,c^h,ʔ,m,n,ɸ,s,h,l and can occur in presyllable.

ᶕ which are m,n,ŋ and can occur in presyllable.

5.11 Suprasegmental Features

Suprasegmental features are phonetic features that are associated with segmental speech sounds. The syllable nucleus (vowel) always carries the suprasegmental features, though there may be some influence on the consonants.

5.11.1 Register

Register has been mentioned by some linguists as follows.

Abercrombie (1968) says that 'Register is a feature of voice dynamics. Registers of the speaking voice are different qualities arising from differences in the action of phonation, and they are not tied to any particular pitch range. It is also confined to types of phonation which the speaker varies at will. Contrasts of register in many languages are used to provide affective indices and language bearing patterns. The latter is the linguistic function of register.'

Theraphan L.Thongkum(1982) also says that 'the term register has been used in many definitions found in the literature depending upon who uses it music and voice specialists,phoneticians,linguists or language teachers.....'

David Thomas(1987) says that 'Register complexes,especially as found in Mon-Khmer languages,tend to include voice quality, pitch,voicing of the initial consonant,vowel height and vowel gliding.'

For the linguists who work on Khmu,Lindell,Svantesson and Damrong(1976)and Svantesson(1983) describe the Khmu variety they work on as having two tones.

Lindell(1976) suggested that the northern dialects of Khmu are in the process of developing tones while the southern group of Khmu remain non-tonal,having preserved the voicing contrast among prevolic consonants.

S.Premrirat(1986) presents the Khmu variety she works on as having 2 register:lax and tense.

P.Srisakorn(1987) also presents the Khmu variety she works on as having 2 registers:high clear and breathy.

I have found that the variety of Khmu Lue I work on can also be described as having register.Pitches alone cannot be used to characterize its phonology.Voice quality,tenseness,final consonant and vowel length must be taken into consideration.The meaning of the words are different according to different registers.

There are two phonemic registers:High clear and Low breathy.

Every stressed syllable is pronounced with the accompaniment of a register. Every vowel can carry all types of register.

5.11.1.1 High clear register

High clear register contains two pitches. The high rising pitch ['] occurs with final stops and fricatives and the high falling pitch [^] occurs with final nasals, semi-vowel and laterals. The high clear register is phonemically unmarked.

High clear register with high rising pitch [']

The high rising pitch always occurs with final stops and fricatives. It can occur in both monosyllabic and disyllabic words.

Examples:

['pɪc]	'to throw away'
[n't ^h ri:k]	'bark'
['puh]	'to wash'
['mʊs]	'a kind of mushroom'

High clear register with high falling pitch [^]

The high falling pitch always occurs with final nasals, semi-vowels and laterals. It can occur in both monosyllabic and disyllabic words.

Examples:

['pɪp [^]]	'to shoot'
[baw [^]]	'classifier for cigarette'
[n'ʔa:j [^]]	'vapor'

[h^hian] 'pig'

5.11.1.2. Low breathy register

Low breathy register contains two pitches. The low pitch [ʘ] occurs with final stops and fricatives. The mid level pitch occurs with final nasals, semi-vowels and laterals.

The voice quality in the low breathy is lax and breathy. Low breathy register is phonemically marked with /..../.

Low breathy register with mid pitch [unmarked]

The mid pitch always occurs with final nasals, laterals and semi-vowels. It can occur in both monosyllabic and disyllabic words.

Examples:

[m̥ar]	'snake'
[t̥ɔl]	'classifier for hat'
[ci:m:]	'to taste'
[l̥om:]	'to cover'

High breathy register with low pitch [ʘ]

The low pitch always occur with final stops and fricatives. It can occur in monosyllabic and disyllabic words.

Examples:

[ka'c̥u̥ɔ]	'to spit'
[c̥ɔ:ʔ]	'thin'
[t̥ɔ:ʔ]	'shabby, bad'
[t̥ɔk]	'a kind of mushroom'

More examples of words with the two registers

High clear register

/pic/	['píç]	'to throw away'
/ʔɔ:t/	['ʔó:tʰ]	'to rub'
/mpus/	['m'púç]	'to dust off'
/kep/	['kêp:]	'to stab'
/tuh/	['túh]	'old'
/tu:p/	['tú:p:]	'spotty'
/piʔial/	[pi'ʔiál]	'to slippery'
/pati:p/	[pa'tí:pʰ]	'gift'
/kla:/	['klâ:]	'endocarp'
/c ^h ompu:r/	[c ^h om'pû:r]	'a kind of bird'

Low breathy register

/pí:k/	['pí:kʰ]	'to turbid'
/piʔ/	['pi:ʔ]	'not hungry'
/ci:kəh/	[ci'kəh]	'to remove fish internal organ'
/kwa:t/	['kwà:tʰ]	'to bail'
/jím/	['jím:]	'red'
/jəh/	['jəh]	'to walk'
/nŋɔ:j/	[n'ŋɔ:j]	'a kind of vegetable'
/mpəh/	[m'pəh]	'drain'
/ʔəh/	['ʔəh]	'meat'
/ʔa:l/	['ʔa:l]	'not'

5.11.1.3 Minimal pairs contrast

Examples:

High Clear		Low Breathy	
/pu:m/	'to break wind'	/pu:m/	'areca'
/pu:c/	'to strip'	/pu:c/	'liquor'
/plɪh/	'tasteless'	/plɛh/	'to cut'
/ta:p/	'pigtail'	/ta:p/	'to weave'
/tal/	'south'	/taɪ/	'to run'
/cɔ:j/	'kind of verse'	/cɔ:j/	'to help'
/kuk/	'sound of calling chicken'	/kuk/	'claw'
/ʔah/	'there is '	/ʔah/	'meat'
/məh/	'what, how, whatever'	/məh/	'to be'
/pək/	'demon'	/pək/	'to bite'
/ŋɔʔ/	'rice'	/ŋɔʔ/	'to fear'
/hu:t/	'kind of insect'	/hu:t/	'to water'
/lək/	'pole'	/lək/	'to cut'
/wɑ:k/	'to torn'	/wɑ:k/	'earthworm'
/wɑʔ/	'small monkey'	/wɑʔ/	'to chase'
/ntɑ:k/	'tongue'	/ntɑ:k/	'palm'
/nʔɑ:j/	'vapor'	/nʔɑ:j/	'a kind of utensil'
/lɔŋ/	'to forget'	/lɔŋ/	'branch'
/luh/	'to leak'	/luh/	'to pound'

The meaning of the words are different according to different registers.

5.11.2 Length

Length in this Khmu Lue dialect is a phonemic feature because there are minimal pairs between short vowels and long vowels.

5.11.3 Stress

A syllable is said to be stressed if it sticks out more prominent than the surrounding syllables. The stress in this language is treated as predictable. It occurs on every monosyllabic word. In two syllable words, it occurs on the last syllable.

CHAPTER VI

Conclusion

There are twenty-one phonemes /p,p^h,t,t^h,c,c^h,k,k^h,ʔ, b,d,s,h,m,n,ɲ,ŋ,l,r,j,w/. Every phoneme can be the initial consonant. There are 15 final consonants /p,t,c,k,ʔ,s,h,m,n,ɲ,ŋ,l,r,j,w/. And there are 16 consonant clusters such as /pr,pl,p^hr,p^hl,t^hr,t^hl,sr,cr,c^hr,c^hl,kr,kl,kw,k^hr,k^hl,k^hw/.

There are nine single short vowels /i,e,ɛ,a,ə,ɪ,ɔ,o,u/ and nine single long vowels /i:,e:,ɛ:,a:,ə:,ɪ:,ɔ:,o:,u:/. There are three diphthongs /ia,ia,ua/.

In the Intonation Group, there are two types of contour: rising contour and falling contour. They are contrastive between rising contour only in the case of yes-no question and falling contour only in the case of affirmative statement.

In the Stress Group, the stress group may have one or two syllables. Each stress group has as its nucleus one stressed syllable, which is always the last syllable in the group.

There are three types of syllables: major syllable, minor syllable and presyllable.

The syllable structures are 'C(C)V(:)(V)(C), CV(V)(:)(C), CV and N.

There are two contrastive registers: High clear register and Low breathy register.

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APPENDIX

APPENDIX I

Word List

The entries in these wordlists are listed according to the following orders:

1. Their initial consonants are grouped into Stop, Nasal, Fricative, Trill, Lateral and Semi-vowel such as p, m, s, r, l, w, j and voiceless consonants come before voiced consonants. So the full order is /p, p^h, t, t^h, c, c^h, k, k^h, ʔ, b, d, m, n, ɲ, ɳ, s, h, l, r, w, j/.

2. The consonant clusters are listed after the single initial consonants. And monosyllabic words are listed before disyllabic words.

3. The vowel order is i, e, ε, a, i, ɔ, o, u, ia, ia, ua and long vowels come after short vowels.

Khmu Lue Word List

/p-/ monosyllabic word

pic	'to throw away'	pi?	'to have enough'
pih	'wood oil'	pip	'to shoot'
pet	'to cut'	pe?	'three'
peŋ	'full'	pat	'duck, a kind of fruit'
pat	'to wrap'	pak	'to break'
pak	'to ride'	pah	'light'
pan	'to divide'	pan	'to cover'
paŋ	'a kind of vegetable'	pal	'to roll up'
paw	'a kind of tree'	paj	'to plait'
pəh	'to keep'	pɛp	'to see'
pɛt	'to open (book)'	pɛk	'to warm'
pɔt	'strong heart'	pɔ?	'twin'
pɔs	'to guard'	pɔh	'dust'
pɔr	'curse word'	pok	'to bite'
po?	'and'	pom	'to hit'
poŋ	'a kind of ghost'	puk	'a kind of tree'
pu?	'to fluffy'	pu?	'chest'
puh	'to wash'	pun	'part'
pun	'navel'		'to commit'
	'a kind of musical instrument'		

pun̩	'a kind of ghost'	pian̩	'to cover'
pial̩	'dew'	pian̩	'to be able to'
puas	'muntjac'	pual̩	'evening'
pi:t	'to extinguish'	pi:k	'to turbid'
pi:n̩	'to turn over'	pi:n̩	'a kind of instrument'
pɛ:	'to win'	pɛ:p	'dented'
pɛ:t	'to squeeze'	pɛ:m	'a kind of basket'
pɛ:r	'to cut'	pa:	'you(female)'
pa:t	'to cut'	pa:c	'to search'
pa:k	'ladle'	pa:m	'to put'
	'to break'	pa:ŋ	'a kind of sugarcane'
pa:r	'two'	pa:n̩	'to be drunk'
pa:	'a kind of vegetable'	pa:j	'to fan'
pi:p	'edge'	pi:n̩	'floor'
pɔ:	'a kind of tree'	pɔ:t	'a kind of insect'
pɔ:k	'to burn'	pɔ:m	'cheek'
pɔ:ŋ	'to swell'	pɔ:ŋ	'a kind of fish'
pɔ:r	'a kind of bird'	po:p	'to cry'
po:t	'to torn'	po:k	'a kind of bird'
po:n̩	'to put on'	pu:t	'cloud'
pu:t	'to discard'	pu:c	'to strip'
pu:c	'liquor'	pu:m	'to grind'
pu:m	'areca'	pu:l̩	'poison, to go truck farming'

/pr-/

praj	'bamboo'	pruŋ	'lumph'
	'a kind of mushroom'		

/pl-/

plit	'to give away'	pliŋ	'a kind of grass'
pleʔ	'fruit'	plɛt	'sound of bone'
plɛh	'tasteless'	plɛh	'to cut'
pləʔ	'arm'	plas	'a kind of snake'
plah	'to put'	pliŋ	'a kind of tree'
plɔh	'empty'	plot	'to pick up'
plok	'to jump'	plɔʔ	'to be dumb'
pluʔ	'thigh'	pluŋ	'a kind of tree'
plia	'beautiful'	pliat	'to cut'
plian	'to take out'	plɛas	'spear'
pliam	'land-leech'	pli:ŋ	'sea slug'
ple:k	'eel'		'to curve'
plə:	'to rap, mince'	plə:k	'classifier for tree'
plə:w	'coconut'	plɔ:k(tɪʔ)	'ring'

plɔ:ŋ 'calf of leg' plɔ:ŋ 'rattan'

plɔ:m 'to feed'

/p-/ disyllabic word

piʔial 'to slippery' piʔəʔ 'to send'

piʔi:p 'centipede' pati:p 'gift'

pinhup 'babble' pinhu:p 'to annoy'

pinla:p 'pigtail' panɛc 'to pick'

palec 'to go through' pateʔ 'soil'

panɪl 'wing' paʔo:m 'to speak'

palɪa 'fire' patəʔ 'smoke'

patim 'a kind of tree' panu:c 'stinger'

panim 'anthill' pakak 'to stammer'

paka:j 'to return' panə:j 'fan'

patak 'link of leg' pacɪ:r 'cock's comb'

patɔ:ŋ 'a kind of fish' patah 'to split'

pakɔ: 'a kind of fish' paja:t 'disease'

pac^hat 'a kind of food' pajɔ:ŋ 'mermaid'

pacat 'a kind of vegetable' paka:j 'to return'

pa _h i:m	'a kind of tree'	pa _s i:m	'to plant'
pa _h o:s	'twisted thing'	pa _n i:l	'wing'
pa _h i:m	'to transplant'	pa _h o:j	'a kind of insect'
pa _h i:m	'night'	pa _h ian	'to stick out'
pa _n ɲ:p	'a kind of tree'	pa _n ta:l	'a kind of fruit'
pa _n ta:l	'a kind of vegetable'	pa _n i:m	'anthill'
pa _r ɲh	'to lift'	pa _k pɲ:	'wall gecko'
pa _n ɲɲ?	'to spook'	pa _n ka?	'to shame'
pa _n ka:l	'part of house'	pa _n i:l	'wing'
pa _k ^h rok	'wart'	pa _n ka:j	'to return'
pa _n ma _h	'to feed'	pa _n hu:p	'to annoy'

/p^h-/

pa ^h it	'wrong'	pa ^h et	'a kind of vegetable'
pa ^h et	'Khmu's name'	pa ^h ek	'to imitate'
pa ^h at	'to round'	pa ^h anɲ	'bank'
pa ^h al	'alive'	pa ^h e:t	'a kind of ghost'
pa ^h a:	'cloth'	pa ^h a:n	'to kill'
pa ^h a:ɲ	'a kind of fruit'	pa ^h a:j	'flock, thread'

/p^hr-/

p ^h riʔ	'chili,hot'	p ^h riʔ	'forest'
p ^h ran	'to scatter'	p ^h roh	'to split'
p ^h ronj	'a kind of bird'	p ^h ruʔ	'to roast by using short time'
p ^h ruʔ	'dot'		
p ^h riɑŋ	'they'	p ^h ri:k	'burnt rice'
p ^h ri:m	'old'	p ^h rɔ:t	'to pick off'
p ^h rɔ:k	'squirrel'	p ^h rɔ:j	'to be crisp'
p ^h ro:t	'to donate'	p ^h ru:r	'a kind of animal'

/p^hl-/

p ^h lɛt	'sound of bone'	p ^h lak	'old'
p ^h lom	'right'	p ^h lyʔ	'a kind of tree'
p ^h li:ŋ	'drum'	p ^h la:ŋ	'roof'
p ^h la:j	'a kind of trap'	p ^h ly:k	'cloth'

/p^h-/ disyllabic word

p ^h aloʔ	'a kind of flower'	p ^h ɑ:nka:j	'a kind of animal'
p ^h əp ^h aʔ	'wet'	p ^h ip ^h kar	'to have a nightmare'

/t-/ monosyllabic word

tip	'a name'	ti _{..} p	'a name'
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tit	'to stick'	tik	'to proceed'
tiʔ	'hand'	tih	'mushroom'
tec	'to sell'	tek	'to push'
tɛʔ	'to take'	teh	'to pluck'
tɛn	'to sit'	tɛp	'to rash'
tɛʔ	'to dance'	tɛp	'barn, to shut'
tat	'a kind of fruit'	tət	'sleepy'
tak	'to abuttal'	tək	'to warm'
taʔ	'grandfather'	tah	'to pick'
tam	'a kind of banana'	taŋ	'to lure'
	'to hit'	taŋ	'to boulder'
tal	'south'	təl	'to run'
taj	'to find'	taw	'to shove'
təʔ	'shabby, bad'	təl	'classifier for hat'
tɪp	'to dip'	tɪt	'to shut'
tik	'naughty'	tɪk	'to butt'
tɪn	'santol, to culture'	tɪk	'a kind of mushroom'
tʔʔ	'stool, pile'	tʔʔ	'buttocks'

tɔh	'chisel'	tɔj	'cripple'
tɔp	'to fold'	tok	'a kind of vegetable'
tɔk	'a kind of mushroom'		'to peck'
toʔ	'at'	tɔh	'to undo'
tuk	'to tie'	tɔʔ	'to run away'
tɔs	'foam'	tɔh	'old'
tum	'body, to hang'	tiap	'to wrap'
tɔk	'to prepare for planting'	tɔr	'ford'
		tual	'end'
ti:p	'a kind of banana'	ti:k	'to lay down'
ti:n	'to order'	ti:n	'to push'
ti:l	'blind'	te:n	'to step on'
te:p	'full'	te:n	'in-law'
tɛ:	'to wipe'	tɛ:k	'to measure'
tɛ:p	'shirt'	tɛ:r	'to fry'
ta:t	'highland'	ta:k	'to emit'
ta:p	'to weave'	ta:n	'lizard'
ta:r	'to cry'	ta:j	'elder cousin'
ta:w	'a kind of tree'	tɔ:m	'tame'

tɔ̣:l	'narrow'	tɪ:r	'to fly'
tɔ̣:c	'to spin'	tɔ̣:m	'button'
tɔ̣:m	'to beg'	tɔ̣:ŋ	'a kind of fish'
tɔ̣:ŋ	'tail'	tɔ̣:r	'anvil'
to:	'classifier for animal'	to:l	'clothesline, head'
		tu:t	'head'
tu:ŋ	'spotty'	tu:l	'a kind of tree'

/t-/ disyllabic word

tipiãh	'to shiver'	tita:m	'a kind of banana'
tisih	'mattress'	tani?	'mark'
taʔəj	'to call'	talik	'blind'
tasih	'mattress'	tane?	'to squint'
tapme:ŋ	'temple on each side of the head'	talɛ:ŋ	'a kind of tree'
		tarɛc	'to chase'
tajɛ:ŋ	'to carry'	taja:k	'deer'
talɔ̣:m	'liver'	talɔ̣:l	'to fall down'
tala:	'a kind of tree'	taha?	'a kind of tree'
tapa:t	'a kind of small toad'	takɔ̣:j	'a kind of tree'

tajjal	'a kind of basket'	talo?	'a kind of vegetable'
tawas	'to damn'	talo:c	'lichen'
tal?:ŋ	'log'	taku:l	'finger'
tamup	'long'	tam?:ŋ	'claw'
tamat	'to pluck'	tati?	'middle'
tamuas	'a kind of tree'	tamu:r	'shower'
taku:t	'a kind of bird'	tahat	'to spurt'
tan?:r	'a kind of mushroom'	taha:j	'a kind of insect'
tasal	'mad'	talɔh	'cooking pot'
tama?	'flea'	tapanj	'shoot'
tal?:ŋ	'log'	tapak	'to break'
taj?:r	'sieve'	tam?	'where, anywhere, everywhere, wherever'
tanɔh	'chisel'		
taloh	'male'	talɔh	'seam'
tawa?	'a kind of tree'	taha?	'a kind of tree'
tampa?	'snapping turtle'	ta:ntah	'to straddle'
takan	'a kind of animal'	taj?:l	'a kind of basket'
takuj	'a kind of insect'	tapiah	'to shiver'
ta:nt ^h ?:l	'chameleon'	tɔnlɔh	'male'

təɭɔːj	'banana'	təkɪt	'to think'
təneh	'to lamp'	təruk	'to fall'
təntoʔ	'a kind of vegetable'	təŋk ^h ian	'highland'
təŋkir	'stump'	təltɔh	'story'
tɪkpɛ:p	'ailment'	tɪmhɪr	'a kind of tree'
tɪŋŋɛh	'hail'	tɪnlaʔ	'cracky'
tɪnloʔ	'swamp'	tɔːŋpɔh	'a kind of trap'
tokŋa:w	'adversity'	tokŋɔl	'a kind of insect'
tump ^h laʔ	'stove'	tumtuʔ	'a kind of grass'
tu:pmuʔ	'a kind of fuel'	tuti:t	'a kind of bird'

/t^h-/ monosyllabic word

t ^h an	'equal'	t ^h aw	'old'
t ^h ɔk	'a kind of money'	t ^h ɔʔ	'to scale'
t ^h ɔh	'to scale'	t ^h ɔŋ	'gold'
t ^h ɔl	'chameleon'	t ^h uk	'to rub'
t ^h ian	'handle'	t ^h ial	'a kind of bird'
t ^h i:p	'to shove away	t ^h ɛ:p	'a kind of money'
	the foot'	t ^h e:t	'a kind of fruit'
t ^h a:t	'pagoda'	t ^h a:k	'to trim'

t^hɔ:k 'to pour' t^hɔ:ŋ 'old'

t^hu:l 'a kind of insect'

/t^h-/ disyllabic word

t^hatni? 'next'

/t^hr-/ monosyllabic word

t^hra? 'a kind of wood' t^hraŋ 'a kind of tree'

t^hraŋ 'a kind of tree' t^hraʔ 'a kind of fruit'

t^hraʔh 'to pull up' 'to uproot'

t^hraʔ? 'melodious' t^hriak 'ribs'

t^hriar 'a kind of bird' t^hre:ŋ(?iar) 'a kind of grass'

t^hra:k 'buffalo' t^hraʔ: 'fiddle'

t^hro:ŋ 'throat' t^hro:j 'ankle'

t^hra:s 'to shove' t^hru:p 'termites'

t^hra:j 'net'

/t^hl-/ monosyllabic word

t^hlan 'to startled' t^hlʔh 'to pluck'

t^hli:r 'to shine'

/c-/ monosyllabic word

cip 'a kind of tool' cɨp 'to dip'

ci _ː t	'spirit'	ce _ː p	'to grope'
ce _ː t	'seven'	ceʔ	'grandson'
ce _ː p	'to get'	ce _ː k	'skink'
ce _ː ŋ	'to leak'	ce _ː l	'dew'
ca _ː t	'sour'	ca _ː k	'a kind of tree'
ca _ː k	'to pull'	ca _ː m	'to sow'
ca _ː m	'to soak'	ca _ː ŋ	'bitter'
ca _ː ʔ	'to mear'	ca _ː m	'every'
co _ː p	'quiet'	co _ː k	'to tickle'
co _ː ʔ	'thin, grand-grandson'	co _ː p	'to end'
co _ː t	'to pinch'	co _ː ŋ	'high'
cuk	'a kind of money'	cuʔ	'sick'
cuʔ	'to want'	cuj	'untalkative'
ciap	'myna'	ciap	'to find'
ci _ː aŋ	'foot'	ci _ː p	'to crouch'
ci _ː p	'to talk amorously'	ci _ː k	'acidulous'
ci _ː m	'to taste'	ce _ː :	'dwarfed'
ce _ː m	'to soak'	ce _ː :r	'to leak'

ca:t	'a kind of fish'	ca:k	'a kind of flower'
ca:w	'comb'		'to tear'
ci:r	'cock's comb'	cɔ:m	'to hunt'
cɔ:ŋ	'a kind of tree'	cɔ:j	'a kind of verse'
cɔ:j	'to help'	cɔ:ŋ	'a kind of bird'
cu:	'a kind of dog'	cu:t	'a kind of vegetable'
cu:l	'down'		

/c-/ disyllabic word

cipɬh	'fin'	cicam	'to remember'
cikɬh	'to remove fish internal organ'	cikɔ:t	'to embrass'
		cinɬ:p	'to crowd out'
cape?	'a kind of tree'	cate?	'a kind of tree'
caʔɬ?	'small toad'	cakot	'to pinch'
cakɔ:ŋ	'spit'	caku:r	'finger'
cakɔ:j	'galingale'	cakaj	'leprosy'
cananɣ	'a kind of tree'	cala?	'a kind of tree'
canim	'lac'		'thorn'
canɔ:k	'to tail'	caʔi:p	'centipede'

calɔ:ŋ	'to sharpen'	calɔk	'to hiccup'
calɔ:j	'a kind of fish'	caʔoʔ	'hunting-hunt, to crow'
caŋwa:ŋ	'mosquito'	caŋa:r	'yellow'
caŋa:j	'to have a cold'	ciŋeʔ	'to glance'
ciŋeʔ	'a kind of flower'	ciwa:ŋ	'a kind of flower'
ciŋŋa:j	'to have cold'	ciŋɔ:n	'to stretch'
ciŋŋa:n	'to poke'	ciŋɛʔ	'a kind of insect'
ciwa:ŋ	'a kind of flower'	cɔmp ^h rɔʔ	'man'
ciŋkin	'woman'		
cɔnlaʔ	'thorn'	cuci:	'a kind of insect'

/cr-/ disyllabic word

craŋok	'valve'	cri:r	'gold'
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/c^h-/ monosyllabic word

c ^h ep	'clothing'	c ^h ek	'to raw off'
c ^h ɛk	'to cut'	c ^h ap	'to tattoo'
c ^h ak	'to hook'	c ^h ar	'a kind of animal'
c ^h əʔ	'to get the splinter out'	c ^h ok	'to smoke'
		c ^h oʔ	'axe'
c ^h oh	'a kind of bird'	c ^h up	'head'

c ^h u _u j	'slow'	c ^h iap	'to carve'
c ^h ian _ŋ	'pig'	c ^h ua _u	'to try'
c ^h ɛ:	'to bore'	c ^h ɛ:w	'a kind of flower'
c ^h a:k	'lunar'	c ^h a:ŋ	'big monkey'
c ^h ɛ: _ɛ	'to straight'	c ^h ɔ:t	'dressed salad'
c ^h ɔ:ŋ	'to lift'	c ^h ɔ:r	'a kind of wood'

/c^h-/ disyllabic word

c ^h ica:ŋ	'elephant'	c ^h iloh	'to hunt'
c ^h ipun _ŋ	'a kind of basket'	c ^h ina _l	'walking stick'
c ^h ijjc	'a kind of trap'	c ^h ikɛ:p	'tong'
c ^h ikot	'to pluck'	c ^h ipar	'to braid'
c ^h imen _ŋ	'star'	c ^h i?e _ŋ	'to think'
c ^h ilek	'a kind of vegetable'	c ^h iwa _n	'a kind of mushroom'
c ^h ilo?	'a kind of cone'	c ^h ink ^h la:n	'first'
c ^h inrat	'belt'	c ^h in _n ɛ:p	'a kind of material'
c ^h inta:k	'a kind of flower'	c ^h ilek	'a kind of vegetable'
c ^h inla?	'to buffet'	c ^h in _l ah	'broken meat'
c ^h ipal	'to braid'	c ^h implo?	'to be numb'

c ^h erw̄an	'a kind of mushroom'	c ^h ali?	'a kind of mushroom'
c ^h ali:	'bo tree'		
c ^h aden	'to rebound'	c ^h a?ɔ:ŋ	'tree'
c ^h aro:ŋ	'parched'		
c ^h awa:j	'to squat'	c ^h a?ɔ:j	'a kind of fish'
c ^h amɔ?	'real'		
c ^h anwa?	'spider'	c ^h anpra:	'a kind of grass'
c ^h ale:	'to sway'	c ^h ikɔ?	'wet'
c ^h imeŋ	'star'	c ^h iŋi?	'day'
c ^h implo?	'to dance'	c ^h iŋʔu:t	'dew'
c ^h imnɛp	'to crowd out'	c ^h imp ^h ruac	'to vomit'
c ^h ompu:r	'a kind of bird'	c ^h omlo:j	'a kind of fruit'
c ^h umbut	'papaya'	c ^h upun	'bamboo basket'
c ^h uanpa:n	'a kind of tree'		

/c^hr-/ monosyllabic word

c ^h ri?	'to be silent'	c ^h ri?	'a kind of tree'
c ^h reh	'sand'	c ^h rɛk	'a kind of bird'
c ^h rɛr	'a kind of animal'	c ^h ra?	'a kind of vegetable'
c ^h rak	'house sparrow'	c ^h rɛp	'to shut'

c^hroh 'a kind of tree' c^hru? 'deep'

c^hrɛ:n 'to slash'

/c^hl-/ monosyllabic word

c^hliam 'a kind of vegetable' c^hluat 'morning'

c^hlɛ:n 'to cut' c^hlɛ:ŋ 'large type of symbol'

/k-/ monosyllabic word

kiŋ 'to full' kep 'to cut off'

ket 'scale' keŋ 'bark'

keç 'to drop' kek 'to cry(snake)'

ke? 'female organ' keh 'a kind of animal'

kep 'to stab' keŋ 'to tight'

kaŋ 'a kind of grass' kep 'to cut'

kap 'handle' kat 'cold'

'to cut(with scissors)'

kak 'to fit' ka? 'fish'

kah 'to untie' kam 'to prop'

kał 'to cut' kaŋ 'lichen'

kaŋ 'to remain' kaŋ 'to think'

kəʔ	'to blazed'	kəh	'to go up'
kɛp	'to boil'	kɛr	'to shut'
kɔk	'crippled'	kɔʔ	'to wait'
kɔh	'to rub off'	kɔm	'to inculcate'
kok	'a kind of bird'	kok	'bend, winding'
	'olive'	kop	'to put on'
koh	'to boulder, to cut'	kɔn	'person'
koŋ	'a kind of trap'	kɔl	'to bend'
	'a kind of pig'	kɔr	'to scratch'
kuk	'sound of calling chicken'	kuk	'claw'
		kuʔ	'a kind of banana'
kuʔ	'to like'	kun	'kind'
kuŋ	'village'	kur	'to mix'
kur	'fat'	kuj	'fist'
kiat	'to be angry'	kiaŋ	'elbow'
kiaŋ	'a kind of snake'	kial	'cucumber'
kuaŋ	'waist'	kual	'mortar'
ki:	'this'	ki:k	'single'

ki:w	'a kind of vegetable'	ke:t	'to plough'
kɛ:p	'to put(into belt)'	kɛ:l	'carambola'
kɛ:m	'edge'	ka:	'to go up'
ka:p	'a kind of insect'	ka:t	'to scrape off'
	'chin'	ka:n	'to be overcome'
ka:n	'work'	ka:ŋ	'house'
ka:l	'before'	ka:r	'to roast for using a long time'
ka:j	'to return'		
kə:	'elder brother'	kɔ:k	'a kind of insect'
kɔ:k	'pinfold'	kɔ:n	'baby'
kɔ:ŋ	'to cook curry'	kɔ:l	'to cut'
ko:p	'to hold in one's hand, to keep'	ko:ŋ	'a kind of dog'
		ku:p	'to roast'
ku:p	'to grill'	ku:t	'to point'
ku:t	'to enter'	ku:m	'to cover'
ku:m	'to winnow'	ku:n	'python'
ku:p	'to see'	ku:j	'sound'
kiat	'to be angry'		

/k-/ disyllabic word

kice?	'a kind of wood'	kace?	'a kind of tree'
kacɔl	'heel'	ketwec	'millipede'
kati?	'a kind of tool'	kani?	'that'
	'middle'		'mark'
kami:n	'to steal a glance'	ka?iŋ	'a kind of wood'
kali:ŋ	'a kind of wood'	katec	'to rehearse'
kane?	'rat'	kameɭ	'to roll'
kate?	'low'	kame:ɭ	'hammer'
kat ^h ɔ:l	'small toad'	kanɛ:p	'to put around'
ka?ɛk	'arm pit'	kawɛh	'leg'
kanɛh	'match'	kata:ŋ	'the lower'
katɛ:n	'a kind of utensil'	ka:dɛ:ŋ	'a kind of tree'
kamiɭ	'dew'	kama?	'rain'
kamu:l	'silver'	kamu:c	'to blow one's nose'
katɔŋ	'egg'	kamɔ:ŋ	'fingernail'
kaca:k	'tear'	katu:t	'to suck'
kanu:n	'knee'	kacus	'to spit'
kamu?	'man'	kate?	'low'
kajka:	'a kind of bird'	katɛ:p	'part of house'
kac ^h ɔ:	'a kind of mango'	kanɔ:r	'dip net'

kada:ŋ	'incompetent'	kac ^h iar	'balcony'
kal ^l j	'flower of coconut'	kajial	'to swing'
kor ^o :k	'a kind of bird'	kami:n	'to steal a glance'
kaj ^o :ŋ	'to swim'	kat ^o :t	'to crow while laying eggs'
ka ^o j	'to call'		
kat ^o h	'to tell story'	kapak	'to break'
kap ^o k	'bell'	kawat	'to swing'
kat ^o ŋ	'a kind of liquor'	kama ^o ŋ	'cobweb'
katam	'heavy'	kata:m	'crab'
kap ^o :m	'soft'	kano?	'fragrant'
kan ^o m	'to bend over'	kan ^o ŋ	'bridge'
kam ^o ŋ	'sword'	ka ^o a:k	'crow'
ka ^o a:p	'a kind of insect'	ka ^o a?	'saliva'
kata ^o h	'forehead'	kan ^o ŋ:m	'orphan'
kada:n	'cliff'	kac ^o l	'heel'
kam ^o l	'dew'	kasu:p	'a kind of vegetable'
kata:k	'a kind of vegetable'	kadat	'pineapple'
	'sole, palm'	katec	'rag'
kad ^o :p	'a kind of insect'	kat ^o l	'gizzard'
kato:t	'to suck'	kacu ^o ar	'a kind of bird'
kasial	'to extend'		

kanu:ŋ	'a kind of fruit'	kamu:r	'to eject'
kama:t	'a kind of food'	kac ^h ar	'a kind of tree'
kamɔ:t	'a kind of insect'	kalɔj	'to go up'
kawat	'to swing'	kamla?	'a kind of tree'
kamɲah	'bagasse'	kamliəŋ	'to turn over'
kamlo?	'block'	kampa:ŋ	'pagnant'
kampa:m	'a kind of insect'	kampaŋ	'to listen'
kɔ:nsɔ?	'a kind of tree'	konkɔ:n	'arrow'
kat ^h ɔ:l	'small toad'	kula:k	'to tell a lie'
kulə:c	'thief'	kulo:p	'pindling'
kuruk	'to fall'	komlok	'bud'
kunoh	'chopping block'	kukur	'a kind of bird'
kupuk	'step of ladder'	kupok	'unkind'

/kr-/ monosyllabic word

kri:s	'to be wrong'	kre?	'husband'
krɛh	'to scale'	kra?	'a kind of bird'
krɔ?	'snail'	krok	'mortar'
krum	'a kind of flower'	kra:p	'tussock'
krɛ:ŋ	'a kind of vegetable'	kra:t	'bald'
krɔ:k	'a kind of chicken'		

/kl-/ monosyllabic word

kli?	'to make mistake'	klet	'part of tree'
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klat	'to trap'	klɛh	'blad'
klɑʔ	'a kind of tree'	klɑh	'to slice'
	'to wash'	klam	'to carry'
klɔʔ	'hair'	klɔŋ	'rotten'
klɔj	'to go up'	klɔk	'mortar'
klom	'to pin'	klum	'to cover'
klɪak	'to tumble about'	klɪas	'wrong'
kluat	'a kind of fish'	kluaŋ	'inside'
kla:ŋ	'a kind of bird'	klɛ:t	'to lick'
	'stone, handle'	klɔ:ŋ	'gong'
klɛ:m	'to gnaw'	klɛ:m	'lip'
klɛ:ŋ	'a kind of vegetable'	kla:	'testicle'
kla:p	'a kind of vegetable'	kla:k	'classifier for
kle:ŋ	'firefly'		'banana'
klɔ:k	'white'	klɔ:ŋ	'seed'

/kw-/ monosyllabic word

kwɛ:n	'to know'	kwɛ:ŋ	'part of house'
kwa:t	'to bail'	kwa:c	'to beckon'
kwa:j	'yam'	kwa:r	'to bark'

/k^h-/ monosyllabic word

k ^h ip	'to cut'	k ^h it	'to think'
k ^h iŋ	'a kind of trap'	k ^h i _{..} w	'eyebrow'
k ^h ɛp	'slippers'	k ^h ɛ _{..} w	'minivet'
	'a kind of vegetable'	k ^h ɛt	'to be afraid'
k ^h at	'to bolt'	k ^h a?	'a kind of fruit'
k ^h ɔp	'saddle'	k ^h on	'simple skirt'
k ^h u?	'a kind of ant'	k ^h um	'shrub'
k ^h ia?	'cactus'	k ^h ia _{..} w	'to harvest'
k ^h ian	'up'	k ^h iaŋ	'to dig'
k ^h ial	'a kind of tree'	k ^h ia _{..} r	'a kind of rattan'
k ^h ua	'to fry'	k ^h ɛ _{..} p	'a kind of vegetable'
k ^h ə:t	'a kind of tree'	k ^h ɔ:p	'frame'
k ^h ɔ:n	'to mix'	k ^h ɔ _{..} p	'a kind of tree'
k ^h ɔ:j	'a kind of tree'	k ^h o:p	'to stubble'
k ^h ɔ:l	'to whistle'	k ^h o:k	'a kind of skin disease'
k ^h o:ŋ	'cage'	k ^h o:r	'to whisper'
k ^h u:t	'to shave off'	k ^h u:r	'hair'

/k^h-/ disyllabic word

k ^h a:nja:	'handle of flower'	k ^h apna _{..} p	'to respect'
k ^h ucɔ:	'magic'	k ^h i:pu:m	'a kind of snake'
k ^h i:k _{..} u:	'to heave'	k ^h i:mi _{..} n	'a kind of tree'

k ^h i:miaŋ	'rust'	k ^h a:mk ^h wa?	'a kind of tree'
k ^h ŋnkɔm	'a kind of snake'	k ^h ɔ:lɛ:n	'a kind of fruit'

/k^hr-/ monosyllabic word

k ^h rɛh	'to cut'	k ^h rɛw	'a kind of trap'
k ^h raŋ	'strong'	k ^h rɔŋ	'a kind of yam'
k ^h ro:k	'a kind of bird'	k ^h ro?	'a kind of bird'
k ^h ri:r	'a kind of insect'	k ^h rɛ:ŋ	'serpent eagle'
k ^h ra:c	'to scratch'	k ^h ra:s	'to laugh'
k ^h ra:w	'season'		

/k^hl-/ monosyllabic word

k ^h la?	'to unroll'	k ^h laŋ	'a kind of rattan'
k ^h la:n	'lazy'	k ^h la:ŋ	'to pinch'
k ^h lɔ:ŋ	'stalk'		

/k^hw-/ monosyllabic word

k ^h wak	'to extract'	k ^h wa?	'to spill'
k ^h wɛ:n	'to alleviate'		

/?-/ monosyllabic word

?it	'to suppress'	?i?	'we'
?iŋ	'to lean'	?ɛh	'boil'
?e?	'firewood'	?a ^h	'meat'
?an	'to give'		'to have'
?a ^h l	'not'	?a ^h j	'it'

?is	'loud'	?ɔh	'to do'
?im	'warm'	?im	'to hold in the mouth'
?ij	'loud'	?ɔk	'chest'
?ir	'fragrance'	?ɔh	'to fetch'
?ɔh	'to dip up'	?ɔm	'daughter-in-law'
?ɔl	'to hoarse'	?ɔŋ	'a kind of banana'
	'to persuade'	?oh	'final particle'
?o?	'I'	?om	'water'
?oh	'sharp'	?u?	'bad smell, rotten'
?ut	'sweat'	?ul	'a kind of curry'
?uŋ	'sore'	?iak	'to drink'
?ia	'sweet'	?ial	'a kind of skin disease'
?iam	'fever'	?uat	'tired'
?iaj	'bad smell'	?e:k	'a name'
?i:l	'swallow'	?a:p	'raw'
?e:m	'aunt'	?ɛ:r	'near'
?i:ŋ	'bull frog'	?ɔ:t	'to wipe'
?t.	'a kind of bird'	?ɔ:n	'cataract'
?ɔ:n	'to sprout'	?ɔ:j	'dizzly'
?ɔ:ŋ	'paper wasp'	?o:r	'to cry'
?u:t	'a kind of insect'	?u:l	'spinach'
?u:n	'to put'		

?iar 'chicken'

/ʔ-/ disyllabic word

?ijaʔ 'bag' ?isal 'galingale'

?ijɔ:k 'a kind of trap' ?iŋheʔ 'vein'

?iŋʔa:j 'a kind of utensil' ?iŋʔɔ:ŋ 'to shout'

ʔɔ:mhɔ: 'a kind of bottle' ?ijo:l 'gibbon'

/b-/ monosyllabic word

bit 'to twist' bet 'fishhook'

bak 'to notch, to cut out' beŋ 'to stuck up'

baw 'classifier for cigarette' bɔʔ 'a kind of tree'

bok 'to fallow'

bi: 'a kind of monney' bɛ: 'sound of cow'

bɔ: 'well water'

/d-/ monosyllabic word

dik 'to dive' deʔ 'delicious'

deŋ 'big bell' dɔk 'many'

duʔ 'diligent' diaʔ 'to bounce'

di:t 'to kick' de:t 'a name'

da:n 'to obstinate' du: 'a kind of tree'

dɔ:m 'to look'

/m-/ monosyllabic word

mit 'friend, to put' met 'seed'

mec	'to know'	mək	'to embrass'
meʔ	'new'	meh	'to bite'
mən	'a kind of yam'	mɛt	'to stole'
mat	'eye'	maʔ	'mother'
mah	'to eat'	man	'tight, a kind of coin'
mah	'food'	maɪ	'to start'
mar	'snake'	mɔc	'to crawl'
məʔ	'to have a feeling'	məʔ	'who, anyone, whoever'
məh	'what, how, whatever'	məh	'be, is'
mɔc	'to snatch'	mɔc	'to whisper'
mɔʔ	'beautiful'	mɔʔ	'crossbow'
mɔs	'a kind of mushroom'	mok	'mountain'
mɔn	'circular'	mɔŋ	'moon'
muk	'cricket'	muʔ	'rot'
muh	'nose'	me:	'you (male)'
mɛ:	'day'	mɪaŋ	'to chew'
muan	'to enjoy'	mɔ:c	'to stroke'
	'pimple'	mɔ:n	'old'
mɔ:ŋ	'a kind of trap'	mɔ:ŋ	'sad'
mɔ:j	'one'	mu:c	'ant'
mu:m	'to bath'	mo:p	'a kind of insect'
mi:t	'knife'	me:k	'a kind of tree'

ma:m	'blood'	ma:n	'to bury'
ma:p	'to ask'	ma:l	'shadow, to dream'
ma:r	'salt'	mɔ:c	'fat'
mɔ:j	'fat'	mɔ:t	'to put'

/m-/ disyllabic word

map ^h ra:n	'part of house'	mɛanwa:j	'a kind of grass'
mpɔh	'drain'	mti:p	'a kind of trap'
mpi:t	'to clear'	mpu:j	'nest'
mpri?	'vegetable'	mpɪr	'thick'
mpi:l	'pumpkin, eyelid'	mp ^h lɛp	'to blink'
mpa:k	'strip of bommboo'	mpla:k	'side'
	'to plug'	mp ^h la?	'wife'
mp ^h ra?	'dust'	mp ^h laŋ	'horse'
mpaŋ	'other'	mp ^h lɛh	'to hen'
		mpus	'to dust off'
mplon	'loose-fitting'	mp ^h lɔh	'to belch'
mp ^h rɔ?	'man'	mpɔc	'part of tree'
mpɔc	'pimple'	mp ^h rok	'wild dog'
mpo?	'cow'	mpoŋ	'head'
mpial	'a kind of basket'	mpɛan	'to goggle'
mpɛan	'staw'	mpuəl	'a kind of animal'
mpu:k	'to rap'	mpu:l	'skin'

mpu:j	'tassel'	mpj:k	'bark'
mp ^h la:j	'worm'		

/n-/ monosyllabic word

ni?	'this'	net	'keen'
nah	'to recoil'	ne ^h c	'to hit'
nam	'big'	na ^h m	'time'
naj	'chipmunk'	num	'lover'
ni:p	'to nip off'	ni:p	'spoon'
ni:t	'to overlap'	na:	'older sister'
nɛ:ŋ	'a kind of trap'	na:j	'that'
nə:j	'to lean'	nɔ:	'they'
nɔ:m	'to excite'	nɔ:ŋ	'not yet'
nɔ:j	'a kind of cucumber'	nu:m	'urine, piss'
nu:n	'ridge'	nɛ?	'question word'

/n-/ disyllabic word

nanlɛ:	'bruised'	nɔ:jŋu:	'a kind of fruit'
nɛmp ^h rɔj	'mole'	nci:	'to point'
nt ^h ri:k	'bark'	ntu?	'hole'
ncim	'soft'	nti:ŋ	'to fall down'
nti:ŋ	'wild'	nc ^h e:k	'a kind of grass'
nɛk	'to poke'	nse:k	'a kind of leaf'
nt ^h le?	'pestle'	nt ^h re?	'diligent'

nteʔ	'to moan'	ncen	'to'
nweɿ	'to go round'	ntɛk	'little'
nta:k	'tongue'	nta:k	'palm'
nt ^h roḥ	'to boil'	nlaʔ	'spade'
ntoh	'to come off'	ntoḥ	'to breath'
ntaʔ	'to clap,tail'	ntaʔ	'thin'
ntah	'shrimp'	ntoɿ	'a kind of vegetable'
nt ^h laŋ	'post'	ntaŋ	'dry'
nla:ŋ	'shoulder'	nma:l	'a kind of tree'
nca:l	'light'	nca:k	'tear'
ntɔh	'wilt'	nta:l	'to go down'
nlo:j	'to flow'	nt ^h roḥ	'iron,to boil'
nʔa:j	'vapor'	nʔa:j	'coconut shell'
nt ^h ra:ŋ	'a kind of altar'	nt ^h lɔ:j	'soft wind'
nt ^h las	'thunder-bolt'	nt ^h ra:m	'to stamp'
nluʔ	'to rest'	nt ^h ra:ŋ	'horn'
ntunɿl	'mouth'	ntɔp	'shell of mollusk'
nnɔ:m	'to pound'	nhɔ:m	'a kind of grass'
ntɔ:ŋ	'big stick'	ntɿl	'to snore'
ntiŋ	'to struggle'	nni:	'mango'
nnal	'luffa'	ntu:m	'ripe'
ntɔ:ŋ	'ladder'	nmɔ:ŋ	'to bend'

nt ^h ru:m	'floor'	nyʔ:ŋ	'shin'
ntu:l	'crown of head'	nt ^h ry:ŋ	'back'
nt ^h ra:ŋ	'first'	nt ^h rʔ:j	'rice broken'
nyʔ:j	'to poke'	ncu:l	'to go down'
nt ^h rok	'to cover'	npu:j	'nest'
nloʔ	'mud'	nlu:j	'to hang'
nt ^h rias	'comb'	ntʔal	'bat'
ntual	'neck'	nʔɛh	'to sneeze'
nnaɾ	'wood'	nma:r	'a kind of fruit'
nt ^h ri:k	'bark'	nt ^h ran	'to start'
nsah	'chacoal'	nt ^h lik	'to nudge'
ntʔ:r	'gutter'	nʔu:r	'a kind of vegetable'
nt ^h rɔaj	'classifier'	ntap	'scabby'
nt ^h rak	'altar'	nja:m	'turtle'
nt ^h rʔ:j	'bran'	nteʔ.	'freckles'

/p-/ monosyllabic word

piɸ	'to grasp'	pak	'to put'
pak	'a kind of ghost'	pʔʔ	'a kind of fruit'
pɛʔ	'little, narrow'	pɛʔ	'to press'
piɔɾ	'a kind of animal'	piam	'heart'
puam	'phlegm'	pa:k	'to be disheveled'
pa:m	'cricket'	pa:ŋ	'cobweb'

/p-/ disyllabic word

ɲukɲik	'to rub'	ɲajɔk	'a kind of tree'
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/ŋ-/ monosyllabic word

ŋip	'dark'	ŋiw	'a kind of plant'
ŋe?	'to glance'	ŋel	'to shiver'
ŋat	'dry'	ŋa?	'itch, a kind of egg plant'
ŋar	'cold'		
ŋɔk	'hair on the back of horse'	ŋɔ?	'rice'
		ŋɔ?	'to frighten'
ŋɔm	'broadbill'	ŋon	'a kind of yam'
ŋup	'to bend'	ŋian	'fin'
ŋi:	'mango'	ŋa:	'ivory'
ŋa:p	'yawn'	ŋɛ:n	'bottle gourd'
ŋa:w	'dumb'	ŋɔ:n	'to plow'
ŋɔ:r	'way'	ŋo:ŋ	'a kind of fish'
ŋu:n	'a kind of tree'	ŋka:k	'to cross'
ŋka?	'shame'	ŋka:m	'husk'
ŋkar	'a kind of wood'	ŋkɛn	'woman'
ŋkɛr	'stump'	ŋkɔ:ŋ	'high mountain'
ŋko?	'pounded rice'	ŋkɔn	'single'
ŋku:p	'to overturn'	ŋku:r	'hard wind'
ŋku:j	'to drowse'	ŋkian	'a kind of bird'
ŋklɛ:m	'organ of body'	ŋkɔ:j	'a kind of vegetable'

ŋkɔ̌l	'classifier'	ŋko:k	'to touch'
ŋkɔ̌:t	'to cough'	ŋkɪt	'to block one's view'
ŋk ^h ruʔ	'to growl'		
	/s-/ monosyllabic word		
sip	'ten'	sit	'right'
siʔ	'to instigate'	sih	'to sleep'
sec	'sharp'	seʔ	'louse'
sat	'animal'	saŋ	'pole'
sal	'a kind of animal'	sɔʔ	'dog'
soʔ	'axe'	sop'	'dead body'
sut	'to burn'	suk	'a kind of tree'
siap	'to skewer'	siat	'rust'
sian	'a kind of money'	si:p	'to sprout'
si:m	'bird'	si:n	'ripe'
se:t	'leaving'	sɛ:t	'a kind of vegetable'
sa:p	'smell'	sa:w	'twenty'
sa:ŋ	'big money'	sɔ:p	'to like'
sɔ̌:t	'a kind of food'	sɔ̌:ŋ	'to hide'
su:t	'to ask'		
	/sr-/ monosyllabic word		
sruat	'morning'		

/s-/ disyllabic word

sipun̩	'a kind of basket'	sipaːj	'a kind of vegetable'
sitʃːn	'young'	sinɛːt	'close'
sinaːt	'gun'	sikam	'needle'
sin̩əh	'to turn up'	sin̩əm	'medicine'
sil̩iəŋ	'a kind of grass'	silɛːŋ	'a kind of vegetable'
sikiː	'a kind of tree'	siʔeŋ	'to care for'
sikiː	'today'	sipaŋ	'tomorrow'
simoːj	'day after tomorrow'	sal̩iː	'porn'
siŋkiː	'yesterday'	silun̩	'stream'
siluːt	'deaf'	sik ^h rat	'flip'
sikaː	'the name of a Khmu day'	sikaːp	'Monday'
siwaːj	'Wednesday'	sirap	'the name of a Khmu day'
sim̩əŋ	'the name of a Khmu day'	siplək	'Friday'
sikot	'the name of a Khmu day'	sikat	'the name of a Khmu day'
sitaw	'day of working'	siruəŋ	'the name of a Khmu day'
sikɔːt	'to embarrass'	siwəŋ	'a kind of mushroom'
silek	'a kind of vegetable'	sin̩p ^h ri?	'hot food'
siŋk ^h li?	'taboo'	siŋti?	'bracelet'
siŋte?	'thing'	siŋt ^h	'cup'

siŋsih	'grass mat'	siŋmah	'food'
siŋku:p	'to lie flat on one's stomach'	siŋpaŋ	'echo'
siŋ?ir	'onion'	siŋpaŋ	'other'
siŋko:j	'necklace'	siŋkɔ:ŋ	'curry'
siŋlah	'remain thing'	siŋklo:j	'a kind of coin'
sama:	'to excuse'	siŋkɛ:l	'to recline'
saloh	'to hunt'	salit	'to be affected'
saŋful	'wasp'	sanpu:	'a kind of vegetable'
si?im	'a kind of vegetable'	saŋla?	'thorn'
siŋke:l	'to lie on one's side'	siŋte?	'thing'
siŋtɛh	'bowl'	siŋtɛp	'to lean'
sikan	'faithful'	siŋk ^h la?	'skin'
siakk ^h ra:	'a kind of vegetable'	sikɔ?	'wet'
simpu:l	'grey'	siko?	'a kind of fruit'
siŋku:p	'to face down'	siklɔ:k	'to embrass'
siŋkwa:t	'broom'	siŋlo?	'fish trap'
sɔrpɛn	'a kind of wood'	siŋkɔ:ŋ	'curry'
sukrok	'to rap'	siŋtɔ:ŋ	'to stretch out'
		sukot	'to pick up'
		suwe:k	'harelip'

/h-/ monosyllabic word

hic	'to point'	hak	'to stay'
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haʔ	'to be burnt'	ham	'right'
hɛ̃ŋ	'bed bug'	hɛ̃r	'a kind of bird, gum'
hɔs	'grasshopper'	hot	'topknot, to roll up'
hoʔ	'those'	hom	'to carry in one's arms'
hɔ̃r	'to blow'	hɔ̃n	'todpole'
hɛ̃ar	'to vomit'	hɔ̃ar	'bear'
hi:p	'to eat with a spoon'	hi:t	'to extense'
hɛ̃:t	'to call'	hɛ̃:k	'to cut'
hɛ̃:m	'younger person'	hɛ̃:l	'to clear'
ha:n	'to die'	ha:l	'to peel by knief'
ha:ŋ	'a kind of coin'	ha:w	'a kind of trap'
hɛ̃:w	'a kind of tree'	hɛ̃:t	'a kind of tree'
hɛ̃:j	'to lop thread off'	hɛ̃:	'final particle'
hi:n	'to crossbreed'	hɔ̃:c	'to shape'
hɔ̃:m	'to tie'	hɔ̃:j	'to play'
ho:p	'a kind of bird'	ho:c	'already'
hɔ̃:t	'a kind of insect'		
hu:c	'to bite'	hɔ̃:c	'to pour'
hu:r	'rotten'		

/h-/ disyllabic word

ha:mkãj	'a kind of tree'	hɛ̃?ɛ̃l	'to smell'
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/l-/ monosyllabic word

lit	'litre'	lic	'to expose'
liŋ	'to leap'	lek	'iron'
lec	'to go through'	leʔ	'porcupine'
leh	'near'	ləŋ	'dot'
lɛʔ	'question word'	lat	'a kind of fish'
lɑc	'to chase'	lɑk	'side'
lak	'a kind of ant, to cut'	laʔ	'leaf'
lɑm	'side'	lɑw	'to tell'
lɔʔ	'good, to disappear'	lɔŋ	'long'
lɔʔ	'to add; a kind of animal'	lɔs	'to sew'
lɔh	'body'	lɔŋ	'side'
lok	'a kind of disease'	lɔm	'to cover'
lon	'to fall down'	loŋ	'to lose one's way'
	'small stick'	luʔ	'naked'
luh	'to leak'	luh	'to pound'
liat	'short'	liɑn	'out'
liak	'squint-eyed'	liɑs	'timber'
li:t	'ceremony'	li:ŋ	'bruised'
li:ɸ	'bone of knee'	li:ŋ	'a kind of animal'
li:l	'a kind of insect'	li:ŋ	'tasteless'
la:t	'gold bracelet'	la:k	'to tell a lie'
la:k	'to urge'	la:c	'to disappear'

la:r	'to spread the hood'	la:n	'a kind of tree'
li:p	'to choke'	lɔ:c	'stillborn offspring'
li:n	'to play'	lɔ:n	'to mould with hand'
lɔ:j	'to swim'	lɔ:n	'in'
lo:p	'to deceive'	lo:c	'all'
lu:j	'abdomen'		

/.l-/ disyllabic word

litla:l	'flash of lightening'	lamli:	'cigarette'
lamu:p	'beard'	lekluat	'wire'
lawe?	'ginger'	lawa:n	'sky'
lasa:j	'like to'	lawa:j	'tiger'
lapta:p	'butterfly'	laha:n	'a kind of tree'
lawe:p	'curl'	lanla?	'a kind of fruit'
lanu:t	'shadow'	lorpɔ:t	'a kind of grass'
lulu?	'a kind of grass'	lukku:j	'fist'
la:nɔ:n	'a kind of flower'	la:jtɔ?	'monitor lizard of the genus Varanus'
la:ncɔ:k	'a kind of bird'		
lɔ:kɔ:	'fiddle'	lu:jlɔ:j	'egg of plant'

/r-/ monosyllabic word

re?	'field'	rɔc	'to chase'
ra?	'to snatch'	ran	'old'
rə?	'to blaze'	rəp	'fishing-net'
ran	'askance'	rɔh	'to awaken'

rɔʔ	'to put in'	rɔʔŋ	'a kind of vegetable'
rɔʔs	'to sew'	rɔʔh	'to go along'
rɔʔj	'beriberi'	rok	'toad'
ruk	'rubbish'	ruŋ	'to cook'
riaŋ	'intestines'	riam	'to clear'
rua	'to chase'	ra:	'to wash'
ra:j	'to curse'	ra:ŋ	'tooth'
rɔ:t	'to fall down'	rɔ:j	'fly'
ro:c	'mollusc'	ro:j	'spirit'
rɔ:ŋ	'ear of paddy'	ru:	'to push'
ru:k	'cloth'		

/r-/ disyllabic word

rɔʔjias	'a kind of grass'	ra:ŋkle:ŋ	'firefly'
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/w-/ monosyllabic word

wit	'to jump'	wec	'to come'
weʔ	'left'	wɛh	'to avoid'
wɛk	'sickle'	wat	'to discard'
wat	'to throw'	waʔ	'small money'
waʔ	'to chase'	wak	'to hang'
wak	'to lean'	wah	'wide'
waj	'quick'	wan	'tangled'
wi:t	'to be in a whirl'	wɛ:t	'to buy'

wɛ:n	'mirrow'	wɛ:l	'a kind of grass'
wa:c	'to pick up'	wa:k	'to torn'
wa:k	'earthworm'	wa:n	'a kind of tree'
wa:ŋ	'long'	wa:r	'sunshine'
wə:k	'a kind of bird'	wə:j	'to dip'
wə:r	'a kind of tool'	wɔ:	'mad'
wɔ:r	'a kind of tool'		

/j-/ monosyllabic word

jim	'red'	jap	'close(eyes)'
jat	'to live'	jan	'black'
jal	'sick'	jɔk	'to hop on one foot'
jɔk	'limping'	jɔ?	'together'
jɔ?	'friend'	jɔh	'to walk'
joŋ	'father'	ju?	'grass'
jəh	'root'	jɛ:k	'to seperate'
ja:k	'to pant'	ja:m	'to cry'
ja:n	'a kind of gong'	ja:ŋ	'female'
ja:ŋ	'cob'	jɔ:t	'to copulate'
jo:l	'gibbon'	jo:r	'wax'
ju:n	'to shake'		

APPENDIX II

Connected Speech

1.To go truck farming

2.Curse word

3.To go to bring meat

4.Hunting

5.Cooking chicken curry

1. To go truck farming

jɔh ?əh re?

go do field

jɔh hɛ:l ju? hɛ:l ju? hɛ:l ju? ho:c kɔj wec kuŋ
 go clear grass clear grass clear grass already h.v.return village

'to go to clear grass to clear grass to clear grass already and
 return to the village

wec kuŋ c^hipun kɔj jɔh tⁿɛ:m hɛ:l ju? ho:c kɔj

return village tomorrow h.v. go again clear grass already h.v.
 return to the village tomorrow going again to clear grass already

?ɔ:l jɔ? jɔh hɛ:l ju? tⁿɛ:m hɛ:l ju? ho:c kɔj

persuade together go clear grass again clear grass already h.v.
 to persuade together to clear grass again to clear grass already

?an jɔ? ntu:m kɔj

give pounded rice ripe h.v.'

to give pounded rice ripe

k^hiaw ŋɔ?

hook pounded rice

to hook pounded rice

kⁿiaw ŋɔ? ho:c kɔj mɔ:t kɔ:ŋ ro? kɔ:ŋ

hook pounded rice already put heap carry heap

to hook pounded rice already to put heap and carry heap

kɔ:ŋ ho:c na: məh pɛ:n nuaɟ kɔj te:n

heap already it is unit h.v. step on

te:n na: ho:c ?u:n pɛ:n ti: kɔj mɔ:t mpo?

step on it already put place h.v. put cow

to step on it already to put the place to put cow

jɔh ta:ŋ

go carry

to go for carrying'

2. Curse word

<u>jak</u>	<u>ra:j</u>	<u>jak</u>	<u>bom</u>	<u>jak</u>	<u>ma:m</u>	<u>jak</u>	<u>ji:m</u>
excrement	curse	excrement		excrement	blood	excrement	red
<u>lon</u>	<u>dam</u>	<u>lon</u>	<u>dɛ:n</u>	<u>wa:j</u>	<u>ha:n</u>	<u>wa:j</u>	<u>wec</u>
down	black	down	red	dead	dead	dead	come
<u>ʔan</u>	<u>pⁿri:ŋ</u>	<u>pi:p</u>	<u>p^hri:ŋ</u>	<u>pɛʔ</u>	<u>ʔan</u>	<u>ha:n</u>	<u>ʔuʔ</u>
give	we	shoot	we		give	dead	rotten
<u>ha:n</u>	<u>hu:r</u>	<u>ʔan</u>	<u>wa:j</u>	<u>mec</u>	<u>wa:j</u>	<u>ku:p</u>	
dead	bad	smell	give	dead	know	dead	see
<u>ʔan</u>	<u>pa:</u>	<u>ha:n</u>	<u>ndiʔ</u>				
give	you	dead	now				

3. To go to bring meat

ca? ?ɔ:l po? hɛ:m ?əm ca? klam ?ah c^hian

h.v. persuade with younger cousin . carry meat pig

'to persuade with younger cousin to carry pig

lak re? ?əm ho? lak ?om tu:n ?əm ho?

side field that side river Tun that

at the field side at Tun river at that side

po? ?al jɔh jɔh kɔ? jɔh ka? ?o? ?əm

with neg. go go h.v. go with I

if not go to go with me

?o? ca? ?ɔ:l ?əm ?al ?o? wec kɔ? ca?

I h.v. persuade neg. I come h.v.

I will persuade I do not come will

pan pa? re? dɛ: ?al po? jɔh kɔ? hak jɔh nkɔn

divide at field neg. with go like go alone

divide at the field if not go to like to go alone

tɛkmɔ? c^hipun ?o? ?əm ca? pi:an jɔh lak c^hu?

every time tomorrow I go side that

tomorrow I will go that side

?al jɔh ?al jɔh kɔ? ?əm law ?əh tik lət lət ?əm

neg. go go speak do every good good

do not go do not go to do well

?o? ca? ?ɔ:l kɔ:n ŋɛ? ?ah jɔh pa:r kɔn

I persuade children have go two person

I will persuade children to go with two person

po? nlo:j ?əm ?aj c^hal ?əm mɔh kɔ? lət ?əm ho:c

with flow Sal good already

ndi? po? jɔh mɔ:t po? takɔ: jɔh taj ʔəm

now with go put with neg. go find

now to go to to put do not go to find

kɔ? taj ciam mah ʔɔm kɔ? law ʔo? ci? ʔo? tⁿi:

find cook eat say I I place

to find cooking to eat to say I will

ʔo? cⁿaj tⁿi: ʔo? po? jɔh po? hak ʔal jɔh

I place I with go with like neg. go

I like to go, do not go

ʔo? ca? ʔɔ:l po? jɔh mɔ:t ʔah cⁿiaŋ haj lo:j pian

I persuade with go put meat pig give

I will persuade I put pork to give at that side

lak ho? ʔɔm ʔɔ: ʔuŋ lak re? ho? ʔəm po? ci? jɔh

side that sore side field that with go

at that field, go

ʔal jɔh ʔal po? ʔal jɔh ʔo? kɔ? ca? hak jɔh nkon

neg. go neg. with neg. go I like go alone

do not go with, do not go I will like to go alone

ho? po? jɔh taj ho? kɔ? law cⁿa? ʔo? ci? ʔo?

that with go that say I I

go to that

tⁿi: kɔ? we:la: ni: ʔo? po? jɔh ho:c pⁿro? wa:

time this I with go already because

this time I go already because

ʔo? ʔal pian jat ʔo? cian lak cⁿu? cⁿiɔuŋ cⁿu?

I neg. live I side that tomorrow that

I do not live

naɪ? ʔəm ʔoʔ kɔʔ jɔh ho:c kɔʔ ʔəm ʔɔ:l jɔh
 now I go already persuade go

I go already

poʔ jɔh ʔoʔ kɔʔ jɔh ho:c kɔʔ ʔəm ʔɔ:l jɔh poʔ
 with go I go already persuade go with
 to persuade

jɔh ʔoʔ kɔʔ caʔ ʔɔ:l jɔh pa:r kon tɪkmɔʔ niʔ
 go I persuade go two person every time this

to go I will persuade to go for two persons every time

kɔʔ ʔəm ho:c jɔh rɔ:t law poʔ ho:c poʔ .nɔ:
 already go come say with already with them
 to go already and come already with them

ʔal jɔh ʔal wec kɔʔ ta:m caj pɔ:t tɔʔ ʔoʔ ʔɔ:l
 neg. go neg. come along heart father I persuade
 do not go, do not come I persuade

jɔh ku:p ho:c ʔəm niʔ kɔʔ caʔ pa:t ʔah wec
 go see already this cut meat come
 to go I persuade to go for seeing already to cut meat.

taʔ kuŋ ʔal wec cɪan kuŋ caʔ ʔan pɔ:t teʔ pe:n
 at village neg. come village give put
 and come at the village, do not come at the village, will give to put

pun pe:n pun pun pɔ:t dɛ: pun no:c dɛ:
 some some some already
 for some

ʔal pɔ:t jɔh sia we:la: ka:l mʔ kɔʔ ʔəm
 neg. go waste time before
 do not go to waste time before

ʔah c^hiaŋ pian ho:c niʔ poʔ jɔh pip jɔh pip
 meat pig already this with go shoot go shoot
 pork only to go to shoot

wec ho:c ?o? po? wec kɔ? ca? pan ?an pɔ:t
 come already I with come divide give
 and come already I come to divide for giving
ti? dɛ: kɔ? t^ha: jɔh jak jɔh ndi? kɔ? ?al wec
 go excrement go now neg. come
 to go, to go now and do not come
ndi? p^hrɔ? wa: ca? ?an po? jɔh sia we:la:
 now because give with go waste time
 now because I will give to go to waste time
jɔh wec po? jɔh na: pian tɪk jɔh ?al mɔ?
 go come with go it every go neg.
pian dək ?al mɔ? pian ntɛk pɑ:r mɔ? kɔn kɔ?
 many neg. many two person
ho:c ja? ta? ?i: pian ja? jɔh lo:c
 already go all'

4. Hunting

jɔh c^hiloh p^hri? jɔh ki? ?al pian kɔ? jɔh lak ho?
 go hunt forest go neg. go side that

'to go hunting at the forest to go at that side

jɔh lak ho? jɔh ho? ?al pian kɔ? jɔh lak ki:
 go side that go that neg. go side this

to go that, to go this side

?al jɔh ?om p^hri? ?al pian kɔ? jɔh ?om p^ha:n
 neg. go water Phri neg. go water Phang

do not go at Phri river and go at Phang river

?al pian kɔ? ho? jɔh ?om k^ha:w jɔh ?om k^ha:w
 neg. that go water Khaw go water Khaw

to go Khaw river

?al pian kɔ? jɔh ?om pɔ:t jɔh ?om pɔ:t
 neg. go water Yaot go water

to go to Yaot river

?al pian kɔ? jɔh ?om jen ho? jɔh ?om jen ho?
 neg. go water Yen that go water Yen that

to go to Yen river at that side

?al pian kɔ? jɔh ?om po? kɔlo:n ?al ci? ca? pian
 go water Pokolong neg.

to go Pokolong river

law na: ca? jɔh c^hiloh p^hri? nɛ? jɔh taj tɛ:
 say it go hunt forest go find

ma:h ci? tɛ? k^hra:n kɔ:n pɛ? ?om ?an na: taj caj
 eat children give it persist

to give it persisting in

jɔh jɔh wec kɔ? ?an pian kamu? ka? c^hon
 go go come give person

to go to come, to give person'



5. Cooking chicken curry

ca? kɔ:ŋ ʔah ʔiar jam nt^ho:l kɔ? p^ha:n
 curry meat cock kill

to curry chicken

ʔiar kɔ? t^hə? k^hu:r t^hə? k^hu:r kɔ? jɔh ra:
 cock hair pull hair go wash

to pull hair out and wash

kɔ? jɔh pet jɔh ra: ho:c kɔ? mɔ:t kamlo? plah
 go go wash already put some put

to put some

kɔ? kok kamlo? kɔ? kɔ:ŋ kɔ? pi? kɔ? ma:l kɔ?
 cut some curry roast

to curry

palia t^ha:j ho:c kɔ? na: si:n kɔ? tɔp ʔal ci?
 fire already. it ripe neg.

it is ripe

ʔal ʔal kɔ:n mah mah ho:c kɔ? ʔal na: jɔh
 neg. neg. piece eat food already neg. it go

do not eat to eat already and do not go

jat to? ka:ŋ ʔal na: jat to? ka:ŋ tu? re?
 live at house neg. it live at house field

live at the house and do not live

to live at the house and do not live

ʔal na: jɔh taj siŋʔə? tiktik hɔ?
 neg. it go find do again

to go again'