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**A PHONOLOGICAL STUDY OF THE KHMER SPOKEN AT BAN NAWATTAI,
TAMBON DONGNOI, RATCHASAN SUB-DISTRICT, CHACHOENGSAW PROVINCE**

AMPHON WICHITKHACHEE

With compliments
of

Amphon Wichitkhachee

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS
(LINGUISTICS)**

**IN
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY**

1996

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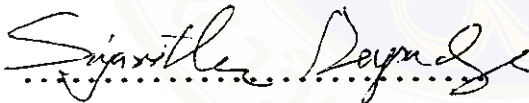
A PHONOLOGICAL STUDY OF THE KHMER SPOKEN AT BAN NAWATTAI, TAMBON
DONGNOI, RATCHASAN SUB-DISTRICT, CHACHOENGSAW PROVINCE

 *Wichitkhachee*
.....

Amphon Wichitkhachee
Candidate

 *Srichampa*
.....

Sophana Srichampa, M.A.
Major Advisor

 *Deepadung*
.....

Sujaritlak Deepadung
Co-advisor

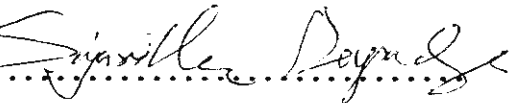
 *Prensirat*
.....

Suwilai Prensirat, Ph. D.
Co-advisor

 *Chulasamaya*
.....

Monthree Chulasamaya, M.D., Ph.D.
Dean
Faculty of Graduate Studies

(Chairman)

 *Deepadung*
.....

Sujaritlak Deepadung, Ph. D.
Acting Chairman
Master of Arts Program
in Linguistics
Institute of Language and
Culture for Rural Development

Thesis
entitled

A PHONOLOGICAL STUDY OF THE KHMER SPOKEN AT BAN NAWATTAI,
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was submitted to the Faculty of Graduate Studies, Mahidol
University for the degree of Master of Arts (Linguistics)

on

March 19, 1996

 *Wichitkhachee*
.....

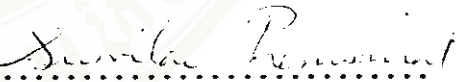
Amphon Wichitkhachee

Candidate

 *Srichampa*
.....

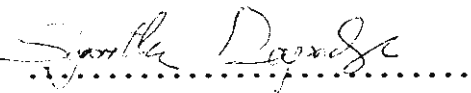
Sophana Srichampa, M.A.

Chairman

 *Prensirat*
.....

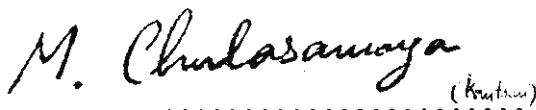
Suwilai Prensirat, Ph.D.

Member

 *Deepadung*
.....

Sujaritlak Deepadung, Ph. D.

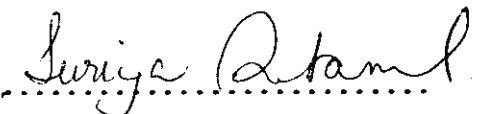
Member

 *Chulasamaya*
..... (Kruthee)

Monthree Chulasamaya, M.D., Ph.D.

Dean

Faculty of Graduate Studies

 *Ratanakul*
.....

Suriya Ratanakul, Ph.D.

Director

Institute of Language and
Culture For Rural Development

BIOGRAPPHY

Name Mr. Amphon Wichitkhachee

Date of Birth 14 December B.E. 2512 (1969)

Place of Birth Roi-Et, Thailand

Institutions attended

Srinakharinwirot University, Mahasarakarn
Campus, 1988-1991:

Bachelor of Education (English)

Mahidol University, 1992-1995:

Master of Arts (Linguistics)

Research Grant Graduate Studies, Mahidol University, 1994

The National Research Council, 1995

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Amphon Wichitkhachee

ชื่อวิทยานิพนธ์ การศึกษาระบบเสียงภาษาเขมรบ้านหน้าวัดใต้ ตำบลดงน้อย
 กิ่งอำเภอราชสาส์น จังหวัดฉะเชิงเทรา
 ผู้วิจัย ลำพล วิจิตขจี
 ปรึกษา ศิลปศาสตรมหาบัณฑิต (ภาษาศาสตร์)
 คณะกรรมการควบคุมวิทยานิพนธ์

โสภณา ศรีจำปา, MA.

สุวิไล เปรมศรีรัตน์, Ph.D.

สุจิตลักษณ์ คีตคง, Ph.D.

วันสำเร็จการศึกษา ๑๘ มีนาคม พ.ศ. ๒๕๖๔

บทคัดย่อ

วิทยานิพนธ์ฉบับนี้ เสนอการศึกษาระบบเสียงภาษาเขมรบ้านหน้าวัดใต้ ตำบลดงน้อย กิ่งอำเภอราชสาส์น จังหวัดฉะเชิงเทรา โดยแบ่งเนื้อหาวิทยานิพนธ์ออกเป็น ๕ บท บทที่หนึ่งเป็นบทนำ บทที่สองเป็นการวิเคราะห์หน่วยเสียง บทที่สามเป็นการวิเคราะห์ พยางค์ บทที่สี่เป็นการวิเคราะห์หน่วยคำ บทที่ห้าเป็นการวิเคราะห์ทำนองเสียง บทที่หก เป็นการสรุป โดยในบทสรุปได้นำเสนอลักษณะการแปรทางเสียงเปรียบเทียบระหว่างภาษา เขมรบ้านหน้าวัดใต้กับภาษาเขมรกลาง และระหว่างคนอายุ ๖๐ ปี กับ ๗๐ ปี โดยภาษาเขมรกลางยึดจากภาษาเขมร

นอกจากนี้ยังได้วิเคราะห์ระบบการเขียนและระบบเสียงของภาษาเขมรกลาง รวมทั้ง ข้อมูลใช้ในการวิเคราะห์ เสียงแปรบางอย่างในภาคผนวกที่ ๑ และคำศัพท์ที่ใช้ในการ วิเคราะห์ระบบเสียงถิ่นนี้ในภาคผนวกที่ ๒ ทั้งนี้เพื่อเป็นประโยชน์ในการศึกษาต่อไป

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 Tambon Dongnoi Ratchasan Sub-district, Chachoengsaw
 Province

Name Amphon Wichitkhachee
Degree Master of Arts (Linguistics)

Thesis Supervisory Committee

 Sophana Srichampa, MA.
 Suwilai Prensirat, Ph.D.
 Sujaritlak Deepadung, Ph.D.

Date of Graduation 19 March B.E. 2539 (1996)

ABSTRACT

This Thesis presents the result of a phonological study of the variety of Khmer spoken at Ban Nawattai, Tambon Dongnoi, Ratchasan sub-district, Chachoengsaw province. It consists of 6 chapters.

Chapter 1 is an introduction. Chapter 2 is an analysis of the phonemes. Chapter 3 is an analysis of the syllable. Chapter 4 is an analysis of the word. Chapter 5 is an analysis of the intonation. Chapter 6 contains the conclusion and present some differences between Ban Nawattai Khmer informants aged 60 and 20, and Central Khmer. For Central Khmer the description is based partly on my work with an informant, and partly on published work relating to the standard language.

In addition, the analyses of the Khmer writing system and the phonological system of Central Khmer, and some comparisons between Central Khmer and Ban Nawattai Khmer are provided in Appendix I. Moreover, the word list for Ban Nawattai Khmer in Appendix II may serve as a preliminary source for future studies.

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ABBREVIATIONS AND SYMBOLS

Art.	=	Articulation
asp.	=	Aspirated Consonant
C	=	Consonant
C ₁	=	First Consonant
C ₂	=	Second Consonant
C ₃	=	Third Consonant
C ₄	=	Fourth Consonant
C ₅	=	Final Consonant
Cl.	=	Cluster
CNK	=	Central Khmer
F.	=	Falling Contour
Fin.	=	Final Consonant
In.	=	Initial Consonant
IPA.	=	The International Phonetic Alphabet
M	=	Muu (អ្នក)
Maj.	=	Major Syllable
Min.	=	Minor Syllable
N	=	Nasal Consonant
NK	=	Northern Khmer
NWK	=	Nawattai Khmer
Pre.	=	Presyllable
R.	=	Rising Contour
R-F	=	Rising and Falling Contour
S.	=	Strong Stress, Series (on page 154-155)
Sym.	=	Alphabet Symbol
U.	=	Unstressed
unasp.	=	Unaspirated Consonant
V.	=	Vowel
vd.	=	Voiced Consonant

v1.	=	Voiceless Consonant
[V]	=	Short Vowel
[V:]	=	Long Vowel
[VV]	=	Short Diphthong
[V:V]	=	Long Diphthong
W.	=	Weak Stress
[N]	=	Syllabic Nasal
[.]	=	Syllabic Marker
[...]	=	Syllable Boundary
[']	=	Strong Stress Marker
[.]	=	Weak Stress Marker
[_ ¹]	=	Low Pitch
[_ ²]	=	Mid(˜High) Pitch
[_ ³]	=	High Pitch
[˘]	=	Variant Marker
[C̣]	=	Unreleased Consonant
/ ————— /	=	Rising Contour
/ ————— /	=	Falling Contour
/ ————— /	=	Rising and Falling Contour
[]	=	Phonetic Transcription
/ /	=	Phonemic Transcription
()	=	Optional

CHAPTER I

INTRODUCTION

1.1 Background of The Study

The speakers of Khmer mostly live in Cambodia where Khmer is spoken as the official language. Besides Cambodia, there are many Khmer people in Thailand, where the biggest group lives in the southern part of the Northeast and some scattered groups are also in the East of Thailand. The first group is known as Northern Khmer and they call their language upper Khmer or /khmɛ:r lv:/. The Upper Khmer people refer to the Khmer in Cambodia (Central Khmer) as lower Khmer or /khmɛ:r kro:ɯ/. The lower Khmer call the Southern Khmer who live in the Southern part of Vietnam in the of Mekong delta area the lower Khmer, too. At the present time Cambodia is politically divided into two maingroups, the legal government, which is called "Khmer", and the illegal one, which is called "Red Khmer" or "Khmer Rouge" /khma:e kro:ho:ɯ/ which is opposed to Cambodian government.

The Northern Khmer are concentrated in Surin, Buriram and Srisaket and some scattered groups are distributed in Roi-et, Nakornratchasima, Mahasarakam, Ubonratchathani. Researchers and scholars have studied and described much about the language and have included historical and Khmer dialect data in their descriptions. The Khmer who live in the eastern part of Thailand are located in Prachinburi, Chachoengsaw and Trat. The language of these latter groups has been rarely studied in the field, so descriptions of the language and historical documents are needed.

The Khmer spoken in Chachoengsaw is the subject of my study, in particular the phonology of this dialect. I choose to study the Khmer at Ban Nawattai village, Dongnoi Tambon Ratchasan Sub-district, this is the original group in this Tambon. The old people told me that are four groups of Khmer in this province; Tambon Nongyaw, in Ban Tonna and Ban Tontan (Phnom-sarakam); Tambon Dongnoi, Tambon Bangkha (almost extinct) (Ratchasan Sub-district), and Ban Samet village (Mueng District), the accents among them are different. They also differ from Northern Khmer, but resemble Central Khmer.

Therefore, the Khmer in this area may have been settled here for a long time. Though their communities are among villages, which people speak Central Thai language, they still communicate by using their mother tongue in their daily lives.

1.2 General Information on the Khmer People

There are 6000 Khmer people who live in Tambon Dongnoi and this group is well known as a unique language among Thai and other Lao dialects around here.

There are few documents about this group of them. They may have originally been here or may have migrated or may have been forcibly moved by Thai soldiers from Cambodia long time ago. Thus their backgrounds have been collected by interviewing people of the older generation. Many persons do not know exactly where their former generations came from in Cambodia, and some emphasize that they have been here for a long time without moving from anywhere. However, in one interesting interview with Mr. Wanna Tipwong, the head of Ban Thangkham village, Dongnoi Tambon, I was told that he had listened to a story from his uncle who got the information from his great-grandmother, that Thai soldiers had forced them to move from

Battambang during the Rattanakosin period around the end period of King Taksin or at the beginning of King Rama I's reign and to locate their houses in Bangkok. Then later they got an allowance to go back to their home in Cambodia, but it was a long journey to Cambodia, and so they decided to establish a new home at Dongnoi, where they have lived until now. They refer to this place as the forest of bat-trees or /prəj prkəw/ in Khmer.

The dynastic history of the Rattankosin period in volume I (พงศาวดารสมัยรัตนโกสินทร์ เล่ม 1) mentions that Phya Yomraj (Ban) and Phya Kalahom (Pok), who were the Thai royal rulers in Phnom Penh, avoided being murdered by Phya Mahathep, Phya Worachun and Cham. They escaped and forcibly moved the 500 Khmer as they passed by Battambang before entering to Thailand (Siam) to beswear loyalty to King Rama I in 1782 after the king had ascended the throne. The king had planned to settle the Khmer to the north of Wat Samoray (วัดสมอราย) Temple in Bangkok. After that Wat Samoray temple was renamed Wat Rachathiwat (วัดราชาธิวาส).*

In the period of King Rama IV, he appointed two deputy chiefs of Chachoengsaw, Phya Kampuchphakdee to be the deputy of the Khmer, and Luang Wisutthichinchat, to be the deputy of the Chinese in order to rule the Khmer and Chinese in this province.

There is one piece of ancient evidence that this area belonged to the old Khmer power. The old-Khmer track Road (ถนนรอยขอม) which passes by Sanamchaikhet District (borders on the east of Phanomsarakam) once was the road between Mueng Prarot (Phanatnikom District) and Dongsrimahapho (Srimahapho District) which was an important place of old the Khmer.

* กรมการศาสนา. ประวัติวัดสำคัญทางพุทธศาสนา ตอน 4. พ.ศ. 2527. หน้า 48.

In summary, we do not know where the Khmer in this area are from but there are a lot of reasons for further study of this ethnic group. Furthermore, this region (all provinces in the east) was the war zone between Thailand (Siam) and Khmer for a long time, so it is quite difficult to study and summarize their history.

1.3 Some Information on Chachoengsaw

1.3.1 Brief History

From the historical documents, Chachoengsaw might be a new small town in Ayudhya period in about the year 1548 during the reign of King Chakrapat or about 400-500 years ago. The town was a military center in former times when the country made war with its neighbors which correspond to the same territory as Nonthaburi, Nakornchaisri, Sakornburi. In the period before the year 1548 history tells us that this place was the sea. However, the name of Chachoengsaw was mentioned in the dynastic story in the early period of King Thammara's reign (1570): "In that time Phya Laweak commanded the soldiers to make a reconnaissance by land and waterway of many times to take care of their people and found that they had left a lot of people of Canthaboon, Rayong, Chachoengsaw, Ralueng (Nakornnayok) to their enemy."

In the period of Dvaravati (*during the 6th. to 11th. centuries A.D.), the center was at Nakornpathom and their people built the new towns surrounding the present Chachoengsaw in the East, such as Dongmahapho (Srimahapho District) and Mueng Nakornmahosot (Kokpip District), which are now in Prachinburi

*Thida Saraya. 1989. (Sri) Dvaravati. p. 29.

Province, and Mueng Sriphro (Mueng District), and Mueng Pharot (Phanataikom District) which are now in Chonburi Province. In the Kingdom of the Lavo period, Chachoengsaw never appeared by name in any documents.

In the year 1787, or about 200 years later, the name Chachoengsaw appeared in the Kingdom of Ayudya period during King Ekathat's reign when his town was almost lost to Burma.

1.3.2 Location

Chachoengsaw is in Eastern Thailand. From Bangkok it is 61 kilometres by train, 75 kilometres by the high-way number 704, and 100 kilometres by high-way number 3. It borders on the following provinces:

In the North it is bordered by Prathumthani, Nakornnayok, Prachinburi,

In the South it is bordered by Chonburi, Rayong, Canthaburi, and the Gulf of Thailand. On the East it is bordered by Prachinburi,

In the West it is bordered by Bangkok province and Samut Prakan province.

The land area is 5,422.99 square kilometres or about 3,395,000 Rai.

The population is 552,108 people.* Geographically of this province consists of broad low fertile paddy fields.

1.3.3 Political Region

There are 8 districts and 1 subdistrict of 88 Tambon and 782 villages.

*Population and Housing Census Changwat Chachoengsao, 1990, p.10

1. Mueng Chachoengsaw district	18 Tambon	183 villages
2. Bangkhla district	13 Tambon	85 villages
3. Plaengyaw district	4 Tambon	34 villages
4. Nampriaw district	10 Tambon	146 villages
5. Bangprakong district	9 Tambon	106 villages
6. Banpho district	17 Tambon	73 villages
7. Phomsarakarn district	8 Tambon	73 villages
8. Sanamchaikhet district	6 Tambon	43 villages
9. Ratchasan sub-district	3 Tambon	21 villages

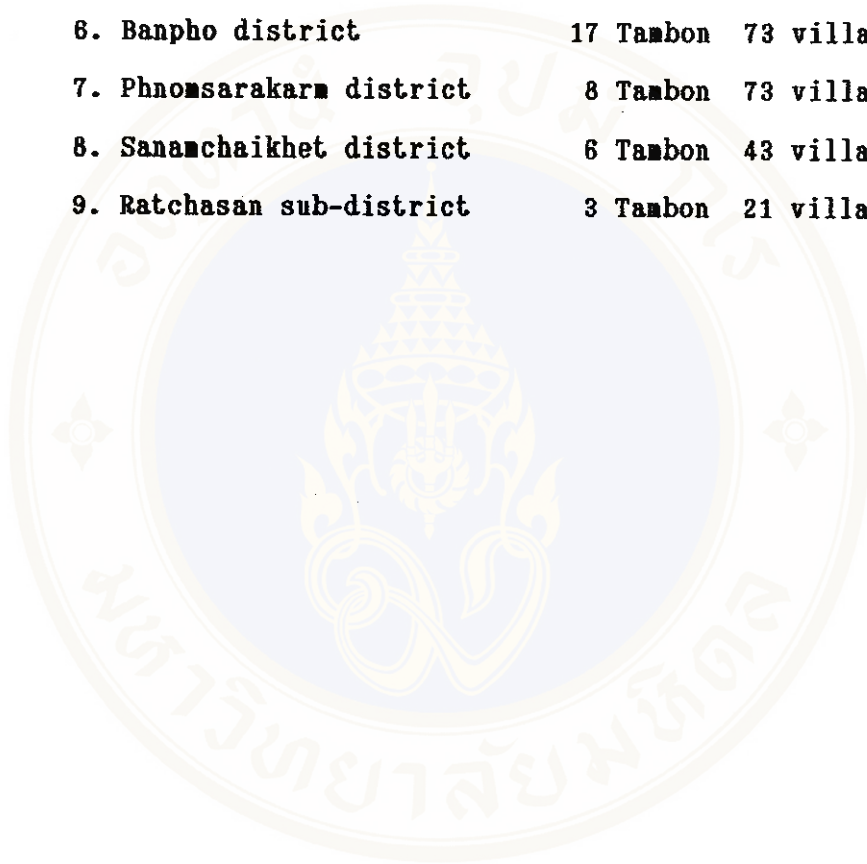
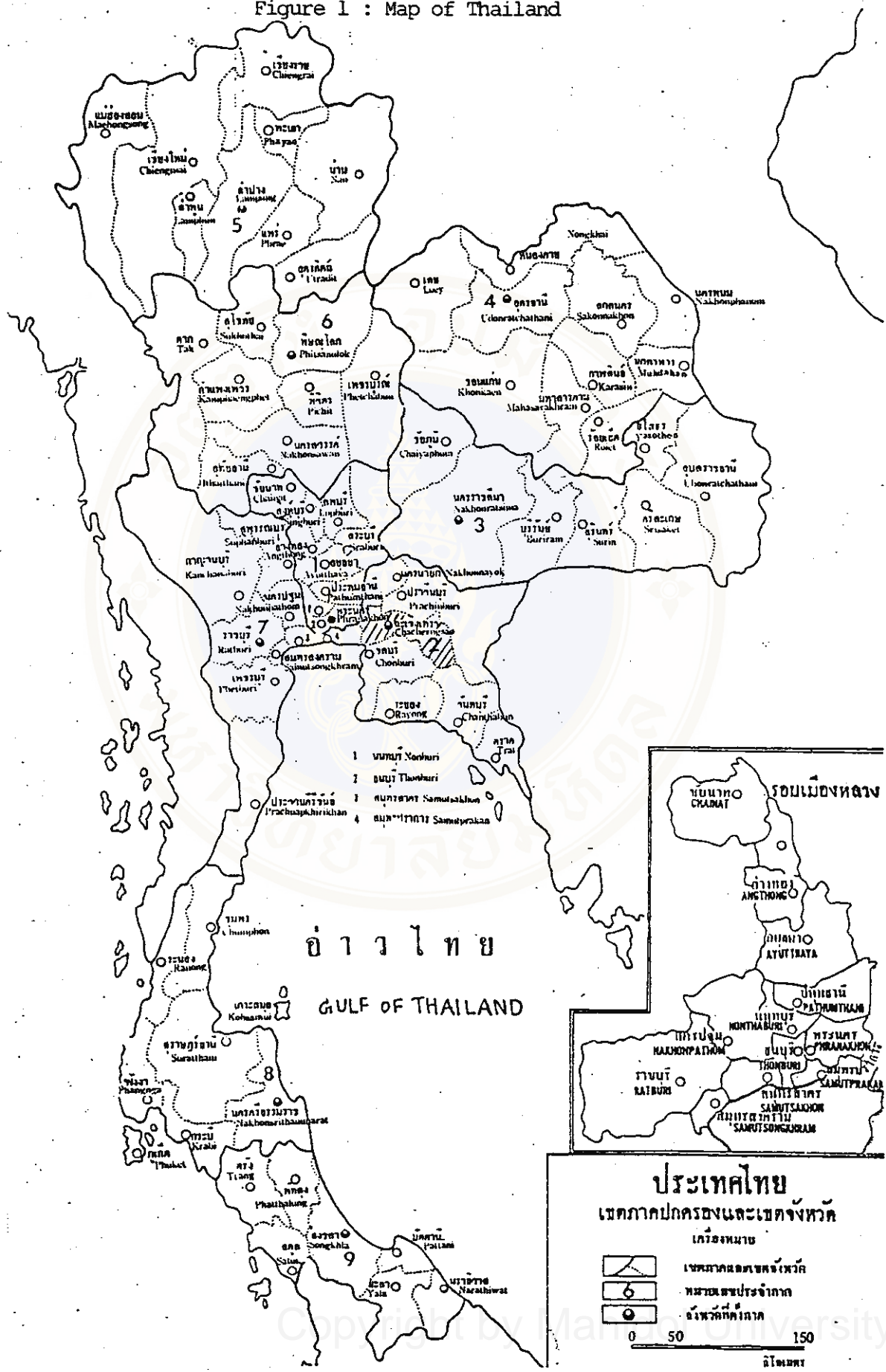


Figure 1 : Map of Thailand



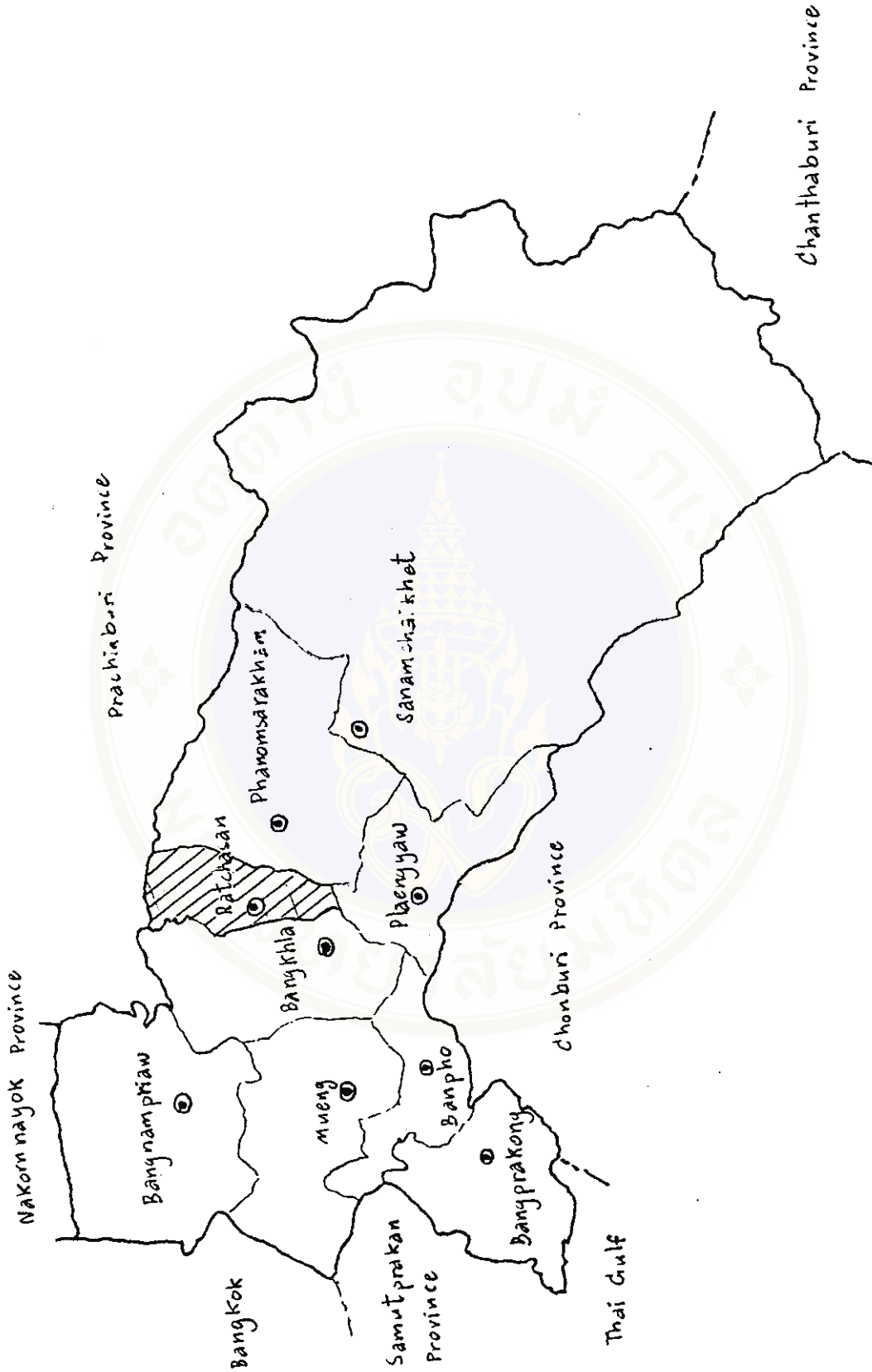


Figure 2 : Map of Chachoengsaw Province

1.3.4 Name of Province

The name of Chachoengsaw province has no accent or meaning in Thai language. Mahacham Thongkhamwan wrote his study about this word in Samthahan newspaper which was published in March 1st, 1962 volume 1 on page 39. He found out the written Chachoengsaw word of King Rama IV in Royal Writing Collection (พระสมุดพระราชนิพนธ์) at Generation Section and stated that Chachoengsaw was a Cambodian (Khmer) name. He further studied the meaning as follows.

"จะทิ้งหม้อ" [catɨŋmɔː] name of one Tambon in Songkhla

"จะทิ้งหม้อ" [catɔːŋmɔː] name of one Tambon in Songkla, its original name was "สทิ้งพระ" [stɨŋphra]

"ละเชียงเทรา" [chachəŋsaw] name of Chachoengsaw province

"เชียงแดง" [chiːaŋtɛːŋ] name of province in Cambodia

All words of "จะทิ้ง" [catɨŋ], "สทิ้ง" [stɨŋ], "ละเชียง" [chachəːŋ], and "เชียง" [chiːaŋ] may be variants of Khmer "สทิ้ง" [stɨŋ] "canal".

Therefore the word "คลองหม้อ" [khlɔːŋ mɔː] (pot canal)" come from [catɨŋmɔː], the word "คลองพระ" [khlɔːŋ phra?] (priest canal)" come from [stɨŋphra]. However, Chachoengsaw [chachəːŋsaw] contains as modifier the adjective [saw] (crəw "โจ้ว" in Khmer) and means "to be deep". So the whole meaning of this word is " a deep canal (คลองลึก)".

Because this area was an old Khmer empire, the people are born Khmer (until now in some parts of Phnom-sarakarn District, Ban Pho District, Ratchasan Sub-district) and Thai. The province is located beside the Bangprakong River, which is important, big, and deep which may be named for this province.

Moreover, King Rama IV said that " there are two names of this province in Khmer and Thai". The second name is Paetriw, in which Paet means "eight" and Riw means "strip".

The name Paetriw is said to have originated from the fact that fisherman of this area sliced dried fish into eight strips. The fish quite variety involved was a big sort was named Plachon (Snakehead fish). It was caught in rivers, especially the Bangprakong river in the area of Chachoengsaw.

1.4 Information about Ratchasan Sub-district

Ratchasan sub-district has been divided from Phnomssarakam district since 1977. It area is 134.9 square kilometres or 84,312 Rai. It is 46 kilometres from Chachoengsaw City and is bordered by:

Bansang district (Prachinburi) in The north

Phnomssarakam and Plaengyaw districts (Chachoengsaw) in the south

Phnomssarakam district (Chachoengsaw) in The east

Bangkhla district (Chachoengsaw) and in The west.

It is divided into 3 Tambon with 30 villages. The populations is 12,559 people; 6,279 males and 6,260 females in 1983.¹

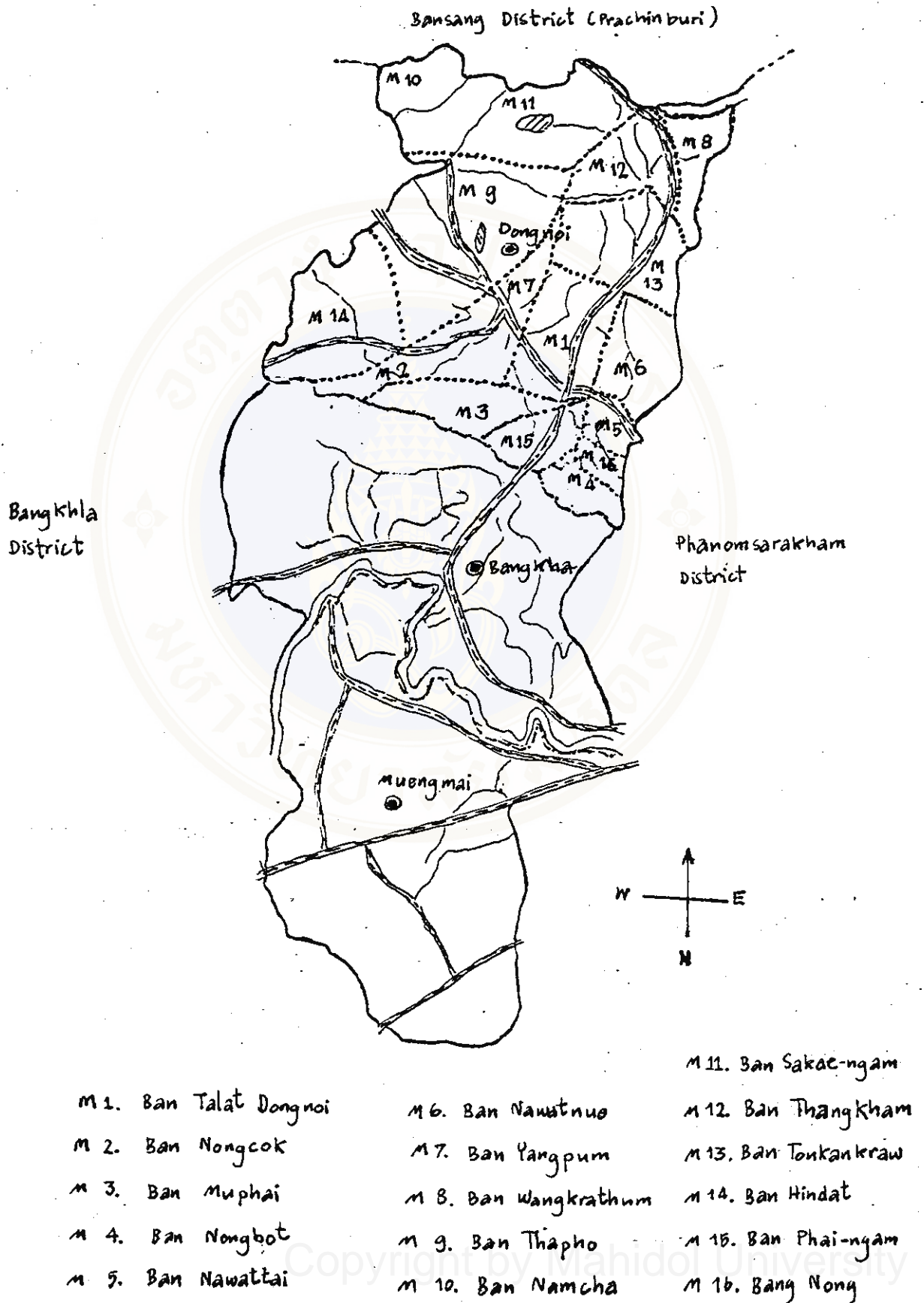
Bangkha Tambon: villages: 6, population: 2,309; males: 1,156 females: 1,153, families: 504

Muengmai Tambon: villages: 8, population: 3,133; males: 1,569, females: 1,564, families: 681

Dongnoi Tambon: villages:16, population: 7,097; males: 3,554, females: 3,543, families: 1,361

1. บรรณานุกรม กิ่งอำเภอราชสาส์น, 2536, น.1

Figure 3 : Map of Ratchasan Sub-district



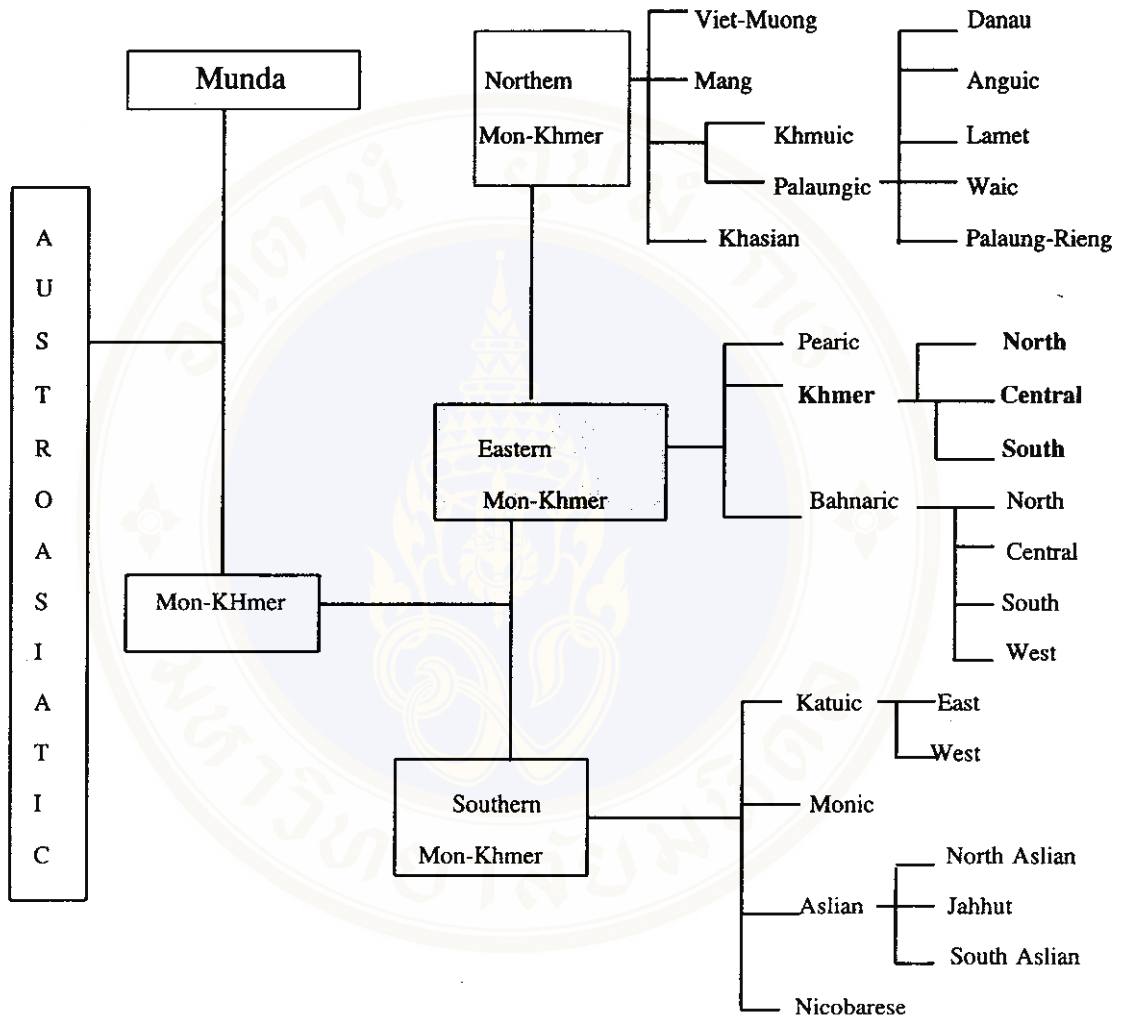
1.5 Language Classification

The Khmer language belongs to Eastern Mon-Khmer subfamily of the Austroasiatic language family (see the figure 4. page 13).

Varieties of Khmer include the following:

1. Northern Khmer, spoken by sizeable numbers of ethnic Khmer, people in the south of the northeast of Thailand.
2. Central Khmer, spoken by the Khmer in Cambodia.
3. Southern Khmer spoken by the ethnic Khmer in the Mekong delta in Southern Vietnam.

Figure 1 : The Branches of Mon-Khmer language Family



(Adapted From Gerard Diffloth cited in Prakorb Phon-ngam,1987,p.2)

1.6 Objective

1. This study describes the phonology of the variety of Khmer spoken at Ban Nawattai village in Ratchasan sub-district, Chachoengsaw province.

1.7 Scope and Method of Study

1.7.1 Source of Data

Ban Nawattai Khmer

The data for this study are based on the speech of two persons of different ages. The first person was Mr. Sa-at Phuttharaksa, the main informant for this dialect. He was about 63 years old. He was born in Ban Nawattai village. The second person was Mr. Cet Pinkul. He was chosen as a young informant representing the young generation. He was 20 years old at the time of the study and was born in this place.

Central Khmer

Statements about the phonology of Central Khmer in the present work are based on Cambodian dictionaries and the transcription system used by Franklin E. Huffman. This system was converted to the phonetic symbols of the IPA (see appendix I. 1.). In addition, my Cambodian friend Dr. Pen. Sok Serey pronounced the letters of the Cambodian writing system for me. He was 38 years old at the time. He had come to Thailand to study at the Asean Institute for Health Development of Mahidol University (1983-1984). He worked at Prey Veng as director of Neak Loeng hospital and as Deputy director of the Prey-Veng Health Committee.

For this study some variations will be presented in the concluding chapter.

1.7.2 Scope of Study

This thesis presents a phonological description of the Khmer dialect of Ban Nawattai spoken in Ratchasan Sub-district, Chachoengsaw province. Comparison with the Central Khmer was based on the transcription system of Franklin E. Huffman (1969).

The present phonological description of this dialect includes the intonation group, the phonological word, the syllable and phonemes.

1.7.3 Phonemic Analysis

The analysis of the data follows the phonological hierarchy of the tagmemic school, which has set up four levels: the intonation group, the stress group, the phonological word, the syllable and the phoneme (as in the Figure 5.). The phoneme functions in the syllable, the syllable in the phonological word, the phonological word functions in the intonation group. The intonation group is the highest level in the hierarchy. Each level has a structure made up of the levels below it. I begin with the phoneme at the lowest level and work upward to the intonation.

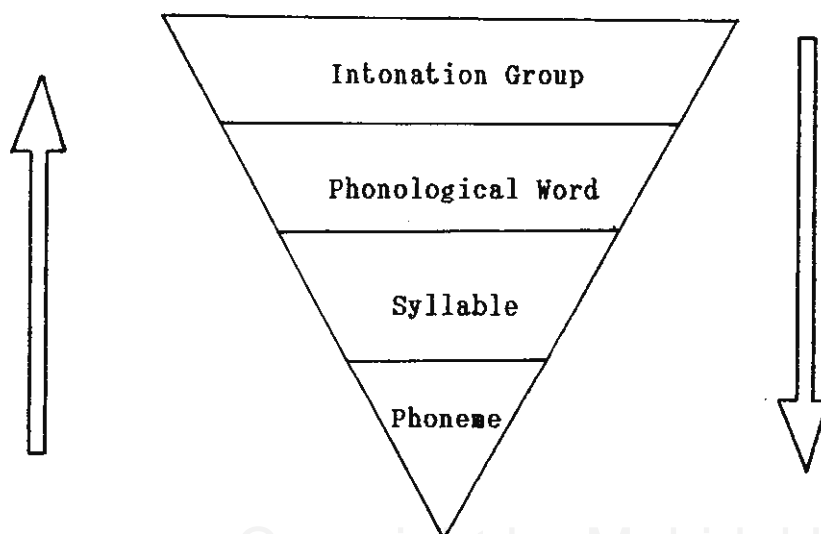


Figure 5. Tagmemic Levels.

1.8. Review of Related Literature

There are the numbers of studies on Khmer phonology that are briefly summarized here.

1.8.1. Jacob, Judith M. (1960); The Structure of the word in old Khmer. The is study aims to produce a system or systems which are based as far as possible on the internal evidence of the texts rather than on deductions drawn from a diachronic approach. She made a comparative phonological study of the Pre-Angkorian and Angkorian dialects from inscriptions.

The word structures Pre-Angkorian and Angkorian dialects are presented in this study as follows:

-1. Monosyllable

a. CV(C), the monosyllable with simple initial is also the simplest form of word.

b. CCV(C)

c. CCCV(V), three place-initial sequences is based on the restricted nature of the second consonant as follows:

- nasal (preceded by the anaptyctic vowel as structure of CNCV(C).

- r/l (usually r is followed and l preceded by the anaptyctic vowel but is not always so) the structure as Cr/lCV(C).

d. CCCC(C), four place initial consonants do occur and a large proportion have h or r in the fourth place.

In this structure it will be observed that all the examples have the formula as follows.

-CNCCV(C)

-Cr/lNCV(C) or CNr/lCV(C)

-2. Disyllable

She defined the main structure of disyllable as

(C)(C)(C)CV(V)-(C)(C)(C)CV(C). She found the structure of the disyllable to be as follows.

- a. (C)CV(C)-CV(C)
- b. CV(C)-CV(C)
- c. CCCV(C)-CCCV(C)

1.8.2. Richard B. Noss (1966); The Treatment of */R/ in two Modern Khmer dialects, this article presents the phoneme /R/ as it appears in Standard Cambodian and the Khmer dialects around the national capital Phnom Penh. The assumption of the writer is that the phoneme /R/ in written language corresponds to an /r/ in spoken language. The outstanding point here is that the phoneme /r/ occurs in standard Khmer while Phnom Penh dialect it does not.

The effect of */r/ in the Standard Khmer has varied as follows:

-The normal reflex of */r/ as single initial consonant in a stressed syllable is a voiced pharyngeal spirant /H/.

-The reflex of stressed */Xr/ (X is initial consonant) is no clear occurrence of /H/.

-Initial and clustered */r/ in unstressed syllables are totally lost in Phnom Penh dialect.

It was found that the rising tone in Phnom Penh dialect is in a historical sense and it is the feature of this dialect which corresponds in all words to inherited stressed */r/.

1.8.3. Robert K. Headley, Jr. Kylin Chhor and et al (1977), this study aims to present the Cambodian-English Dictionary, thus they analysed the pronunciation system in Cambodian as follows.

Consonants

-Stop p b t d c k g ?

-Spirants (f) v s z ž y h

-Nasals m n ñ ŋ

-Flap r

-Lateral l

It found that /b/ and /d/ are normally preglottalized. The voiceless stops are normally aspirated in syllable initial position preceding other voiceless stops, except /ʔ/, and sonorants. /v/ has two distinct allophones: [β] a voiced bilabial spirant in free variation with [v] (voiced labiodental spirant) which occurs in initial and final position. In the final position it usually approaches [w] with little or labial articulation, especially after [a] or [ə]. The second allophone is [u] a non-syllabic voiced vocoid which occurs prevocally as the second member of a consonant cluster.

The voiced velar stop /g/, the voiced dental spirant /z/, and the voiced palatal spirant /ž/ only occur loan words from French.

Vowels

There are two types of vowel phoneme: simple and complex vowels as follows.

-Simple Vowel Phonemes

/i, ii, e, ee, ε, εε, a, aa, i, ii, ə,
əə, u, uu, o, oo, ɔ, ɔɔ, ɑ, ɑɑ /

-Complex Vowel Phonemes

/ ie, ae, ao, iə, aə, ea, ia, uə, oa, ɔə /

Word Structure

The word structure in this study is couched in a normal Mon-Khmer pattern: C(C)V(F) or C(C)V(C)-C(C)V(F).

1.8.4. Kanchana Nacaskul (1978); The Syllabic and Morphological Structure of Cambodian words. She mentions that the morphological processes which most Cambodian words have

undergone in the past. It was found that the characteristic word-forms of Cambodian are monosyllables and disyllables. There are two types of syllable: major syllable and minorsyllable. The major syllable can occur freely by itself whereas minor syllable must be followed immediately by a major syllable in the same word.

-Major syllable

She gave the two patterns as: Iⁿ V and I V F

I is short form of initial consonant and F is final consonant, V is vowel (long or short) and R is register. She attempted to divide the register on vowels which were signaled by the consonant sets, its patterns are as follows.

- | | | |
|-------------------------|-----|-----------------------|
| 1. CVV ^{n1/2} | and | CCVV ^{n1/2} |
| 2. CVC ^{n1/2} | and | CCVC ^{n1/2} |
| 3. CVVC ^{n1/2} | and | CCVVC ^{n1/2} |

-Disyllabic Words

There are three types of disyllabic word. The first one is the first syllable which takes a weak stress and the major syllable that takes strong stress.

- 1. CV'CVV, CrV'CVV, CV'CCV, CV'CVC, CrV'CVC,
CV'CCVVC, CrV'CCVC
- 2. In this type the minor syllable consist CVN^{1/2}.
CVN^{n1'}CVVⁿ², CVN^{n1'}CVVⁿ², CVN^{n1'}CCVVⁿ², CVN^{n1'}CVCⁿ²,
CVN^{n1'}CVVCⁿ², CVN^{n1'}CCVVCⁿ², CVN^{n2'}CVVCⁿ²

-3. For this type the two syllables comprise two successive syllables of any of the types previously described for the monosyllable, with equal stress on each.

1.8.5. David Thomas and Wanna Tienmee (1990); An Acoustic Study of Northern Khmer Vowels. This study attempts to make spectrograms of each utterance of vowels in the environments of PVV, PVVP, PVP (P is the consonant before and after the vowels). The vowels tested are / ia, wa, ua, i, u, ɪ, ʏ, ɒ, e, ə, o, ɛ, ʌ, a, ɔ, ɑ / . Most were done at 80-8,000 Hz range but some, especially back vowels were done at 40-4,000 Hz. The results are shown in the spectrogram reading of different frequencies in each vowels.

1.8.6. Suwilai Premsrirat (1995); Phonetic variation of final trill and final palatals in Khmer dialects of Thailand, this paper presents the outstanding final consonants of Khmer dialects in Thailand. She had collected the data from 37 amphoes (district) of 10 provinces in the East and Northeast of Thailand. It was a geographical survey and tried to collect from informants in as many places as possible without the social variables of age, sex, status and education.

The result of distributions gives quite interesting perspective in Khmer dialects as follows.

-Final trill: In Most Khmer varieties spoken in Thailand final /_r/ is pronounced but in some locations it is dropped (∅), in some area final /_r/ in some words has been changed to /_l, _n, _j /.

-Final palatal nasal: For this phoneme in certain areas /_p/ is used but in other areas /_ŋ/ is used.

-Final palatal stop: The final /_c/ represents two thirds of all occurrences, whereas final /_k/ occurs in about one third, and final /_ʔ/ only occurs in a few locations. Furthermore, final /_k/ can vary with /_ʔ/ or the final consonant can reduce to ∅. In some words final /_ʔ/ can vary with /_k/.

Her study was carried out with 90 lexical items and took Surin Khmer as the base.

Her last topic was comparison with Modern Cambodian Khmer which is based on from written language. It found that the phoneme /_r/, /_p/, /_ŋ/, /_c/ and /_k/ can vary in some contexts of long and short vowels.

1.8.7. Krissana Yodmongkhol (1986); The Phonology of Northern Khmer Tambon Prakhonchai, Amphoe Prakhonchai, Buriram Province. For this dialect the study area is near by Khmer Surin. She found the the linguistic features as follows.

-The Phoneme

There are 21 consonant phonemes: / p, t, k, ʔ, p^h, t^h, k^h, b, d, ʈ, ʈ^h, s, h, m, n, ɲ, l, r, j, w /, they can occur finally except for / p^h, t^h, k^h, b, d, ʈ^h, s /.

There are 13 single short vowels: / i, ɪ, e, ɛ, ɯ, ə, ʌ, a, u, ɔ, o, ɔ, ɒ / and 14 single long vowels: / i:, ɪ:, e:, ɛ:, ɯ:, v:, ə:, ʌ:, a:, u:, ɔ:, o:, ɔ:, ɒ:/ Three short diphthongs were found and one long diphthong: /iə, i:ə, əɯ, əə /

-The Syllable

There are two types of syllable in this dialect, they are the major syllable and the minor syllable. The classes of syllable are nuclear and peripheral syllable. The major syllable always takes strong stress and the minor syllable takes weak stress.

-The phonological word

There are monosyllabic word and disyllabic word with three types of non-contrastive stress; strong stress, weak stress, and non-stress.

-The Intonation Group

In this study was found that they are three types of intonation contour: falling contour, rising contour, and rising-falling contour.

1.8.8. Prakorb Phon-ngam (1987), A Phonological Comparison of Spoken Central Khmer (Phnom Penh) and Northern Khmer (Surin). His study was found that the two dialects are similar. There are some differences between their intonations, syllable structures, and vowel phonemes. However, the speakers of the two dialects can understand each other as follows.

-Comparison of Intonation Groups

There are three types of intonation groups in both dialects: the falling contour, the rising contour, and the high level contour, but the rising-falling contour can occur only in Northern Khmer. Intonation in Central Khmer is also affected by politeness, formality or informality but this does not occur in Northern Khmer.

-Comparison of The Phonological Words

The phonological words in both dialects may have one or two syllables. The major syllable of the disyllabic words in these two dialects is the last syllable.

-Comparison of Phonemes

There are three types of syllables in Northern Khmer: major syllable minor syllable and presyllable, but there are only the major syllable and minor syllable in Central Khmer.

-Comparison of Phonemes

Both dialects have 17 consonant phonemes as / p, t, c, k, ʔ, b, d, s, h, m, n, ɲ, ɳ, l, r, w, j, /. The phonemes /b, d, s/ can not occur finally. It found that the final consonant / r / can occur finally only in Northern Khmer.

It structures in patterns as follows:

	Central Khmer	Northern Khmer
a. Major syllable	-C(C)V -C(C)VC	-C(C)(C)V -C(C)(C)(C)VC
b. Minor syllable	-C(C)V -C(C)VC	-CV -C(C)VN
c. Presyllable	----- -----	-Cə~C"ə -N

There are contrasts between short and long vowels in both dialects. There are 36 vowel phonemes in Central Khmer: 27 monophthongs and 9 diphthongs. There are 33 vowel phonemes in Northern Khmer 28 monophthongs and 5 diphthongs as follows.

Central Khmer: /i, i:, ɨ, ɨ:, u, u:, ɪ, ɪ:, ʏ, ʏ:, ɔ, ɔ:, e, e:, ə, ə:, o, o:, a, a:, ɛ, ɛ:, ʌ, ʌ:, ɔ, ɔ:, ɒ, ɒ:, i:a, ɨ:a, ua, u:a, ea, o:a, a:ɛ, a:ʌ, a:ɔ/

Northern Khmer: /i, i:, ɨ, ɨ:, u, u:, ɪ, ɪ:, ʏ, ʏ:, ɔ, ɔ:, e, e:, ə, ə:, o, o:, a, a:, ɛ, ɛ:, ʌ, ʌ:, ɔ, ɔ:, ɒ, ɒ:, ia i:a, ɨa, ua, u:a, /

CHAPTER II

PHONEME

1. Definition

The phoneme is the minimal unit in the sound system of a language. A phoneme is defined as the rank level whose units function in the syllable. It is the lowest rank in the phonological hierarchy which is capable of differentiating one word from another, because it is the smallest unit of speech.

The phonemes of Khmer Ban Nawattai dialect are defined as the rank at which the units function in the syllable. It is the lowest rank of the hierarchy.

The phonemes described here are consonants and vowels.

2. Consonant Phonemes

2.1. Single Initial Phonemes

The consonant system of Ban Nawattai Khmer dialect has 17 phonemes as shown in the Table below:

Place of Articulation	Labial	Alviolar	Palatal	Velar	Glottal
Manner of Articulation					
Stops					
vl.	p	t	c	k	ʔ
Implosives					
vd.	ɓ	ɗ			
Fricatives					
vl.		s			h
Nasals					
vd.	m	n	ɲ	ŋ	
Lateral		l			
Trill		r			
Semi-vowels					
vd.	w		j		

Table 1. The Consonant Phonemes of Ban Nawattai Khmer Dialect.

2.2. Function and Class

The consonant phonemes function as the periphery of the syllable and may be divided into 5 classes according to their position in the syllable and may be represented in the structural formula as / C₁(C₂)(C₃)(C₄)V(:)(v)(C₅) /.

2.2.1. Class 1 (C_1) Initial Consonants

All consonants can occur in the initial position of the syllable.

2.2.2. Class 2 (C_2) Cluster-second Consonants

This class functions as the second member of the initial consonants cluster and consists of / p, t, c, k, ʔ, ʃ, d, s, h, m, n, ɲ, l, r, w, j /.

2.2.3. Class 3 (C_3)

It functions as the third consonant in the initial consonants cluster and consists of / p, t, c, k, ʃ, s, h, m, n, ɲ, l, r, w, j / phonemes.

2.2.4. Class 4 (C_4)

It function as the fourth consonant in the initial consonants cluster and consists only / h, l /.

2.2.5. Class 5 (C_5)

This class functions as the final consonant of the syllable and can be divided into two sub-types according to:

-1. The final consonants of major syllable which consist of all initial consonants except for / ʃ, d, s, r / which never occur as the finals.

-2. The final consonants of minor syllable which consist of / t, ʔ, h, m, n, ɲ, l, w, j /.

2.2. Formational Statements of Khmer Ban Nawattai Dialect Consonants

/ p / has two allophones, [p] and [p̚]

[p] is a voiceless bilabial unaspirated stop. It occurs in syllable initial position, and as the second and third members of a consonant cluster.

/ pi: /	['pi:²]	" two "
/ pi:ruh /	[,pi:¹. 'ruʰ³]	" to be melodious "
/ pec /	['pec³]	" diamond "
/ ppe: /	['p̚pe:²]	" to soothe "
/ tpsɿ /	['t̚psɿ²]	" young bamboo, swamp "
/ chphɔ:ʔ /	['ch̚p̚ɔ:ʔ³]	" speciality "

[p̚] is a voiceless bilabial unaspirated unreleased stop.

It occurs in syllable final position.

/ pi:p /	['pi:p̚³]	" a kerosene can (ឃ្នា) "
/ sti:ap /	['s̚ti:ap̚³]	" to fondle, to stroke "
/ ŋkɛ:p /	[,ʔ̚ŋ¹. 'kɛ:p̚³] ~ [,ŋ¹. 'kɛ:p̚³]	" a frog "
/ bɛ:p /	['bɛ:p̚³]	" form "
/ sɔ:p /	['sɔ:p̚³]	" to inspect "

/ t / has two allophones, [t] and [t̚]

[t] is a voiceless alveolar unaspirated stop.

It occurs syllable initially and as the second and third members of consonant cluster.

/ tpe:k /	['t̚pe:k̚³]	" to be bald "
/ tse: /	['t̚se:²]	" to write "
/ ti:a /	['ti:a²]	" a duck "
/ ta:e /	['ta:e²]	" but "
/ ta:ɔŋ /	['ta:ɔŋ²]	" to tow "

/ pthaw /	['p ^ə t ^h aw ²]	" axe "
/ pteh /	['p ^ə te ^h 3]	" country "
/ phtal /	['ph ^ə tal ²]	" a bowl "
/ phtsh /	['p ^h ts ^h 3]	" house "

[t̥] is a voiceless alveolar unaspirated unreleased stop,

It occurs in syllable finally.

/ lɲit /	['l ^ə ɲit ³]	" dim "
/ lit /	['lit ³]	" to lick "
/ caŋst /	[.caŋ ¹ .rɛt ³]	" cricket "
/ kat /	['kat ³]	" to cut "
/ bat /	['bat ³]	" to lose, to go over "

/ c / has two allophones, [c] and [c̥].

[c] is a voiceless palatal unaspirated stop. It occurs in syllable initial position and as the second and the third members of consonant cluster.

/ cka: /	['c ^ə ka: ²]	" chin "
/ chə: /	['chə: ²]	" tree "
/ ci: /	['ci: ²]	" fertilizer "
/ pruj /	['p ^ə ruj ²]	" mold mark "
/ kcɔ? /	['k ^ə ɔ? ³]	" mirror "
/ phchu:a /	['ph ^ə c ^h u:a ²]	" to set "
/ phcuh /	['ph ^ə cu ^h 3]	" storm "

[c̥] is a voiceless palatal unaspirated unreleased stop.

It occurs in syllable the final position.

/ m̥ec /	['m̥ec ³]	" the fruitfly "
/ w̥ec /	['w̥ec ³]	" to wrap "
/ c̥b̥sc /	['c̥b̥sc ³]	" to press, to massage "
/ s̥ac /	['s̥ac ³]	" meat "

/ tu:c / ['tu:c³] " to be small "

/ k / has two allophones, [k] and [k'].

[k] is a voiceless velar unaspirated stop. It occurs in syllable initial position and as the second and third members of consonant cluster.

/ kɔ: /	['kɔ: ²]	" couple, ox "
/ kok /	['kok ³]	" a heron "
/ ko:n /	['ko:n ²]	" child "
/ pkon /	['p ^ə kon ²]	" toilet "
/ pkuŋ /	['p ^ə kuŋ ²]	" roof frame "
/ cka: /	['c ^ə ka: ²]	" chin "
/ ckuŋ /	['c ^ə kuŋ ²]	" knee "
/ ska: /	['s ^ə ka: ²]	" the scale of fish "
/ phkap /	['ph ^ə kap ³]	" to turn over "
/ phka: /	['ph ^ə ka: ²]	" flower "
/ thki:am /	['th ^ə ki:am ²]	" molar teeth "

[k'] is a voiceless velar unaspirated unreleased stop. It occurs in syllable final position.

/ kok /	['kok ³]	" a heron "
/ phtuk /	['ph ^ə tuk ³]	" to transport, to load "
/ tpe:k /	['t ^ə pe:k ³]	" to be bald "
/ tu:k /	['tu:k ³]	" boat "
/ kʔa:ek /	['k ^ə ʔa:ek ³]	" crow "

/ ʔ / [ʔ] is a glottal stop. It occurs in the syllable initial and final positions and as the second member of consonant clusters.

/ ʔam /	['ʔam ²]	" aunt "
/ ʔo:h /	['ʔo:h ³]	" to drag "

/ ʔɔ:j /	['ʔɔ:j ²]	" to give "
/ pʔɛ:m /	['p ^ə ʔɛ:m ²]	" to be sweet "
/ pʔo:m /	['p ^ə ʔo:m ²]	" to go sour "
/ cʔɛ:t /	['c ^ə ʔɛ:t ³]	" to be full "
/ kʔɔ:ʔ /	['k ^ə ʔɔ:ʔ ³]	" to cough "
/ ptaʔ /	['p ^ə taʔ ³]	" to collide "
/ phɔʔ /	['phɔʔ ³]	" mud "
/ tɕɛʔ /	['t ^ə ɕɛʔ ³]	" freeze "

/ ʙ / [ʙ] is a voiced bilabial implosive which can occur syllable initially and as the second and the third member of consonant clusters.

/ ʙɛ:c /	['ʙɛ:c ³]	" to break "
/ ʙəj /	['ʙəj ²]	" three "
/ ʙap /	['ʙap ²]	" to shoot "
/ pʙɔ: /	['p ^ə ʙɔ: ²]	" gruel "
/ pʙu:an /	['p ^ə ʙu:an ²]	" to persuade "
/ tʙɛ:k /	['t ^ə ʙɛ:k ³]	" guava "
/ khʙu:an /	['kh ^ə ʙu:an ²]	" parade "

/ ɖ / [ɖ] is a voiced alveolar implosive and occurs in the syllable initial position and as the second members of a consonant cluster.

/ ɖɛp /	['ɖɛp ²]	" to chase "
/ ɖac /	['ɖac ³]	" to tear "
/ ɖot /	['ɖot ³]	" to burn "
/ pɖom /	['p ^ə ɖom ²]	" to spin "
/ pɖəj /	['p ^ə ɖəj ²]	" husband "
/ sɖap /	['s ^ə ɖap ³]	" to listen "

/ s / [s] is a voiceless alveolar fricative. It occurs in the initial position, and as the second and third member of a cluster.

/ spsh /	['s ^ə ps ^{h3}]	" to respect by putting both hand together "
/ spm: /	['s ^ə pm: ²]	" a carambolar (ကးဇီဝါဂ) "
/ sɔ: /	['sɔ: ²]	" white "
/ psa: /	['p ^ə sa: ²]	" son-in-law, language "
/ psat /	['p ^ə sət ³]	" navel "
/ ksɛ: /	['k ^ə sɛ: ²]	" rope "
/ phsma: /	['ph ^ə s ^ə ma: ²]	" shoulder "
/ phsɛ:ŋ /	['ph ^ə sɛ:ŋ ²]	" snake "

/ h / [h] is a voiceless glottal fricative and occurs in syllable initial and final positions, and as the second and third members of a consonant cluster.

/ hɛ:l /	['hɛ:l ²]	" to swim "
/ ha: /	['ha: ²]	" to open (mouth) "
/ hɔ:c /	['hɔ:c ³]	" to whistle "
/ phɛ:h /	['phɛ:h ³]	" ash "
/ phu:m /	['phu:m ²]	" place "
/ chmoh /	['ch ^ə mo ^{h3}]	" nose "
/ pphu:m /	['p ^ə phu:m ²]	" spirit house "
/ kthɔ: /	['k ^ə thɔ: ²]	" a chamber pot "
/ khtɔh /	['kh ^ə tɔ ^{h3}]	" a poke "
/ khmah /	['kh ^ə ma ^{h3}]	" to be shy "
/ sɛh /	['sɛh ³]	" horse "

/ m / has two allophones, [m] and [m̥]

[m] is a voiced bilabial nasal. It occurs in the syllable initial and final positions and as the second ,

third and fourth members of a consonant cluster.

/ nan /	['nan ²]	" not, no "
/ nu: /	['nu: ²]	" roll "
/ na:ə /	['na:ə ²]	" to see, to watch "
/ nneɕ /	['n ^ə nneɕ ³]	" a fruitfly "
/ knon /	['k ^ə n ^ə on ²]	" girl "
/ lpun /	['l ^ə p ^ə un ²]	" to smile "
/ pʔɛ:n /	['p ^ə ʔɛ:n ²]	" to be sweet "
/ tma:t /	['t ^ə ma:t ³]	" vulture "
/ kme:ŋ /	['k ^ə me:ŋ ²]	" children "
/ thmip /	['th ^ə mip ²]	" teeth "
/ chmo:l /	['ch ^ə mo:l ²]	" male animal "
/ khma:e /	['kh ^ə ma:e ²]	" Khmer "
/ phsma: /	['ph ^ə s ^ə ma: ²]	" shoulder "

[n̄] is a voiced syllabic nasal. It can occur syllable initially in disyllabic words before / p, b, m / [p, b, m].

/ npe:c /	[, ^{7ə} n̄. ¹ pe:c ³ ~ n̄. ¹ pe:c ³]	" now "
/ npul /	[, ^{7ə} n̄. ¹ pul ² ~ n̄. ¹ pul ²]	" tamarind "
/ nbel /	[, ^{7ə} n̄. ¹ bel ² ~ n̄. ¹ bel ²]	" salt "
/ nba:ɔ /	[, ^{7ə} n̄. ¹ ba:ɔ ² ~ n̄. ¹ ba:ɔ ²]	" butterfly "
/ nmip /	[, ^{7ə} n̄. ¹ mip ² ~ n̄. ¹ mip ²]	" moment of time "

/ n / has two allophones, [n] and [n̄]. It occurs in both syllable initial and final positions and as the second and the third member of consonant cluster.

/ na: /	['na: ²]	" where? "
/ nih /	['ni ^{h3}]	" this "
/ nuh /	['nu ^{h3}]	" that "
/ nin /	['nin ²]	" a blue sapphire "

/ cen /	['cen ²]	" Chinese "
/ kan /	['kan ²]	" to hand "
/ knoŋ /	['k ^o noŋ ²]	" inside, room "
/ kni:a /	['k ^o ni:a ²]	" friend "
/ sno:k /	['s ^o no:k ²]	" pig's trough "
/ phne:k /	['ph ^o ne:k ²]	" eye "
/ chnɔt /	['ch ^o ɔt ²]	" kind, sort "
/ chnu:al /	['ch ^o nu:al ²]	" to hire "

[n] is a voiced alveolar syllabic nasal. It can occur syllable initially in disyllabic words before / t, d, c, s, j / [t, d, c, s, j].

/ ntnu: /	[, ^{7o} n ¹ .t ^o nu: ² ~ n ¹ .t ^o nu: ²]	" rainbow "
/ nds:c /	[, ^{7o} n ¹ .ds:c ³ ~ n ¹ .ds:c ³]	" to float "
/ nda:t /	[, ^{7o} n ¹ .da:t ³ ~ n ¹ .da:t ³]	" tongue "
/ ncsm /	[, ^{7o} n ¹ .csm ² ~ n ¹ .csm ²]	" to take care of "
/ ncu:n /	[, ^{7o} n ¹ .cu:n ² ~ n ¹ .cu:n ²]	" to transport "
/ nsa:j /	[, ^{7o} n ¹ .sa:j ² ~ n ¹ .sa:j ²]	" a rabbit "
/ nji:aj /	[, ^{7o} n ¹ .ji:aj ² ~ n ¹ .ji:aj ²]	" to say "

/ ɲ / [ɲ] is a voiced palatal nasal and can occur in both the initial and final positions and as the second and third members of consonant cluster.

/ ɲi: /	['ɲi: ²]	" female animal "
/ ɲə:h /	['ɲə:h ³]	" sweat "
/ ɲuh /	['ɲuh ³]	" to incite "
/ thɲip /	['th ^o ɲip ²]	" teeth "
/ tɲɪp /	['tɲɪp ³]	" to buy "
/ mde:ɲ /	['m ^o de:ɲ ²]	" a galigale (งู) "
/ kɲaj /	['k ^o ɲaj ²]	" ginger "
/ phɲs? /	['ph ^o ɲs? ³]	" to get up "

/ phpa:ə / ['ph^hpa:ə²] " to deposit "

/ ŋ / has two allophones, [ŋ] and [ŋ̥].

[ŋ] is a voiced velar nasal. It occurs both in syllable initial and final positions and as the second and the third members of consonant cluster.

/ ŋək /	['ŋək ²]	" to nod "
/ ŋə:t /	['ŋə:t ²]	" to crane "
/ ŋap /	['ŋap ²]	" to die "
/ plŋ /	['p ^h lŋ ²]	" soul "
/ rŋ /	['rŋ ²]	" to be hard "
/ kha:ŋ /	['kha:ŋ ²]	" side "
/ tŋɔ:l /	['t ^h ŋɔ:l ²]	" to be bald "
/ kŋa:n /	['k ^h ŋa:n ²]	" a goose "
/ rŋi:aw /	['r ^h ŋi:aw ²]	" to crow "
/ thŋa: /	['th ^h ŋa: ²]	" black scorpion "
/ phŋs? /	['ph ^h ŋs? ²]	" to take aback(၈၃း)"
/ chŋa:ɔ /	['ch ^h ŋa:ɔ ²]	" curry "

[ŋ̥] is a voiced velar syllabic nasal. It can occur syllable initially in disyllabic words before / t, c, ʔ, d, s, l, r, w /

/ ŋtuŋ /	[² ŋ̥ ¹ . 'tuŋ ² ~ ŋ̥ ¹ . 'tuŋ ²]	" an eel "
/ ŋci:an /	[² ŋ̥ ¹ . 'ci:an ² ~ ŋ̥ ¹ . 'ci:an ²]	" a ring "
/ ŋkuj /	[² ŋ̥ ¹ . 'kuj ² ~ ŋ̥ ¹ . 'kuj ²]	" to sit "
/ ŋʔs:l /	[² ŋ̥ ¹ . 'ʔs:l ² ~ ŋ̥ ¹ . 'ʔs:l ²]	" to fondle "
/ ŋdo:ŋ /	[² ŋ̥ ¹ . 'do:ŋ ² ~ ŋ̥ ¹ . 'do:ŋ ²]	" well "
/ ŋsɔ:m /	[² ŋ̥ ¹ . 'sɔ:m ² ~ ŋ̥ ¹ . 'sɔ:m ²]	" dew "
/ ŋlu? /	[² ŋ̥ ¹ . 'lu? ² ~ ŋ̥ ¹ . 'lu? ²]	" vegetable "
/ ŋrun /	[² ŋ̥ ¹ . 'run ² ~ ŋ̥ ¹ . 'run ²]	" to swing(the leg)"
/ ŋwe:l /	[² ŋ̥ ¹ . 'we:l ² ~ ŋ̥ ¹ . 'we:l ²]	" to lose "

/ l / [l] is a voiced alveolar lateral approximant. It occurs in both syllable initial and final positions, and as the second and the third members of consonant clusters.

/ lit /	['lit ³]	" to lick "
/ li: /	['li: ²]	" to carry on shoulder "
/ lw: /	['lw: ²]	" to hear "
/ wil /	['wil ²]	" to turn around "
/ hs:l /	['hs:l ²]	" to swim "
/ phtal /	['ph ^ə tal ²]	" a bowl "
/ plon /	['p ^ə lon ²]	" to rob "
/ tlop /	['t ^ə lop ³]	" a kind of tree(ต้นพลับ) "
/ cli: /	['c ^ə li: ²]	" to crush "
/ phls: /	['ph ^ə ls: ²]	" fruit "
/ khlah /	['kh ^ə la ^{h3}]	" some "

/ r / [r] is a voiced alveolar trill. It occurs in syllable initial position and as the second and the third members of consonants clusters.

/ ri:k /	['ri:k ³]	" to bloom "
/ rwh /	['rwh ^{h3}]	" or "
/ rut /	['rut ³]	" to kneel "
/ pre:ŋ /	['p ^ə re:ŋ ²]	" oil "
/ tram /	['t ^ə ram ²]	" to soak "
/ cruh /	['c ^ə ru ^{h3}]	" brook "
/ ktrɔ:ʔ /	['k ^ə t ^ə rɔ:ʔ ³]	" fish bamboo container, a fish-trap "
/ kkrɔh /	['k ^ə k ^ə rɔ ^{h3}]	" to be harsh "
/ ppri:a /	['p ^ə p ^ə ri:a ²]	" kind of tree(ไม้สาธ)"

/ w / [w] is a voiced bilabial semi-vowel. It occurs in syllable initial and final positions and as the second

[C₁C₂C₃] and four consonants / C₁C₂C₃C₄ / [C₁C₂C₃C₄].

2.3.1. Type 1 Two Consonants / C₁C₂/

C ₂	p	t	c	k	ʔ	b	d	s	h	m	n	ɲ	l	r	w	j	
C ₁																	
p	X	X	X	X	X	X	X	X	X		X		X	X		X	
t	X	X	X	X		X	X	X	X	X	X		X	X	X		X
c				X	X	X	X		X	X			X	X	X		
k	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
s	X	X		X	X	X	X			X	X		X	X	X	X	
m		X	X				X	X	X	X	X				X		X
l	X			X	X	X			X	X		X	X	X		X	
r	X					X		X			X		X	X		X	X

Table 2: The Distribution of Two Consonant clusters

-Formation Statement of Consonant Clusters of Type 1.

The consonants occur word initially as the phonemes / p, t, c, k, s, m, l, r / which can occur as the first segment in two consonant clusters.

/ p / is the first Consonant / C₁ / that precedes the consonants

/ p, t, c, k, ʔ, b, d, s, h, n, l, r, j / as below.

/ ppon /	['p ^ə pon ²]	" wife "
/ pteh /	['p ^ə te ^{h3}]	" country "
/ pcoh /	['p ^ə co ^{h3}]	" satirize "
/ pkon /	['p ^ə kon ²]	" toilet "
/ pʔo:m /	['p ^ə ʔo:m ²]	" to go sour "
/ pɸo: /	['p ^ə ɸo: ²]	" gruel "
/ pdəj /	['p ^ə dəj ²]	" husband "
/ psat /	['p ^ə sət ³]	" navel "
/ phe:h /	['phe: ^{h3}]	" ash "
/ pnaw /	['p ^ə naw ²]	" bel fruit (มะขาม) "
/ plaʔ /	['p ^ə laʔ ³]	" to stain "
/ pruk /	['p ^ə rʉk ³]	" morning "
/ pju:a /	['p ^ə ju:a ²]	" to hang "

/ t / is the first consonant / C₁ / that precedes the consonants

/ p, t, c, k, b, d, s, h, m, n, ŋ, l, r, j / as follows.

/ tps:t /	['t ^ə ps:t ³]	" to be flat "
/ ttep /	['t ^ə tep ²]	" to grumble, to recite "
/ tcol /	['t ^ə col ²]	" a kind of herbal plant (ต้นเล็บเทย) "
/ tkəw /	['t ^ə kəw ²]	" worm "
/ tɸo:l /	['t ^ə ɸo:l ²]	" roof "
/ tɸo: /	['t ^ə ɸo: ²]	" to shake "
/ that /	['that ³]	" to be fat "

/ tma:t /	['t ² ma:t ³]	" vulture "
/ tnam /	['t ² nam ²]	" to cook (rice) "
/ tɲo:l /	['t ² ɲo:l ²]	" to be bald, to be shaven "
/ tlo:m /	['t ² lo:m ²]	" to reek "
/ tram /	['t ² ram ²]	" to soak "

/ c / is the first consonants / C₁ / that precedes the consonants

/ k, ʔ, β, d, h, m, ŋ, l, r / as follows.

/ ckɯŋ /	['c ² kuŋ ²]	" knee "
/ cʔa:ɔ /	['c ² ʔa:ɔ ²]	" to roast "
/ cβo:k /	['c ² βo:k ³]	" spear "
/ cdɔ: /	['c ² dɔ: ²]	" a kind of fish (ปลาชะโด) "
/ chɯ: /	['chɯ: ²]	" to hurt "
/ cmɔh /	['c ² mɔ ^{h3}]	" nose "
/ cɲap /	['c ² ɲap ²]	" to be delicious "
/ cli: /	['c ² li: ²]	" to crush "
/ cro:ŋ /	['c ² ro:ŋ ²]	" to shine "

/ k / is the first consonant element / C₁ / that precedes the consonants / p, t, c, ʔ, β, d, s, h, m, n, ŋ, l, r, w / as follows.

/ kpop /	['k ² pop ³]	" to drop, to fall "
/ kte:l /	['k ² te:l ²]	" mat "
/ kci:al /	['k ² ci:al ²]	" bamboo basket "
/ kʔo:p /	['k ² ʔo:p ³]	" to be a good smell "
/ kβa:el /	['k ² βa:el ²]	" a ray fish "
/ kdec /	['k ² dec ³]	" to pinch "
/ ksac /	['k ² sac ³]	" sand "
/ khom /	['khom ²]	" to be warm "
/ kmi:al /	['k ² mi:al ²]	" to wallow "
/ knoŋ /	['k ² nɔŋ ²]	" inside, room "

/ kɲaj /	['k ^ə ɲaj ²]	" ginger "
/ kɲa:n /	['k ^ə ɲa:n ²]	" a goose "
/ klɔ: /	['k ^ə lɔ: ²]	" a jar "
/ kro:c /	['k ^ə ro:c ³]	" orange "
/ kwan /	['k ^ə wan ²]	" kind of herbal plant (ต้นหญ้ามีดอก) "

/ s / is the first consonant / C₁ / that precedes the consonants

/ p, t, k, ʔ, b, d, m, n, ŋ, l, r, w / as follows.

/ spot /	['s ^ə pot ³]	" cloth "
/ sti:ap /	['s ^ə ti:ap ³]	" to stroke "
/ skon /	['s ^ə kon ²]	" a stem of water lily "
/ sʔɔp /	['s ^ə ʔɔp ³]	" to disgust "
/ sbow /	['s ^ə bow ²]	" a kind of grass "
/ sɔɰh /	['s ^ə ɔɰ ^{h3}]	" to spit "
/ sma:ɔl /	['s ^ə ma:ɔl ²]	" shadow "
/ sna:ɛŋ /	['s ^ə na:ɛŋ ²]	" horn "
/ sɲa:p /	['s ^ə ɲa:p ³]	" to yawn "
/ slah /	['s ^ə lah ^{h3}]	" to be clear "
/ srah /	['s ^ə ra ^{h3}]	" pond "
/ swet /	['s ^ə wɛt ³]	" to addle "

/ m / is the first consonant / C₁ / that precedes the consonants

/ t, c, d, s, h, n, l, r, / as follows.

/ mte ^{h3} /	['m ^ə te ^{h3}]	" chili "
/ mcol /	['m ^ə col ²]	" a kind of fish (ปลาเค็ม) "
/ mde:ŋ /	['m ^ə de:ŋ ²]	" a galingale (ข่า) "
/ msaw /	['m ^ə saw ²]	" powder "
/ mho:p /	['m ^ə ho:p ³]	" food "
/ mnec /	['m ^ə nec ³]	" the fruitfly "
/ mnɰh /	['m ^ə nɰ ^{h3}]	" human "

/ mlo: /	['m ^o lu: ²]	" betel "
/ mrec /	['m ^o rec ³]	" pepper "
/ mja:ŋ /	['m ^o ja:ŋ ²]	" each of "

/ l / is the first consonant / C₁ / that precedes the consonants

/ p, k, ʔ, b, h, m, n, ŋ, l, w / as follows.

/ lpe:n /	['l ^o pe:n ²]	" kidney "
/ lksʔ /	['l ^o ksʔ ³]	" to be rough "
/ lʔnʔ /	['l ^o ʔnʔ ³]	" to be muddy, to be mucky "
/ lbo:t /	['l ^o bo:t ³]	" to slip off, to come off "
/ lhah /	['l ^o ha ^{h3}]	" to be rapid "
/ lmal /	['l ^o mal ²]	" a kind of insect, a hornet, a wasp "
/ lŋit /	['l ^o ŋit ³]	" dim "
/ lŋə: /	['l ^o ŋə: ²]	" to stumble "
/ llut /	['l ^o lut ³]	" to abort "
/ lwɪ:ŋ /	['l ^o wɪ:ŋ ²]	" to be bitter "

/ r / is the first consonant / C₁ / that precedes the consonants

/ t, b, s, n, ŋ, l, w, j / as follows:

/ rtsʔ /	['r ^o tsʔ ³]	" to be untidy "
/ rboh /	['r ^o bo ^{h3}]	" thing "
/ rsa: /	['r ^o sa: ²]	" to work hard "
/ rnoh /	['r ^o no ^{h3}]	" to harrow "
/ rŋi:a /	['r ^o ŋi:a ²]	" cold "
/ rwsŋ /	['r ^o wsŋ ²]	" to be careful "
/ rjsʔ /	['r ^o jsʔ ³]	" distant "

C_3	p	t	c	k	ʔ	ʙ	d	s	h	m	n	ɲ	ŋ	l	r	w	j
C_1C_2																	
pp									X						X		
pt									X						X		
pk									X								
ph		X	X	X				X			X	X	X	X			X
pr													X				
tt															X		
th				X						X	X		X	X		X	
tr			X														
ck															X		
ch				X						X	X		X	X			
kp									X						X		
kt									X						X		
kc									X						X		
kk															X		
kh	X	X	X			X				X	X	X		X		X	
rp									X								

Table 3: Distribution of three consonant clusters

From the table there are 46 clusters with the structure / $C_1C_2C_3$ / which are / pph, ppr, pth, ptr, pkn, pht, phc, phk, phs, phn, phɲ, phŋ, phl, phj, prŋ, ttr, thk, thm, thn, thŋ, thl, thw, trc, ckr, chm, chn, chŋ, chl, kph, kpr, ktb, ktr, kch, kcr, kkr, khp, kht, khc, khʙ, khm, khn, khp, khl,

khw, khj, rph, /.

/ pp / precedes / h, r /.

/ pphu:m / ['p^əphu:m²] " spirit house "

/ ppri:a / ['p^əp^əri:a²] " a kind of tree(ไม้จวง) "

/ pt / precedes / h, r /.

/ pthaw / ['p^əthaw²] " axe "

/ ptri:a / ['p^ət^əri:a²] " jujube "

/ pk / precedes / h /.

/ pkhɔ:ŋ / ['p^əkhɔ:ŋ²] " to prop up "

/ ph / precedes / t, c, k, s, n, ɲ,

ŋ, l, j /.

/ phtal / ['ph^ətal²] " a bowl "

/ phcu:a / ['ph^əc^hu:a²] " to plough "

/ phkap / ['ph^əkap³] " to turn over "

/ phsɛ:ŋ / ['ph^əssɛ:ŋ²] " smoke "

/ phnɔl / ['ph^ənɔl²] " to bet "

/ phpa:ə / ['ph^əpa:ə²] " to deposit "

/ phŋa: / ['ph^əŋa:²] " to turn up "

/ phlɔŋ / ['ph^əlɔŋ²] " truffle "

/ phji:at / ['ph^əji:at³] " parasite "

/ pr / precedes / ŋ /.

/ prŋŋ / ['p^ər^əŋŋ] " to complete "

/ tt / precedes / r /.

/ ttra: / ['t^ət^əra:] " alphabet "

/ th / precedes / k, m, n, ŋ, l, w /.

/ thki:am /	['th ^ə ki:am ²]	" molar teeth "
/ thmaj /	['th ^ə maj ²]	" to be new "
/ thnat /	['th ^ə nat ³]	" to be skillfull "
/ thŋon /	['th ^ə ŋon ²]	" to be heavy "
/ thlŋ /	['th ^ə lŋ ²]	" to be deaf "
/ thwi:a /	['th ^ə wi:a ²]	" door "

/ tr / precedes / c /.

/ trcia? /	['t ^ə r ^ə cia? ³]	" ear "
------------	--	---------

/ ck / precedes / r /.

/ ckra:om /	['c ^ə k ^ə ra:om ²]	" a kind of tree(ไม้คอก) "
-------------	---	----------------------------

/ ch / precedes / k, m, n, ŋ, l /.

/ chka:e /	['ch ^ə ka:e ²]	" a dog "
/ chma: /	['ch ^ə ma: ²]	" a cat "
/ chneʰ /	['ch ^ə ne ^{h3}]	" to win "
/ chŋol /	['ch ^ə ŋol ²]	" to doubt "
/ chlɔ:ŋ /	['ch ^ə lɔ:ŋ ²]	" to go across "

/ kp / precedes / h, r /.

/ kphaw /	['k ^ə phaw ²]	" thigh "
/ kpri:a /	['k ^ə p ^ə ri:a ²]	" orphan "

/ kt / precedes / h, r /.

/ kthw:an /	['k ^ə thw:an ²]	" to shake "
/ ktrɔ:ʔ /	['k ^ə trɔ:ʔ ³]	" fish bamboo container, a fish trap "

/ kc / precedes / h, r /.

- / kchu:aj / ['k^ochu:aj²] " a kind of plant (ต้นกล้วย) "
- / kcha:et / ['k^ocha:et³] " a kind of vegetable
(ผักกะเจต) "
- / kci:ap / ['k^oci:ap³] " a kind of melon (แตงกวา) "
- / kra:en / ['k^ora:en²] " a screen, a grate "

/ kk / precedes / r /.

- / kkrɔh / ['k^ok^ord^{h3}] " to be harsh "

/ kh / precedes / p, t, c, β, m, n, ɲ,
l, w, j /.

- / khpɔh / ['kh^opɔ^{h3}] " to be tall "
- / khtɛh / ['kh^otɛ^{h3}] " a pan "
- / khcu:ŋ / ['kh^ocu:ŋ²] " charcoal "
- / khβu:an / ['kh^oβu:an²] " parade "
- / khmo:t / ['kh^omo:t³] " a weevil "
- / khno:j / ['kh^ono:j²] " a pillow "
- / khnom / ['kh^onom²] " I (polite) "
- / khlap / ['kh^olap²] " fat "
- / khwah / ['kh^owa^{h3}] " to lack "
- / khja? / ['kh^oja?³] " garbage "

/ rp / preceds / h /.

- / rphi:an / ['r^ophi:an²] " opium "

2.3.3. Type 3 Four Consonants / C₁C₂C₃C₄ /.

There are only four clusters with four consonants, / phch, chph, kphl/ in which the fourth consonant is / h, l, / as follows:

- / phchu:a / ['ph^ochu:a²] " to set "

/ chphɔːʔ / [ˈchʰɔʔ³] " speciality "
 / kphlɛːŋ / [ˈkʰhlɛːŋ²] " gun "
 / kphliːaŋ / [ˈkʰhliːaŋ²] " cheek "



3. The Vowel Phonemes

The vowel phonemes are the nucleus of the syllable. There are 27 monophthongs and 8 diphthongs in Khmer Ban Nawattai dialect which are shown in the table below.

Monophthongs

	Front		Central		Back	
	Short	Long	Short	Long	Short	Long
High	i	i:	ɨ	ɨ:	u	u:
Mid-High	ɪ	ɪ:	ʏ	ʏ:	ɯ	ɯ:
Mid	e	e:	ə	ə:	o	o:
Mid-Low	ɛ	ɛ:	ʌ		ɔ	ɔ:
Low			a	a:	ɒ	ɒ:

Table 4. Vowel Phonemes in Ban Nawattai Dialect.

	Front		Central		Back	
	Short	Long	Short	Long	Short	Long
High	ia	i:a		ɯ:a	ua	u:a
Mid-High						
Mid						
Mid-Low						
Low		a:e		a:ə		a:ɔ

Table 5. Diphthongs in Ban Nawattai Dialect.

3.1. Description of Vowel Phonemes

The description of vowels will be according to their distribution in open and closed syllables. The vowels will be divided into two groups, monophthongs and diphthongs.

3.1.1. Monophthongs

-1. Front Vowels

There are 8 front vowels in this dialect ; short and long vowels are as follows.

/ i / [i] is a high front unrounded short vowel. It occurs only in the closed syllable.

/ lɔit /	['l ^ə ɔiɕ ³]	" dim "
/ lit /	['liɕ ³]	" to lick "
/ wil /	['wil ²]	" to turn around "

/ i: / [i:] is a high front unrounded long vowel. It occurs in both open and closed syllables.

/ pi: /	['pi: ²]	" two "
/ ni: /	['ni: ²]	" female animal "
/ ci:t /	['ci:t ³]	" to close up "
/ ri:k /	['ri:k ³]	" to bloom "

/ ɪ / [ɪ] is a mid-high front unrounded short vowel. It occurs only in the closed syllable.

/ tɪc /	['tɪc ³]	" to be little "
/ mɪh /	['m ^ə ɪ ^h ɕ ³]	" hair "
/ wɪp /	['wɪp ²]	" to return back "

/ ɪ: / [ɪ:] is a mid-high front unrounded long vowel. It occurs in both open and closed syllables.

/ ci: /	['ci: ²]	" fertilizer "
/ ni: /	['ni: ²]	" rice noodle "
/ li: /	['li: ²]	" to carry on shoulder "
/ wɪ:c /	['wɪ:c ³]	" curve "
/ crɪ:t /	['c ^ə rɪ:t ³]	" to be pale "
/ ni:ŋ /	['ni:ŋ ²]	" aunt "

/ e / [e] is a mid front unrounded short vowel. It occurs only in the closed syllable.

/ kbet /	['k ^ə bet ^ə]	" knife "
/ kec /	['ke ^ə c ^ə]	" to escape "
/ mteh /	['m ^ə te ^{hə}]	" chilli "

/ e: / [e:] is a mid-front unrounded long vowel. It occurs in both open and closed syllables.

/ ppe: /	['p ^ə pe: ^ə]	" to soothe "
/ tse: /	['t ^ə se: ^ə]	" to write "
/ de: /	['de: ^ə]	" to sew "

/ ɛ / [ɛ] is a mid-low front unrounded short vowel. It occurs only in the closed syllable.

/ cbɛ:c /	['c ^ə bɛ:c ^ə]	" to press, to massage "
/ pɛ? /	['pɛ? ^ə]	" to wear "
/ sɛh /	['sɛ ^{hə}]	" a horse "

/ ɛ: / [ɛ:] is a mid-low front unrounded long vowel. It occurs in both open and closed syllables.

/ phlɛ: /	['ph ^ə lɛ: ^ə]	" fruit "
/ ksɛ: /	['k ^ə sɛ: ^ə]	" rope "
/ c?ɛ:t /	['c ^ə ?ɛ:t ^ə]	" to be full "
/ srɛ:k /	['s ^ə rɛ:k ^ə]	" to scream "
/ phs:h /	['phs: ^{hə}]	" ash "

-2. Central Vowels

There are 9 central vowels : four long vowels and five short vowels.

/ ɨ / [ɨ] is a high central unrounded short vowel. It occurs only in the closed syllable.

/ pruk /	['p ² ruk ²]	" morning "
/ puh /	['pu ^{h3}]	" poisonous "
/ lpum /	['l ² pu ²]	" to smile "

/ u: / [u:] is a high central unrounded long vowel. It occurs both open and closed syllables.

/ chu: /	['chu: ²]	" pain "
/ ku: /	['ku: ²]	" to be "
/ lu: /	['lu: ²]	" to hear "
/ ?u:t /	['?u:t ³]	" to be swollen, to be stuffed up "

/ y / [y] is a mid-high central unrounded short vowel. It occurs only in the closed syllable.

/ phlvw /	['phlvw ²]	" the thigh "
/ spvj /	['spvj ²]	" a kind of vegetable (ผักกาด) "
/ rvh /	['rv ^{h3}]	" root "
/ rrvj /	['r ² rvj ²]	" to spin "

/ v: / [v:] is a mid-high central unrounded long vowel. It occurs only in the closed syllable.

/ tv:h /	['tv:h ^{h3}]	" to impede "
/ lv:h /	['lv:h ^{h3}]	" to be over "
/ rv:h /	['rv:h ^{h3}]	" to keep "

/ ə / [ə] is a mid central unrounded short vowel. It occurs only in closed syllables.

/ təp /	['təp ³]	" just "
/ mək /	['mək ³]	" octopus, squid "
/ təh /	['tə ^{h3}]	" to arrive "

/ ə: / [ə:] is a mid central unrounded long vowel. It occurs in both open and closed syllables.

/ thə: /	['thə:²]	" to make "
/ chə: /	['chə:²]	" tree "
/ mə: /	['mə:²]	" to see "
/ bə:t /	['bə:t³]	" to run "
/ lə:k /	['lə:k³]	" to weave "
/ rə:h /	['rə:h³]	" to choose "

/ ʌ / [ʌ] is a mid-low central unrounded short vowel. It occurs only in the closed syllable.

/ ʌp /	['ʌp³]	" to die "
/ psʌt /	['psʌt³]	" navel "
/ dʌk /	['dʌk³]	" to lead "

/ ʌ / [ʌ] is a low central unrounded short vowel. It occurs only in the closed syllable.

/ cap /	['cap³]	" to catch "
/ ksʌk /	['k³sʌk³]	" sand "
/ ?aŋ /	['ʔaŋ²]	" to roast "

/ a: / [a:] is a low central unrounded long vowel. It occurs in both open and closed syllable.

/ psa: /	['p³sa:²]	" son-in-law, language "
/ ta: /	['ta:²]	" grand-father "
/ cka: /	['c³ka:²]	" chin "
/ sa:p /	['sa:p³]	" to be fresh, to be tasteless "
/ ba:t /	['ba:t³]	" final particle for male affirmative response "
/ ka:c /	['ka:c³]	" to be fierce "

-3. Back Vowels

There are 10 back vowels : five are short and 5 long vowels.

/ u / [u] is a high back rounded short vowel. It occurs only in the closed syllable.

/ put /	['puɪ ³]	" Wednesday "
/ puk /	['puk ³]	" to rot "
/ lu? /	['lu? ³]	" to sell, to fall asleep "

/ u: / [u:] is a high back rounded long vowel. It occurs in both open and closed syllables.

/ tru:/	['t ^ə ru: ²]	" fish trap(罟) "
/ mu: /	['mu: ²]	" roll "
/ ju: /	['ju: ²]	" to be long(time) "
/ nu:t /	['nu:t ³]	" to bathe "
/ tu:c /	['tu:c ³]	" to be small "
/ tu:k /	['tu:k ³]	" boat "
/ pru:h /	['p ^ə ru:h ³]	" to sow "

/ ʊ / [ʊ] is a mid-high back rounded short vowel. It occurs only in closed syllables.

/ phʊ? /	['phʊ? ³]	" mud "
/ phlʊk /	['ph ^ə lʊk ³]	" ivory tusk of elephant "
/ tʊm /	['tʊm ²]	" to be ripe "

/ ɔ: / [ɔ:] is a mid-high back rounded long vowel. It occurs in both open and closed syllables.

/ pɔ: /	['pɔ: ²]	" mother's brother "
/ thɔ: /	['thɔ: ²]	" to be slack "
/ kɔ: /	['kɔ: ²]	" couple, ox "
/ rɔ:p /	['rɔ:p ³]	" picture "
/ hɔ:c /	['hɔ:c ³]	" to whistle "
/ mɔ:h /	['mɔ:h ³]	" mosquito "

/ o / [o] is a mid back rounded short vowel. It occurs only in closed syllables.

/ top /	['top ³]	" to tap "
/ dot /	['dot ³]	" to burn "
/ ?oc /	[' ?oc ³]	" to light "

/ o: / [o:] is a mid-low back rounded long vowel. It occurs only in closed syllables.

/ pɔ: /	['p ³ ɔ: ²]	" to change "
/ ho: /	['ho: ²]	" to flow "
/ jo: /	['jo: ²]	" to be curved "
/ po:p /	['po:p ³]	" to crouch (หมอบราบก้มพื้น) "
/ lɔ:t /	['l ³ ɔ:t ³]	" to slip off, to come off "
/ do:c /	['do:c ³]	" to be similar "

/ ɔ / [ɔ] is a mid-low back rounded short vowel. It occurs only in closed syllables.

/ cɔp /	['cɔp ³]	" to connect, to end "
/ psɔt /	['p ³ sɔt ³]	" mushroom "
/ hɔ? /	['hɔ? ³]	" to jump "

/ ɔ: / [ɔ:] is a mid-low back rounded long vowel. It occurs in both open and closed syllables.

/ pɔ: /	['p ³ ɔ: ²]	" gruel "
/ khɔ: /	['khɔ: ²]	" trousers "
/ sɔ: /	['sɔ: ²]	" white "
/ ?ɔ:p /	[' ?ɔ:p ³]	" to hold, to hug "
/ nɔ:t /	['nɔ:t ³]	" to stuff "
/ khɔ:c /	['k ^h ɔ:c ³]	" to burn "

/ ɒ / [ɒ] is a low back rounded short vowel. It occurs only in closed syllables.

/ ɒp /	['ɒp̚³]	" ten "
/ ɒt /	['ɒt̚³]	" mouth "
/ slɒk /	['s̚lɒk̚³]	" leaf "

/ ɒː / [ɒː] is a low back rounded long vowel. It occurs in both open and closed syllables.

/ cɒː /	['c̚ɒː²]	" a kind of fish(ปลาชะโด) "
/ kɒː /	['kɒː²]	" neck "
/ ?ɒː /	['?ɒː²]	" to be very glad "
/ cɒːp /	['cɒːp̚³]	" a hoe "
/ wɒːt /	['wɒːt̚³]	" scribbly (hand writing) "
/ dɒːc /	['dɒːc̚³]	" to get a headache "

3.1.2. Diphthongal Vowels

The diphthongs in Khmer Ban Nawattai can be classified according to duration with both short and long diphthongs. The description is as follows.

-1. Short Diphthongal Vowels

There are two short diphthongs in this dialect.

/ ia / [ia] is a short diphthong which begins at the position of high front unrounded short vowel [i] and moves downward to the position of the low central unrounded short vowel [a]. It occurs only in closed syllables.

/ tiap /	['tiap̚³]	" to be short "
/ ciat /	['ciat̚³]	" mind "

/ miah /	['mia ^{h3}]	" gold "
/ pia? /	['pia? ³]	" word "

/ ua / [ua] is a short diphthong which begins at the position of high back rounded short vowel [u] and moves downward to position of the low central unrounded short vowel [a]. It occurs in only closed syllables.

/ cuap /	['cuap ³]	" to meet "
/ khmuat /	['kh ^o muat ³]	" to twist "
/ sua? /	['sua? ³]	" to wear "
/ luah /	['lua ^{h3}]	" a wire "

-2. Long Diphthongal Vowels

There are six long diphthongs as follows.

/ i:a / [i:a] is a long diphthong which begins at the position of high front unrounded long vowel [i:] and moves downward to the position of low central unrounded short vowel [a]. It occurs in both open and closed syllables.

/ ki:a /	['ki:a ²]	" to poke, to shove "
/ li:a /	['li:a ²]	" to say "
/ wi:a /	['wi:a ²]	" third person pronoun, to crawl "
/ ci:at /	['ci:at ³]	" nation "
/ ki:ap /	['ki:ap ³]	" to nip, to pinch "
/ thi:at /	['thi:at ³]	" slave "
/ mi:an /	['mi:an ²]	" owl "

/ a:e / [a:e] is a long diphthong which begins at the position of low central unrounded long vowel [a:] and moves upward to the position of mid front short vowel [e]. It occurs in both open and closed syllable.

/ pra:e /	['p ^ə ra:e ^ə]	" to translate "
/ ba:e /	['ba:e ^ə]	" to glance (with eyes) "
/ ma:e /	['ma:e ^ə]	" mother "
/ ha:ep /	['ha:ep ^ə]	" box, casket "
/ ha:et /	['ha:et ^ə]	" cause "
/ kʔa:ek /	['kʔa:ek ^ə]	" a crow "

/ ɜ:a / [ɜ:a] is a long diphthong which begins at the position of high central unrounded long vowel [ɜ:] and moves downward to position of low front short vowel [a]. It occurs in both open and closed syllables.

/ cɜ:a /	['cɜ:a ^ə]	" to believe "
/ lɜ:an /	['lɜ:an ^ə]	" to move "
/ lɜ:an /	['lɜ:an ^ə]	" yellow "
/ rɜ:an /	['rɜ:an ^ə]	" story "

/ a:ə / [a:ə] is a long diphthong which begins at the position of low central unrounded long vowel [a:] and moves upward to the position of mid central unrounded short vowel [ə]. It occurs in both open and closed syllables.

/ pra:ə /	['p ^ə ra:ə ^ə]	" to use "
/ da:ə /	['da:ə ^ə]	" to walk "
/ la:ə /	['la:ə ^ə]	" on "
/ tha:əp /	['tha:əp ^ə]	" to kiss "
/ ka:ət /	['ka:ət ^ə]	" to happen, to give birth "
/ ba:ək /	['ba:ək ^ə]	" to open "

/ u:a / [u:a] is a long diphthong which begins at the position of high back rounded long vowel [u:] and moves downward to the position of low central unrounded short vowel [a]. It occurs in both opened and closed syllables.

/ pu:a /	['pu:a ²]	" to pick up, a blessing "
/ su:a /	['su:a ²]	" to ask question "
/ ju:a /	['ju:a ²]	" to carry, to take "
/ stu:ap /	['s ² tu:ap ³]	" banana leaf "
/ su:at /	['su:at ³]	" lung "
/ lu:aʔ /	['lu:aʔ ³]	" to copy "

/ a:ɔ / [a:ɔ] is a long diphthong which begins at the position of low central unrounded long vowel [a:] and moves upward to the position of mid-low back rounded vowel [ɔ]. It occurs in both open and closed syllables.

/ cʔa:ɔ /	['c ² ʔa:ɔ ²]	" to roast "
/ ca:ɔ /	['ca:ɔ ²]	" robber "
/ sʔa:ɔ /	['s ² ʔa:ɔ ²]	" catarrh "
/ cra:ɔt /	['c ² ra:ɔt ³]	" to harvest "
/ sa:ɔc /	['sa:ɔc ³]	" to laugh "
/ ʔa:ɔh /	['ʔa:ɔ ^{h3}]	" to sweep "

4. Distributions

4.1. Single Initial Consonants

4.1.1. In Major Syllables

-1. Single Initial Consonant Phonemes in Closed Syllables

The co-occurrence of the single initial consonant

phonemes and vowel phonemes in closed syllable will be described in groups according to the manner of consonants' articulation as follows:

monophthongs	i	i:	ɪ	ɪ:	e	e:	ɛ	ɛ:	ɨ	ɨ:	ɹ	ɹ:	ə	ə:	ʌ	a	a:	u	u:	ʊ	ʊ:	o	o:	ɔ	ɔ:	ɒ	ɒ:	
initial con.																												
p	X	X			X	X	X	X	X		X				X	X		X		X	X	X	X			X		
t	X	X	X		X	X	X		X		X			X	X	X		X	X	X	X		X	X			X	
c	X	X			X	X	X	X						X		X	X		X	X	X		X	X	X	X	X	X
k			X		X		X	X	X			X				X	X		X		X		X	X	X	X	X	X
ʔ					X		X	X	X	X				X	X	X	X		X	X		X	X	X	X	X	X	X
ʃ					X		X	X					X	X		X	X				X		X	X	X	X	X	X
h	X	X			X	X		X	X				X	X	X	X	X		X	X	X	X		X	X	X	X	X
m	X	X	X	X	X	X			X	X			X			X	X	X	X	X		X	X	X	X	X	X	X
n	X				X		X			X				X		X	X	X	X	X	X		X	X	X	X	X	X
ɲ	X				X		X		X				X	X	X	X	X		X	X	X		X		X		X	
l	X	X			X	X	X	X	X		X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X
r		X		X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
w	X	X	X	X	X	X	X	X	X		X				X	X	X	X	X					X	X	X	X	X
j					X		X						X			X	X	X	X				X	X	X	X	X	X

Table 6: The Co-occurrence of Single Initial Consonants with Monophthongal Vowels in Closed Major Syllable

diphthongs	ia	i:a	u:a	ua	u:a	a:e	a:ə	a:ɔ
In.								
p	X	X			X			
t	X	X			X			X
c	X	X		X	X		X	
k		X		X	X	X	X	X
ʔ	X	X			X	X		
β		X			X	X	X	X
ɸ		X			X	X	X	
s		X		X	X	X	X	X
h		X	X		X	X	X	
m	X	X		X	X	X		X
n	X	X		X	X	X		
ɲ		X						
ɔ		X			X		X	
l	X	X	X	X	X	X	X	X
r		X	X	X	X	X	X	X
w		X				X		
j	X	X		X	X	X		X

Table 7: The Co-occurrence of Single Initial Consonants with Diphthongal Vowels in Closed major syllables

a. Stops / p, t, c, k, ʔ /

/ p / occurs before: monophthongs / i, i:, e, e:, ε, ε:, ɯ, y,
 ʌ, a, u, ɔ, ɔ:, o, o:, ɔ,
 ɒ, /

: diphthongs / ia, i:a, u:a /.

/ t / occurs before : monophthongs / i, i:, ɪ, e, e:, ε,
 ɤ:, ɯ, ə, ʌ, a, a:, u, u:, ɔ, o, o:, ɒ /
 : diphthongs / ia, i:a, u:a, a:ɔ /

/ c / occurs before : monophthongs / i, i:, e, e:, ε, ε:,
 ə, a, a:, u, u:, ɔ, o, o:, ɔ, ɔ:,
 ɒ, ɒ: /
 : diphthongs / ia, i:a, ua, u:a, a:ə /

/ k / occurs before : monophthongs / ɪ, e, ε, ε:, ɯ,
 ə, a, a:, u, u:, o, o:, ɔ,
 ɔ:, ɒ, ɒ: /
 : diphthongs / i:a, ua, u:a, a:e,
 a:ə, a:ɔ /

/ ʔ / occurs before : monophthongs / e, ε, ε:, ɯ,
 ɤ:, ə:, ʌ, a, a:, u, u:, ɔ, o,
 o:, ɔ, ɔ:, ɒ, ɒ: /
 : diphthongs / ia, i:a, u:a, a:e /

b. Implosives / b, d /

/ b / occurs before : monophthongs / e, ε, ε:, ə, ə:,
 a, a:, ɔ, o, o:, ɔ, ɔ:, ɒ, ɒ: /
 : diphthongs / i:a, u:a, a:e, a:ə,

a:ɔ /

/ d / occurs before : monophthongs / e, e:, ɛ, ɛ:, ə,
 ʌ, a, a:, u:, ʊ, ʊ:, ɔ, ɔ:, ɒ, ɒ: /
 : diphthongs / i:a, u:a, a:e, a:ə /

c. Fricatives / s, h /

/ s / occurs before : monophthongs / i, ɛ, ɛ:, ə, ə:,
 ʌ, a, a:, ʊ, ʊ:, ɔ, ɔ:, ɒ, ɒ: /
 : diphthongs / i:a, ua, u:a, a:e,
 a:ə, a:ɔ /

/ h / occurs before : monophthongs / i, e, e:, ɛ:, ɯ, ə,
 ə:, ʌ, a, a:, u, u:, ʊ, ʊ:, ɔ, ɔ:, ɒ /
 : diphthongs / i:a, ɯ:a, u:a, a:e,
 a:ə /

d. Nasals / ɱ, n, ŋ, ŋ /

/ ɱ / occurs before : monophthongs / i, ɪ, ɪ:, e, e:, ɯ: ə,
 a, a:, u, u:, ʊ, ʊ:, ɔ, ɔ:, ɒ /
 : diphthongs / ia, i:a, ua, u:a,
 a:e, a:ɔ /

/ n / occurs before : monophthongs / i, e:, ɛ, ɯ, ə:,
 a, a:, u, u:, ʊ, ʊ:, ɔ, ɔ:, ɒ, ɒ: /
 : diphthongs / ia, i:a, ua, u:a,
 a:e /

/ ŋ / occurs before : monophthongs / e, ɛ, ɯ, ə:, a,
 u, u:, ʊ, ʊ:, ɔ, ɔ:, ɒ /
 : diphthongs / i:a /

/ ŋ / occurs before : monophthongs / i, ɛ, ə, əː, ʌ
 , a, aː, uː, ɔ, ɔː /
 : diphthongs / ia, iːa, uːa, aːə /

e. Approximants, Lateral and Trill / l, r /

/ l / occurs before : monophthongs / i, iː, e, eː, ɛ,
 ɛː, ʌ, ʏ, ʏː, ə, əː, a, aː, u, uː, ɔ, ɔː, ɔ, ɔː, ɔ, ɔː, ɔ /
 : diphthongs / ia, iːa, ʌːa, ua,
 uːa, aːe, aːə, aːɔ /

/ r / occurs before : monophthongs / iː, iː, e, eː, ɛ, ɛː,
 ʌ, ʏ, ʏː, ə, əː, a, aː, u, uː, ɔ, ɔː, ɔ, ɔː, ɔ, ɔː, ɔ /
 : diphthongs / iːa, ʌːa, ua, uːa,
 aːe, aːə, aːɔ /

f. Semi-vowels / w, j /

/ w / occurs before : monophthongs / i, iː, ɪ, ɪː, e, eː,
 ɛ, ɛː, ʏ, ʌ, a, aː, u, ɔː, ɔ, ɔː, ɔ, ɔː, ɔ /
 : diphthongs / iːa, aːe /

/ j / occurs before : monophthongs / ɛ, əː, a, aː, u,
 ɔː, ɔ, ɔː, ɔ, ɔː, ɔ /
 : diphthongs / ia, iːa, ua, uːa, aːe,
 aːɔ /

-2. Single Initial Consonant Phonemes in Open Syllables

monophthongs	i	i:	ɪ	ɪ:	e	e:	ɛ	ɛ:	ɨ	ɨ:	ɣ	ɣ:	ə	ə:	ʌ	ʌ:	ʊ	ʊ:	ɔ	ɔ:	ɒ	ɒ:	ɔ̃	ɔ̃:	ɒ̃	ɒ̃:	
In.																											
p	X								X					X													
t	X				X		X										X					X					
c	X			X			X										X										
k	X				X				X					X			X				X					X	
ʔ																										X	
β																											X
d					X				X								X				X				X		X
s	X				X		X										X							X			
h									X					X			X				X				X		
m				X													X							X			
n					X												X										
ɲ	X																										
ŋ									X					X			X										
l	X			X			X		X					X			X								X		
r					X		X										X								X		
w																	X										
j																								X			

Table 8: The Co-occurrence of Single Initial Consonants with Monophthongal Vowels in Open Major Syllables

diphthongs	ia	i:a	u:a	ua	u:a	a:e	a:ə	a:ɔ
In.								
p		X			X			X
t		X			X	X		
c		X	X		X			X
k		X			X	X		
ʔ						X		X
β								X
f		X				X	X	
s					X			
h					X	X		
m						X	X	
n		X			X			
ɲ					X		X	
ŋ		X			X			X
l		X			X			
r		X			X	X	X	
w		X						
j					X			

Table 9: The Co-occurrence of Single Initial Consonants with Diphthongal Vowels in Open Major Syllable

a. Stops / p, t, c, k, ʔ /

/ p / occurs before : monophthongs / i:, ɯ:, ə: /
: diphthongs / i:a, u:a, a:ɔ /

/ t / occurs before : monophthongs / i:, e:, ɛ:, a:, u:, o: /
: diphthongs / i:a, u:a, a:e /

/ c / occurs before : monophthongs / i:, ɪ:, e:, a:, u:, o: /
: diphthongs / i:a, ɯ:a, u:a, a:ɔ /

/ k / occurs before : monophthongs / i:, e:, ɯ:, ə:, a:,
ɔ:, ɔ: /
: diphthongs / i:a, u:a, a:e /

/ ʔ / occurs before : monophthong / ɔ: /
: diphthongs / a:e, a:ɔ /

b. Implosives / ɓ, ɗ /

/ ɓ / occurs before : monophthong / ɒ: /
: diphthong / a:ɔ /

/ ɗ / occurs before : monophthongs / e:, ɯ:, a:, o:, ɔ:, ɒ: /
: diphthongs / i:a, a:e, a:ə /

c. Fricatives / s, h /

/ s / occurs before : monophthongs / i:, e:, ɛ:, a:, ɔ: /
: diphthong / u:a /

/ h / occurs before : monophthongs / ɯ:, ə:, a:, ɔ:, o:, ɔ: /
: diphthongs / u:a, a:e /

d. Nasals Group / m, n, ŋ /

/ m / occurs before : monophthongs / i:, a:, u:, ɔ: /
: diphthongs / a:e, a:ə /

/ n / occurs before : monophthongs / e:, a:, u: /
: diphthongs / i:a, u:a /

/ ŋ / occurs before : monophthong / i: /
: diphthongs / u:a, a:ə /

/ ŋ / occurs before : monophthongs / ɜ:, ə:, a: /
: diphthongs / i:a, u:a, a:ɔ /

e. Approximants: Lateral and Trill / l, r /

/ l / occurs before : monophthongs / i:, ɪ:, e:, ɛ:, ɜ:,
ə:, a:, u:, ɔ: /
: diphthongs / i:a, u:a /

/ r / occurs before : monophthongs / e:, ɛ:, a:, u:, ɔ: /
: diphthongs / i:a, u:a, a:e, a:ə /

f. Semi-vowels / w, j /

/ w / occurs before : monophthongs / e:, a: /
: diphthong / u:a /

/ j / occurs before : monophthongs / u:, ɔ: /
: diphthong / u:a /

4.2. Minor Syllables

4.2.1. Single Consonant Phonemes in Closed Syllable

monophthongs	i	i:	ɪ	ɪ:	e	e:	ɛ	ɛ:	ɜ	ɜ:	ʏ	ʏ:	ə	ə:	ʌ	ʌ	ɑ:	u	u:	ʊ	ʊ:	o	o:	ɔ	ɔ:	ɒ	ɒ:
In.																											
p	XY	Y													X	X					X		X		X	X	
t	X															X		Y	X			X		X		X	
c	X	Y					Y							X		X								X		X	
k		Y				Y			X				Y			X		X		Y		X		X	XY	X	
ʔ	X	Y																						Y			
β																			X								
f																X											
s	X															X		Y				X		X			
h						Y										X		Y					X	X			
m																X		Y	X				X	X		Y	
n	Y																										
ɲ																											
ŋ							X									X											
l																	X										
r					X									Y		X											
w																	X										
j	Y					Y																					

Table 10: The Co-occurrence of Single Initial Consonants with Monophthongal Vowels in Minor Syllable

X = Occurs in Closed Syllable

Y = Occurs in Open Syllable

diphthongs	ia	i:a	u:a	ua	u:a	a:e	a:ə	a:ɔ
In.								
p								
t	X							
c		Y						
k								
ʔ								
β								
d								
s								
h								
m								
n								
ɲ								
ŋ								
l		X						
r						Y		
w						Y		
j		Y						

Table 11: The Co-occurrence of Single Initial Consonants with Diphthongal Vowels in Minor Syllable

X = Occurs in Closed Syllable

Y = Occurs in Open Syllable

a. Stops / p, t, c, k, ʔ /

/ p / occurs before : monophthongs / i, ʌ, a, ɔ, o, ɔ, ɔ: /
and never occurs with any diphthongs.

/ t / occurs before : monophthongs / i, a, u, o, ɔ, ɒ /
: diphthong / ia /

/ c / occurs before : monophthongs / i:, ə:, a, ɔ, ɒ /
and never occurs with the diphthongs.

/ k / occurs before : monophthongs / ʌ, a, u, o, ɔ, ɔ:, ɒ /
and never occurs with the diphthongs.

/ ʔ / occurs before : monophthong / i /
and never occurs with the diphthongs.

b. Implosives / ɓ, ɗ /

/ ɓ / occurs before : monophthong / u /
and never occurs with the diphthongs.

/ ɗ / occurs before : monophthong / a /
and never occurs with the diphthongs.

c. Fricatives / s, h /

/ s / occurs before : monophthongs / i, a, o, ɔ /
and never occurs with the diphthongs.

/ h / occurs before : monophthongs / a, ɔ:, ɔ /
and never occurs with the diphthongs.

d. Nasals / n /

/ n / occurs before : monophthongs / a, u, ɔ, ɔ: /
and never occurs with the diphthongs.

e. Approximants Lateral and Trill / l, r /

/ l / occurs before : monophthongs / e, a /
: diphthong / i:a /

/ r / occurs before : monophthongs / i:, a /
and never occurs with the diphthongs.

f. Semi-vowel Group / j /

/ j / occurs before : monophthong / a: /
and never occurs with the diphthongs.

4.2.2. Single Initial Consonant Phonemes in Open Syllable

The consonant phonemes which occur with monophthongs in open syllable are / p, t, c, k, ʔ, s, h, m, n, r, w / and with diphthongs are / c, r, w, j /.

-The detailed distribution with monophthongs is as follows:

/ p / occurs before / i, i: /

/ t / occurs before / a: /

/ c / occurs before / i:, e: /

/ k / occurs before / i:, e:, ə:, u:, ɔ: /

/ ʔ / occurs before / i:, a:, ɔ: /

- / s / occurs before / a: /
- / h / occurs before / e:, a: /
- / m / occurs before / a:, ɒ: /
- / n / occurs before / i /

-The detailed distribution with diphthongs is as follows:

- / c / occurs before / i:a /
- / r / occurs before / u:a /
- / w / occurs before / u:a /
- / j / occurs before / i:a /

5. The Final Consonant Phonemes

The final consonants in this dialect are divided into two types according to their occurrence in major and minor syllables.

i	i:	ɪ	ɪ:	e	e:	ɛ	ɛ:	ɜ	ɜ:	ɹ	ɹ:	ɔ	ɔ:	ʌ	a	a:	u	u:	ʊ	ʊ:	o	o:	ɔ	ɔ:	ɒ	ɒ:	monophthongs
																											fin.
X	X							X	X	X	X	X	X								X	X	X	X	X	X	p
	X		X	X	X	X	X	X	X					X	X	X	X	X	X			X	X	X	X	X	t
X		X	X	X	X	X	X								X	X	X	X	X		X	X	X		X		c
	X				X	X	X			X	X	X					X	X	X	X	X	X	X		X		k
X					X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ʔ
X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	h
X				X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	a
X				X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	n
X		X	X	X	X	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	r
X	X		X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ŋ
X				X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	l
X					X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	w
								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	j

Table 12: The Co-occurrence of Final Consonant Phonemes with Monophthongal Vowels in Major Syllables

ia	i:a	u:a	ua	u:a	a:e	a:ə	a:ɔ	diphthongs
								fin.
X	X		X	X	X	X		p
X	X		X	X	X	X	X	t
							X	c
					X	X	X	k
X			X	X				ʔ
X			X	X			X	h
	X			X		X		m
	X	X	X	X	X	X		n
	X							ɲ
	X	X		X	X	X	X	ŋ
	X			X	X		X	l
	X				X		X	w
X	X	X		X				j

Table 13: The Co-occurrence of Final Consonant Phonemes with Diphthongal Vowels in Major Syllable

i	i:	ɪ	u:	e	e:	ɛ	ɛ:	ɨ	ɨ:	ɪ	ɪ:	ə	ə:	ʌ	ʌ	a:	u	u:	ɔ	ɔ:	o	o:	ɔ	ɔ:	ɒ	ɒ:	monophthongs
																											fin.
					X											X	X				X	X					t
																X	X				X	X					ʔ
																X	X				X	X			X		h
																X	X				X	X					m
																X	X				X	X					n
X			X							X						X	X				X	X					ŋ
X																X	X				X	X					l
																X	X				X	X					w
																X	X				X	X					j

Table 14: The Co-occurrence of Final Consonant Phonemes with Monophthongal Vowels in Minor Syllable.

ia	i:a	wa	w:a	ua	u:a	a:e	a:ə	a:ɔ	diphthongs
									fin.c.
X									t ʔ h m n ɔ l w j
	X								

Table 15: The Co-occurrence of Final Consonant Phonemes with Diphthongs in Minor Syllable

-1. The Final Consonants of Major Syllables

There are 13 consonant phonemes that occur as the finals in this dialect / p, t, c, k, ʔ, h, m, n, ɲ, ŋ, l, w, j /.

The distributional descriptions of the finals in major syllable follow their manners of articulation.

a. Stops / p, t, c, k, ʔ /

/ p / occurs after the monophthongs : / i, i:, ɛ:, ɯ, ə, ə:, ʌ, a, a:, ɔ:, o, o:, ɔ, ɔ:, ɒ, ɒ: /
and after diphthongs : / ia, i:a, au, u:a, a:e, a:ə /.

/ t / occurs after the monophthongs : / i:, ɪ:, e, e:, ɛ, ɛ:, ɯ, ɯ:, ə:, ʌ, a, a:, o, o:, ɔ, ɔ:, ɒ, ɒ: /
and after diphthongs : / ia, i:a, ua, u:a, a:e, a:ə, a:ɔ /.

/ c / occurs after the monophthongs : / i, ɪ, ɪ:, e, e:, ɛ, ɛ:, a, a:, u:, ɔ:, o, o:, ɔ:, ɒ: /
and after diphthongs : / a:ɔ /.

/ k / occurs after the monophthongs : / i:, e:, ɛ:, ɯ, ə, ə:, ʌ, ɔ, ɔ:, o, o:, ɔ, ɒ /
and after diphthongs : / a:e, a:ə, a:ɔ /.

/ ʔ / occurs after the monophthongs : / i, ɛ, ɛ:, ʌ, a, a:, u, ɔ, o, ɔ, ɔ:, ɒ, ɒ: /
and after diphthongs : / ia, ua, u:a /.

b. Fricatives / h /

/ h / occurs after the monophthongs : / i, ɪ, ɪ:, e, ɛ,
 ɛ:, ʌ, ʏ, ʏ:, ə, ə:, a, a:, u, ʊ, ʊ:, o, ɔ:, ɒ,
 ɔ:, ɒ, ɒ: /

and after diphthongs : / ia, ua, u:a, a:ɔ /.

c. Nasals / m, n, ŋ /

/ m / occurs after the monophthongs : / i, e, ɛ, ɛ:,
 ʌ, a, a:, u, u:, ʊ, o, ɔ:, ɒ, ɔ:, ɒ, ɒ: /
 and after diphthongs : / i:a, u:a, a:ə /.

/ n / occurs after the monophthongs : / i, e, e:,
 ɛ, ɛ:, ʌ:, ə, a, a:, u, u:, o, ɔ:, ɒ, ɔ:, ɒ, ɒ: /
 and after diphthongs : / i:a, ʌ:a, ua, u:a, a:e,
 a:ə /.

/ ŋ / occurs after the monophthongs : / i, ɪ, e,
 e:, ɛ, ɛ:, ə:, a:, u, u:, o, ɔ: /
 and after diphthong : / i:a /.

/ ŋ / occurs after the monophthongs : / i, i:, ɪ: e,
 e:, ɛ, ɛ:, ʌ, ə:, ʌ, a, a:, u, u:, o, ɔ:, ɒ, ɔ:,
 ɒ, ɒ: /
 and after diphthongs / i:a, ʌ:a, u:a, a:e,
 a:ə, a:ɔ /.

d. Approximants Lateral Trill / l /

/ l / occurs after the monophthongs : / i, e, e:, ɛ:, ʌ

, ʌ, ɒ, ɔ:, u, u:, ɔ, o, o:, ɔ, ɔ:, ɒ /
 and after diphthongs : / i:a, u:a, a:e, a:ɔ /.

e. Semi-vowels / w, j /

/ w / occurs after the monophthongs : / i, e:, ɛ:,
 ə, ə:, a, a:, o /
 and after diphthongs : / i:a, a:e /.

/ j / occurs after the monophthongs : / ə, ʌ, ɒ, a:
 , u, u:, o, o:, ɔ: /
 and after diphthongs : / ia, i:a, ɯ:a, u:a /.

-2. The Finals of Minor syllable

There are 9 consonant phonemes which occur as finals in this dialect: / t, ʔ, ɱ, n, ŋ, l, w, j /. They occur after with the vowel phonemes as following details.

/ t / occurs only after / ɔ /.

/ ʔ / occurs only after / ɛ, a, o, u, ɔ /.

/ h / occurs only after / a, ia /.

/ ɱ / occurs only after / a, u, o, ɔ, ɒ, /.

/ n / occurs only after / ʌ, a, u, ɔ /.

/ ŋ / occurs only after / i, a, u, o, o:, ɔ, ɒ, a:, ɪ:, ə: /.

/ l / occurs only after / i, a, ɔ /.

/ w / occurs only after / a /.

/ j / occurs only after / a, i:a /.

6. The Contrast

6.1. Consonant Contrasts

-The Initials

/p/-/m/

/pteh/

"country"

/mteh/

"chili"

/put/

"Wednesday"

/mut/

"to be sharp"

/puk/

"to rot"

/muk/

"face"

/pon/

"equal"

/mon/

"hen"

/p/-/w/

/pʌj/

"a flute"

/wʌj/

"to hit"

/p/-/b/

/paʔ/

"to rest"

/baʔ/

"to break"

/p/-/ph/

/pka:/

"pen"

/phka:/

"flower"

/t/-/d/

/tak/

"water"

/ɖak/

"to lead"

/tom/

"jar, to perch"

/ɖom/

"a piece, a lump"

/th/-/t/

/tha:/	" to say "
/ta:/	" grandfather "
/thnam/	" medicine "
/tnam/	" to cook rice "

/c/-/s/

/cɔ:m/	" top "
/sɔ:m/	" to repair "

/c/-/p/

/cu:n/	" to send "
/pu:n/	" a kind of harvest hook "
/ci:/	" a kind of vegetable (ผักขี้) "
/pi:/	" female animal "
/nep/	" to stretch lips "
/cep/	" to exit "

/d/-/s/

/dat/	" to bend "
/sat/	" animal "

/k/-/ŋ/

/phka:/	" flower "
/phŋa:/	" to turn up "

/?/-/h/

?a:w/	" shirt "
?ha:w/	" to call "

/b/-/d/

/baj/	" three "
/daj/	" soil "
/bot/	" to grind "
/dot/	" to burn "

/b/-/w/

/sba:j/	" to be comfortable "
/swa:j/	" mango "

/d/-/l/

/daw:/	" to be naughty "
/law:/	" to hear "

/d/-/n/

/pdaw/	" to teach "
/pnaw/	" bel fruit(มะขาม) "

/s/-/h/

/sɔʔ/	" hair "
/hɔʔ/	" to jump "
/sɔ:l/	" to remain, to be left "
/hɔ:l/	" to be hot (taste) "

/m/-/p/

/mɔ:p/	" to prostrate "
/pɔ:p/	" to be rapid "

/m/-/ŋ/

/mæk/	" octopus "
/ŋæk/	" to nod "

/m/-/n/

/mi:am/	" owl "
/ni:am/	" name "

/n/-/p/

/nwk/	" to think "
/pnk/	" to be frequent "

/n/-/l/

/khna:/	" the particle for male affirmative polite answer to a monk "
/khla:/	" tiger "

/n/-/ŋ/

/ni:aj/	" boss "
/ŋi:aj/	" to be easy "

/n/-/r/

/no:m/	" urine "
/ro:m/	" to swarm "

/l/-/r/

/lo:k/	" monk "
/ro:k/	" disease, affection "
/slah/	" to be clear "
/srah/	" pond "
/lɛʔ/	" to hide "
/rɛʔ/	" to be shallow "

6.1.2. The Finals

/p/-/m/		
	/prap/	" to tell "
	/pram/	" five "
/c/-/j/		
	/ka:c/	" to be fierce "
	/ka:j/	" to rummage "
/c/-/p/-/ŋ/		
	/ʔac/	" excrement "
	/ʔap/	" I (impolite) "
	/ʔaŋ/	" to roast "
/c/-/k/		
	/sɛ:c/	" skin "
	/sɛ:k/	" shoes "
/k/-/ʔ/		
	/phtuk/	" to transport "
	/phtuʔ/	" a kind of fish (ปลาหมึก) "
/k/-/h/		
	/puk/	" to rot "
	/puh/	" to split "
/k/-/ŋ/		
	/tuk/	" to keep, suffering "
	/tuŋ/	" a flag "

/ʔ/-/h/

/phluʔ/

" to taste "

/phluh/

" twin, double "

/paʔ/

" to rest "

/pah/

" to patch "

/m/-/n/

/pʔo:m/

" to go sour "

/pʔo:n/

" younger brother "

/m/-/w/

/tram/

" to soak "

/traw/

" to be right "

/m/-/ŋ/

/sɔ:m/

" to repair "

/sɔ:ŋ/

" to pay for debt "

/n/-/p/

/ti:an/

" candle "

/ti:ap/

" to tie "

/n/-/ŋ/

/tha:en/

" instead of "

/tha:en/

" a bar of "

/li:an/

" field "

/li:an/

" to wash "

/n/-/l/

/cu:n/

" to send "

/cu:l/

" to employ "

6.2. Vowel Contrasts

/i/-/ɛ/

/cih/

" to ride "

/csh/

" to be intelligent "

/i:/-/ɪ:/-/e:/

/ci:/

" a kind of vegetable(ผัก) "

/cɪ:/

" fertilizer "

/ce:/

" to curse "

/ɪ:/-/e/

/wɪ:c/

" to be curved "

/wec/

" to wrap "

/e/-/e:/

/kdec/

" to pinch "

/kde:c/

" to pluck "

/e:/-/ɛ/

/we:ŋ/

" to be long "

/wɛŋ/

" palace "

/e/-/a/

/cen/

" Chinese "

/can/

" Monday "

/ɛ/-/ɛ:/

/ksh/

" to prick "

/ks:h/

" to remove, to flip, to snap "

/s/-/ia/		
/tcsʔ/	" to freeze "	
/tciaʔ/	" ear "	
/s:-/-/a:/		
/kla:t/	" a crockroach "	
/kls:t/	" cigarette "	
/s:-/-/a:e/		
/krs:/	" horn "	
/kra:e/	" a bamboo bed "	
/m/-/u/-/o/		
/pʷh/	" to be poisonous "	
/puh/	" to split "	
/pʷh/	" heat, snake, abdomen "	
/m/-/w:/		
/ʔwʔt/	" to be patient "	
/ʔw:t/	" to be swollen, to be stuffed full "	
/r/-/r:/-/e:/		
/rvh/	" root "	
/rv:h/	" to pick up "	
/rə:h/	" to choose "	
/ə/-/ə/		
/prəj/	" forest "	
/praj/	" to be salty "	

/e/-/e:/

/srɛw/

" a kind of melon(เมลอน) "

/srɛ:w/

" grain, paddy rice "

/u/-/u:/

/puh/

" to incite "

/pu:h/

" to hatch "

/ə/-/a:ə/

/lə:/

" to pile up "

/la:ə/

" on, above "

/ə/-/a:/

/jə:ŋ/

" we "

/ja:ŋ/

" kind, sort "

/ʌ/-/ɔ/

/psʌt/

" navel "

/psɔt/

" mushroom "

/ʌ/-/a/

/dʌt/

" to close up "

/dʌt/

" to bend "

/a/-/a:/

/traʊ/

" to be right "

/tra:w/

" truffle "

/o/-/ɒ/

/bɒt/

" to grind "

/bɒt/

" to fold, lesson, to close "

/a:/-/ə:/		
	/sa:p/	" to be fresh, to be tasteless "
	/sə:p/	" to inspect "
/a:/-/i:a/		
	/kɔ̃a:/	" blackboard "
	/kɔ̃i:a/	" termite "
/a:/-/a:e/		
	/kɔ̃a:l/	" head "
	/kɔ̃a:el/	" a ray fish "
/u/-/u:/		
	/tuk/	" to keep, suffering "
	/tu:k/	" boat "
	/pruh/	" to bark "
	/pru:h/	" to sow "
/u/-/o/		
	/thun/	" fund "
	/thon/	" to endure "
/u/-/ɔ̃/		
	/chlɔ̃h/	" a barking deer "
	/chlɔ̃h/	" to quarrel "
/u/-/o:/		
	/croŋ/	" angle "
	/cro:ŋ/	" to shine "

/u/-/ɔ/

/mun/

" before "

/mon/

" hen "

/u/-/ɔ/-/o:-/-/ɔ/

/run/

" to crowd around "

/rom/

" to wrap, to coil "

/ro:m/

" to swarm "

/rom/

" to dance "

/u:-/-/o/

/llu:t/

" to abort "

/llot/

" to put out "

/u:-/-/o:-/

/tu:c/

" to be small "

/to:c/

" donkey "

/u:-/-/ɔ:-/

/khu:ŋ/

" charcoal "

/khu:ŋ/

" shell "

/ɔ/-/o/

/tom/

" to be ripe "

/tom/

" a jar, to perch "

/ɔ/-/ɔ:-/

/phlɔk/

" ivory "

/lɔ:k/

" to reach with arm, to grasp "

/o/-/o:/	
/nom/	" sweet "
/no:m/	" urine "
/o/-/ɔ/	
/dom/	" a piece, a lump "
/dɔm/	" to pound "
/o/-/ɒ/	
/nom/	" I "
/pɒm/	" salad "
/o:/-/ɔ:/	
/cho:p/	" to pounce upon "
/chɔ:p/	" to like "
/kho:c/	" to be fierce "
/kɔ:c/	" to burn "
/o:/-/ɔ/-/ɔ:/	
/jo:l/	" to swing "
/jɔl/	" sup, gum, wood oil "
/jɔ:l/	" to be bad "
/o:/-/ua/-/a:ɔ/	
/khmo:t/	" a weevil "
/khmuat/	" to twist "
/khma:ɔt/	" ghost "
/ɔ/-/ɔ:/	
/tlo:p/	" a kind of tree(ต้นพลับ) "
/tlo:p/	" to roll "
/ɔ/-/ɒ/	
/dɔl/	" a piece of wood "
/ɒl/	" to arrive, to box "

/ɔː/-/ɒː/

/ŋɔːŋ/

" the snapping turtle "

/ŋɒːŋ/

" salamander "

/ɔː/-/ɒ/

/?aːkrɔː?/

" to be rough "

/?aːkrɒ?/

" to be fierce "

/sɔːŋ/

" to pay debt "

/sɒŋ/

" a monk "

/ɔː/-/ɒ/-/ɒː/

/wɔːt/

" the spawn of fish "

/wɒt/

" to shove with the horns "

/wɒːt/

" scribbly(handwriting) "

/iə/-/iːə/

/ciət/

" mind "

/ciːət/

" nation "

/tiəp/

" to be short "

/tiːəp/

" a custard apple "

/uə/-/uːə/

/lɪuə?/

" dove "

/lɪuːə?/

" to copy "

/aːe/-/aːə/

/praːe/

" to translate "

/praːə/

" to use "

/aːə/-/aːɔ/

/b̩aːəɔk/

" to open "

/b̩aːɔk/

" to wrestle "

CHAPTER III

SYLLABLE

1. General Definition

The syllable is defined as the rank at which units function in the phonological word; its structure is stated in terms of phonemes, the lowest rank in the hierarchy.

2. Syllable Structure

The structure of the syllable in Khmer, Ban Nawattai dialect is described in terms of a nucleus which may be a vowel (V), a long vowel (V:), short complex vowels (VV), long complex vowels (V:V), a syllabic nasal (N), and periphery forms of consonant (C) and pitch markers as (1), (2), (3).

3. Syllable Type

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

3.1. Major Syllable

A major syllable always takes a heavy stress which is marked as mid-level pitch in the open syllable; however it may be shifted higher in the closed syllables which had the finals of voiceless stops and voiceless fricatives; [p, t, c, k, ʔ, h] as the high level pitch that make the pitches in this dialect differ between open and closed syllable with the finals of [m, n, ɲ, ŋ, l, w, w, j]. All of characters occur in phonological word level. (see the conditional shifts of pitch).

3.1.1. Stress

There are two degrees of stress, weak and strong stress which occur on each syllable. The weak stress occurs on the minor syllable and the strong stress occurs on the major syllable. In this dialect the stresses are stated on the phonetic level. The weak stress is marked with the symbol [·__] and the strong stress by the symbol [´__].

There are 9 different subtypes of major syllables. It found that the structures in cluster formulas, the consonant phonemes plus an unstressed phonetic vowel [ə]² are interpreted as the element of clusters.

A. CV

- CV:

/ pi: /	[´pi:²]	" two "
/ tu: /	[´tu:²]	" cupboard "
/ ci: /	[´ci:²]	" fertilizer "
/ kɔ: /	[´kɔ:²]	" a pair, ox, couple "
/ ʔɔ: /	[´ʔɔ:²]	" to be very glad "

- CV:V

/ pu:a /	[´pu:a²]	" to pick up, a blessing "
/ cw:a /	[´cw:a²]	" to believe "
/ ki:a /	[´ki:a²]	" to poke, to shove "
/ ʃa:e /	[´ʃa:e²]	" to glance with(eyes) "
/ ra:ə /	[´ra:ə²]	" to demolish "

*See Prakorb (1987) for two-consonant clusters across syllable Boundary sub-type I

B. CVC

- CVC

/ pec /	['peɕ ³]	" diamond "
/ pep /	['pep ²]	" to be full "
/ pɯŋ /	['pɯŋ ²]	" just, to take refuge "
/ pɔj /	['pɔj ²]	" a flute "

- CVVC

/ piaʔ /	['piaʔ ³]	" word "
/ tiap /	['tiap ³]	" to be short "
/ kuap /	['kuap ³]	" double "
/ suan /	['suan ²]	" garden "

- CV:C

/ tu:k /	['tu:k ³]	" boat "
/ ci:t /	['ci:t ³]	" to close up "
/ cu:n /	['cu:n ²]	" to send "
/ kɛ:h /	['kɛ:h ³]	" to remove "
/ ka:c /	['ka:c ³]	" to be fierce "

- CV:VC

/ ka:ət /	['ka:ət ³]	" to happen, to give birth "
/ ka:əm /	['ka:əm ²]	" a lamp "
/ bu:an /	['bu:an ²]	" four "
/ da:ek /	['da:ek ³]	" iron "
/ su:at /	['su:at ³]	" lung "

C. CCV

-CCV:

/ pla: /	['p ^a la: ²]	" thorn "
/ pre: /	['p ^a re: ²]	" silk fabric "

/ kwi: / ['k^əwi:²] " to wave "
 / sko: / ['s^əko:²] " sugar "
 / sra: / ['s^əra:²] " whisky "

-CCV:V

/ pra:ə / ['p^əra:ə²] " to use "
 / tha:e / ['tha:e²] " to be real "
 / tru:a / ['t^əru:a²] " to receive "
 / chu:a / ['chu:a²] " to stand "
 / kni:a / ['k^əni:a²] " friend "

D. CCVC

- CCVC

/ ppon / ['p^əpon²] " wife "
 / tpeŋ / ['t^əpeŋ²] " young bamboo , swamp "
 / ckuŋ / ['c^əkuŋ²] " knee "
 / kpop / ['k^əpop³] " to drop ,to fall "
 / sdap / ['s^ədap³] " to listen "

- CCV:C

/ pkoŋ / ['p^əkoŋ²] " lobster "
 / tko:l / ['t^əko:l²] " family "
 / cʔs:t / ['c^əʔs:t³] " to be full "
 / kpe:n / ['k^əpe:n²] " kind of green beetle
 (นางทับ) "
 / sna:j / ['s^əna:j²] " kind of tree (ต้นจัน) "

- CCVVC

/ tciaʔ / ['t^əciaʔ³] " ear "
 / kruap / ['k^əruap³] " to cover "
 / sliaʔ / ['s^əliaʔ³] " to wear "

/ llua? / ['l^əlua?³] " dove "

- CCV:VC

/ pku:aj / ['p^əku:aj²] " chameleon "

/ thi:at / ['thi:at³] " slave "

/ cra:ən / ['c^əra:ən²] " many "

/ kdi:aw / ['k^ədi:aw²] " a hook "

/ sma:əl / ['s^əma:əl²] " shadow "

E. CCCV

-CCCV:

/ phka: / ['ph^əka:²] " flower "

/ khna: / ['kh^əna:²] " the particle for male
affirmative polite answer
to a monk "

/ thmɔ: / ['th^əmɔ:²] " stone "

/ kthɔ: / ['k^əthɔ:²] " a chamber pot "

- CCCV:V

/ ppri:a / ['p^əp^əri:a²] " kind of tree(ไม้สาร)"

/ pheu:a / ['p^həcu:a²] " to plough "

/ phɲa:ə / ['ph^əɲa:ə²] " to deposit "

/ chɲa:ɔ / ['ch^əɲa:ɔ²] " curry "

/ chli:a / ['ch^əli:a²] " to average "

/ khma:e / ['kh^əma:e²] " Khmer "

F. CCCVC

- CCCVC

/ pcruj / ['p^əc^əruj²] " mold-mark "

/ thnam / ['th^ənam²] " medicine "

/ chɲol / ['ch^əɲol²] " to doubt "

/ khcoh /	['kh ^o co ^{h3}]	" kind of fish (ปลานกตอง)
/ khcol /	['kh ^o col ²]	" wind "

- CCCV:C

/ pkhɔ:ŋ /	['p ^o khɔ:ŋ ²]	" to prop "
/ phlɔ:ŋ /	['ph ^o lɔ:ŋ ²]	" fire "
/ chmo:l /	['ch ^o mo:l ²]	" male animal "
/ khnɔ:j /	['kh ^o hnɔ:j ²]	" a pillow "
/ khla:c /	['kh ^o la:c ²]	" to fear "

- CCCVVC

/ phlia? /	['ph ^o lia? ³]	" to show up "
/ khmuat /	['kh ^o muat ³]	" to twist "

- CCCV:VC

/ phli:aŋ /	['ph ^o li:aŋ ²]	" rain "
/ thki:am /	['th ^o ki:am ²]	" molar teeth "
/ thla:eŋ /	['th ^o la:eŋ ²]	" to state "
/ ckra:ɔm /	['c ^o k ^o ra:ɔm ²]	" kind of tree (ไม้แดง)
/ khlu:an /	['kh ^o lu:an ²]	" body "

G. CCCC

- CCCC:

/ phsma: /	['ph ^o s ^o ma: ²]	" shoulder "
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- CCCC:V

/ phchu:a /	['ph ^o chu:a ²]	" to set "
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H. CCCCVC

- CCCC:C

/ kphlɔ:ŋ /	['k ^o ph ^o lɔ:ŋ ²]	" gun "
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- CCCCVC

/ kphli:əŋ / ['k^əph^əli:əŋ^ə] " cheek "

3.2. Minor Syllable

A minor syllable is defined as a syllable which is a weak stress and structures as the main structure of major syllable except for the presyllabic nasal which may be included in minor syllable. The structure of presyllabic nasal is [N...] which occurs only in phonetic level then it is resegmented as the main structure in phonemic level. In the phonetic level the minor syllable occurred as open and closed forms.

3.2.1 Types of Minor Syllable

-Type I: The open minor syllable has the structure is C(C)(C)V(:)(V)___ as follows.

A. CV

- CV___ a vowel is / i / [i].

Examples:

/ pika: / [,pi¹. 'ka:²] " handicap "
 / nisaj / [,ni¹. 'saj²] " character "
 / winiah / [,wi¹. 'nia^{h3}] " to go to ruin "

- CV:___ the vowels occurring here are / i:,e:,a:,u:,ɔ:/ [i:,e:,a:,u:,ɔ:].

Example

/ pi:ruh / [,pi:¹. 'ru^{h3}] " to be melodious "
 / ci:wɔt / [,ci:¹. 'wɔt³] " life "
 / ke:ra:e / [,ke:¹. 'ra:e²] " to be naughty, to be bad "
 / we:li:a / [,we:¹. 'li:a²] " time "
 / ?a:tih / [,?a:¹. 'ti^{h3}] " oxcart "

- / ma:tɕɔː / [,maː¹ . 'tɕɔː²] " unit of four "
- / ku:sɔːl / [,kuː¹ . 'sɔːl²] " merit, a past good deed "
- / kɔːsaːŋ / [,kɔː¹ . 'saːŋ²] " to build "
- / kɔːhɔːm / [,kɔː¹ . 'hɔːm²] " red "

- CV:V__ the vowels found are / i:a,u:a / [i:a,u:a].

Example:

- / ci:amu:aj / [,ci:a¹ . 'mu:aj²] " to be with "
- / wu:awwk / [,wu:a¹ . 'wɔk³] " to be very busy "

B. CCV

- CCV: the vowels are found as / e:,ə:,a:,i:a /
[e:,ə:,a:,i:a].

Example

- / phe:ða:n / [,pheː¹ . 'ða:n²] " ceiling "
- / prə:hi:am / [,pᵣəː¹ . 'hi:am²] " dawn "
- / lha:pe:k / [,lᵣhaː¹ . 'pe:k³] " immediate "

C. CCCV

-CCCV:

- / phja:ji:am / [,phᵣjaː¹ . 'ji:am²] " to try "

_CCCV:V

- / phji:aɕa:n / [,phᵣji:a¹ . 'ɕa:n³] " nurse "

-Type II: closed minor syllable

The structure of this type is C(C)V(:)(V)C. It can be divided into sub-types as follows:

A. CVC

1. CVN: the finals of this structure are the nasals except /_ŋ / [_ŋ] which never occurs in final position

of the minor syllable.

-CV_m occurs with / a, ə, ɔ, ɒ, o / [ã, ə, ɔ, ɒ, o] as follows.

Example:

/ tankɪc /	[t̃am ¹ . 'kɪc ³]	" to throw, to putt (ทุ่ม) "
/ tamne: /	[t̃am ¹ . 'ne: ²]	" to be free "
/ cɔmhi:əŋ /	[c̃ɔm ¹ . 'hi:əŋ ²]	" a section, a slice "
/ kɔmnu:a /	[k̃ɔm ¹ . 'nu:a ²]	" heap "
/ tɔmlɔŋ /	[t̃ɔm ¹ . 'lɔŋ ²]	" kind of ivy plant (คำลิง) "
/ kɔmɔ:t /	[k̃ɔm ¹ . 'nɔ:t ³]	" a log "
/ sɔmtu:c /	[s̃ɔm ¹ . 'tu:c ³]	" barb "

-CV_ŋ occurs with / i, a, u, o, ə, ɔ, ɒ / [i, ã, u, o, ə, ɔ, ɒ].

Example

/ piŋpi:əŋ /	[piŋ ¹ . 'pi:əŋ ²]	" spider "
/ paŋʔu:c /	[paŋ ¹ . 'ʔu:c ³]	" window "
/ caŋruk /	[caŋ ¹ . 'ruk ³]	" grain barn "
/ muŋnu:an /	[muŋ ¹ . 'nu:an ³]	" certain "
/ poŋwel /	[poŋ ¹ . 'wel ²]	" to turn with a lathe "
/ poŋwi:a /	[poŋ ¹ . 'wi:a ²]	" Indian "
/ koŋwɔl /	[koŋ ¹ . 'wɔl ²]	" to worry "
/ koŋwe: /	[koŋ ¹ . 'we: ²]	" a hook for controlling an elephant "

2. CV:N a long vowel occurs only after velar the final velar nasal /_ŋ / [_ŋ] as follows.

-CV:ŋ this structure occurs with the vowels as / i:, ə:, a: / [i:, ə:, a:].

Example:

/ ja:ŋme:c /	[ja:ŋ ¹ . 'me:c ³]	" how? "
--------------	--	----------

/ rɪ:ŋru:əŋ / [rɪ:ŋ¹ . 'ru:əŋ²] " a centipede "
 / cə:ŋma: / [cə:ŋ¹ . 'ma:²] " a bench , a stool "

B. CVC

The final consonants in the first syllable are found as /t,ʔ,l,w,j / [t,ʔ,l,w,j]. The sub-types are listed below.

-1. -CVC :

Example

/ kotma:j / [kot¹ . 'ma:j²] " law "
 / kaʔ.da:h / [kaʔ¹ . 'da:h³] " paper "
 / sɔljiaʔ / [sɔl¹ . 'jiaʔ³] " benefit "
 / kawli: / [kaw¹ . 'li:²] " Korea "
 / majsu:a / [maj¹ . 'su:a²] " float "

-2. -CV:VC : Only one case is found as follows.

Examples:

/ li:ajlɔm / [li:aj¹ . 'lɔm³] " to combine "

C. CCVC :

- CCVC : the vowels found are / a,u,o / [a,u,o].

Example:

/ pdahsa:j / [p^əda^{h1} . 'sa:j²] " a cold "
 / ktumruj / [k^ətum¹ . 'ruj²] " a dragonfly "
 / ktontu:k / [k^əton¹ . 'tu:k³] " a horseshoe crab "

- CCV:C Only the vowel / ɔː / [ɔː] is found here.

Example:

/ kɔːjɔn / [k^əɔːj¹. 'cɔn²] " a kind of herbal plant
(สันตวา) "

- CCVVC The diphthong / ia / [ia] is found here.

Example

/ ktiahlɔŋ / [k^ətia^{h1}. 'lɔŋ²] " a water bug, the
whirligig beetle "

3.3. Presyllabic Nasal

The structure of the nasal syllable is / N_ / [N_]. Due to the weakness of preglottal stop [²_] and its vowel features are free variety between [a] and [ə] [²a~ə] therefore the final consonants / m,n,ŋ / [m,n,ŋ] but not / p / [p] had been become the strong pronouncing element as the first position which had been varied in phonetically level: [²a~əN._ → N_]. However, it is resegmented phonemically as the first initial consonant in the words. The examples are shown below.

-N / m,n,ŋ / [m,n,ŋ] are shown in consequences as follow.

Example

/ mpe:c / [²m¹. 'pe:c³ ~ m¹. 'pe:c³] " now "
/ mpul / [²m¹. 'pul² ~ m¹. 'pul²] " tamarind "
/ mpuŋ / [²m¹. 'puŋ² ~ m¹. 'puŋ²] " Adam's apple "
/ nds:c / [²n¹. 'ds:c³ ~ n¹. 'ds:c³] " to float "

/ nda:t /	[^{7ə} n ¹ . 'dɑ:t ³ ~ ⁷ n ¹ . 'dɑ:t ³]	" tongue "
/ nɛsm /	[^{7ə} n ¹ . 'cɛm ² ~ ⁷ n ¹ . 'cɛm ²]	" to take care of "
/ ɲsɔ:m /	[^{7ə} ɲ ¹ . 'sɔ:m ² ~ ⁷ ɲ ¹ . 'sɔ:m ²]	" dew "
/ ɲsɔ:ɲ /	[^{7ə} ɲ ¹ . 'sɔ:ɲ ² ~ ⁷ ɲ ¹ . 'sɔ:ɲ ³]	" the snapping turtle "
/ ɲsɔ:ɲ /	[^{7ə} ɲ ¹ . 'sɔ:ɲ ² ~ ⁷ ɲ ¹ . 'sɔ:ɲ ²]	" salamader "

4. Co-occurrence of Syllable

The co-occurrence of syllables to be described here because the structure of the syllable depends upon some conditions or context features which may differ in other dialects. The focus in vowels and final consonants, including the nasal syllabic consonants in minor syllables that occur with the initial consonants of the following syllables with the structures [_V.C(C)_], [_VC.C(C)_], [N.C(C)_].

4.1. Co-occurrence of Structure 1 [_V.C_]

For this structure the first syllable is an open minor syllable, so the vowels are segmental linkers which occur or connect to the first initial consonant of the major syllable. They are shown in the following chart:

first syllable	Ci	Ci:	Ce:	Ca:	Cu:	Co:	Co:	Co:	Ci:a	Cu:a
Initial Consonant of second Syllable										
p										
t		x		x						
c		x								
k	x						x			
ʔ										
b										
d					x					
s	x				x	x		x		x
h								x	x	
m					x					x
n										
ɲ										
ŋ										
l		x	x	x				x		
r		x	x							
w		x								x
j										
tʃ						x				
kn				x						
kr					x					

The table 16: Co-occurrence of syllable between the first open minor syllable and the initial consonant of the second major syllable.

4.1.1. Description of Single Initial Consonants

This section describes the co-occurrence boundary between the vowels in the first syllable and the initial consonants of the second syllable. The description is based on the first segment of the second syllable preceded by the final segments of the first syllable.

a. Co-occurrence with the initial consonant

-1. Co-occurrence with stops in major syllable.

The stop consonants in major syllables are / t, c, k / [t, c, k,] as follows.

/ t / [t] occurs with vowels / i:, a: / [i:, a:].

Examples:

/ ?i:ti:al / [?i:¹. 'ti:al²] " kind of tree (ไม้ตาง) "

/ ?a:tih / [?a:¹. 'ti^{h3}] " oxcart "

/ c / [c] occurs with vowel / i: / [i:].

Example:

/ ?i:ca:əŋ / [?i:¹. 'ca:əŋ²] " south "

/ k / [k] occurs with vowels / i, o:, / [i, o:].

Examples:

/ pika: / [pi¹. 'ka:²] " handicapped "

/ ?o:ka:h / [?o:¹. 'ka:^{h3}] " a chance, opportunity "

-2. The implosive consonants / d / [d] in major syllable can occur with a vowel / a: / [a:].

Example:

/ ?a:ds:l / [?a:¹. 'ds:l²] " to be original "

-3. The fricative consonants / s, h / [s, h] are preceded by the following vowels:.

/ s / [s] occurs with / i, a:, u:, ɔ:, u:a / [i, a:, u:, ɔ:, u:a].

Examples:

/ ?a:səj / [?a:¹. 'səj²] " bamboo "

/ ku:sɔ:l / [ku:¹. 'sɔ:l²] " merit, a past good deed "

/ kɔ:sa:ŋ / [kɔ:¹. 'sa:ŋ²] " to build "

/ nisaj / [ni¹. 'saj²] " character "

/ ru:asɔp / [ru:a¹. 'sɔp³] " to dream "

/ h / [h] occurs with the vowels / ɔ:, ɒ: / [ɔ:, ɒ:].

Examples:

/ kɔ:hɔ:m / [kɔ:¹. 'hɔ:m²] " red "

/ ɒ:hɔ: / [ɒ:¹. 'hɔ:²] " to be very angry "

-4. The nasal consonant / m / [m] occurs with the following vowels:

/ m / occurs with the vowels / a:, i:a / [a:, i:a].

Examples:

/ sa:mɔn / [sa:¹. 'mɔn²] " a kind of tree, longan tree
(ต้นลำไย) "

/ ci:amu:aj / [ci:a¹. 'mu:aj²] " to be with "

-5. The lateral and trill consonants / l, r / [l, r] occur with the following vowels:

/ l / [l] is preceded by the vowels / i:, e:, a:, ɔ: /
[i:, e:, a:, ɔ:]

Examples:

/ ki:le:h / [ki:¹. 'ls:ʰ³] " desire "
/ we:li:a / [we:¹. 'li:a²] " time "
/ ?a:law / [?a:¹. 'law²] " at the present time, now "
/ trɔ:lɔp / [tʰrɔ:¹. 'lɔp³] " to return "

/ r / [r] follows vowels / i:, e: / [i:, e:].

Examples:

/ pi:ruh / [pi:¹. 'ruʰ³] " to be melodious "
/ ke:ra:e / [ke:¹. 'ra:e²] " to be naughty, to be bad "

-6. The semi-vowel consonant / w / [w] occurs with / i:, u:a / [i:, u:a].

Examples:

/ ci:wɔt / [ci:¹. 'wɔt³] " life "
/ ?i:wan / [?i:¹. 'wan²] " luggage "
/ wu:awuk / [wu:a¹. 'wuk³] " to be very busy "

b. Co-occurrence with Consonants Cluster

The clusters / tʃ, kn, kr / are found in the major syllable which are preceded by an open minor syllable as follows.

/ tʃ / [tʃ] occurs with a vowel / a: / [a:].

Example

/ ma:tʃɔ: / [,ma:¹ . tʃɔ:²] " unit of four "

/ kn / [kn] has found with a / e: / [e:].

Example

/ we:knə: / [,we:¹ . kənə:²] " ungrateful "

/ kr / [kr] occurs with a vowel / a: / [a:].

Example

/ ?a:krɔ:ʔ / [,?a:¹ . kʰrɔ:ʔ³] " to be rough "

4.2. Co-occurrence of Structure 2. [_VC.C(C)_]

In this structure, a closed minor syllable has a final a consonant. Therefore, the first and second syllables will be linked together by the consonants. They are shown in the table 17 as follows.

I.C.	p	ph	t	th	c	ch	k	kh	ʔ	ʃ	d	s	h	n	ɲ	l	r	w	j	kpr	kr	nd	lp	lm	lj
H.Sy.																									
Can	p	ph	t				k	kh	ʃ	d			h	n		l	r					nd			
Com													h	n		l	r								
Com														n		l									
Com			t																						
Can																	l								
Can						ch				d							l								
Cun							k																		
Com														n		l									
Ciq	p		t			ch	k																		
Can							k	ʔ	d							l	r	w			kr				
Cuŋ															n										
Coŋ																			w						
Co:ŋ																		r							
Coŋ																			w						
Coŋ																			w						
Ca:ŋ														n	n										
Ci:ŋ																			r						
Cə:ŋ														n											
Cot														n											
Caʔ	p									d	h														
Coʔ																					kpr				
Cuʔ																	l								
Coʔ											s														
Cəʔ									ʔ							l									
Cil																								lm	
Cal																									lj
Col																			j				lp		
Caj											s														
Caw																	l								
Ci:aj																	l								

Table 17: Co-occurrence of Structure 2.

4.2.1. Description of Initial Single Consonant

This type of structure occurs in the closed minor syllable which will be concentrated on the vowels and the finals. For the major syllable the description is based on the first elements which are grouped according to their manner and clusters.

a. Co-occurrence with the initial consonants

-1. Co-occurrence with Stops

The stops are / p, t, k, ʔ / [p, t, k, ʔ] and then clusters /ph, ch, kh, kp, kr/ [p^h, c^h, k^h, kp, kr]. They occur with the minor syllable structure as follows.

/ p / [p] occurs with / Cam₋, Ciŋ₋, Caʔ₋, Caŋ₋ / [Cam₋, Ciŋ₋, Caʔ₋, Caŋ₋].

Examples:

/ kampu^h / [kam¹. 'pu^{h3}] "shrimp"
 / nampe:c / [nam¹. 'pe:c³] "just a moment"
 / piŋpi:aŋ / [piŋ¹. 'pi:aŋ²] "spider"
 / caʔpeʔ / [ca^{ʔ1}. 'peʔ³] "debt"
 / kaʔpiʔ / [ka^{ʔ1}. 'piʔ³] "shrimp paste"
 / caŋkra:n / [caŋ¹. 'k^əra:n²] "stove"

/ t / [t] occurs with / Cam₋, Com₋, Ciŋ₋ / [Cam₋, Com₋, Ciŋ₋].

Examples:

/ kantec / [kam¹. 'tec³] "dust"
 / sontu:c / [son¹. 'tu:c³] "barb"
 / tiŋtuŋ / [tiŋ¹. 'tuŋ¹] "eel"
 / siŋto: / [siŋ¹. 'to:²] "lion"

/ k / [k] occurs with / Cam_, Ciŋ_ / [Cam..., Cun...,
Ciŋ_].

Examples:

/ tamkɛ /	[tam ¹ . 'kɛ ³]	" to putt, to throw "
/ tamkec /	[tam ¹ . 'kec ³]	" to attack "
/ camka: /	[cam ¹ . 'ka: ²]	" the frame "
/ camka:ŋ /	[cam ¹ . 'ka:ŋ ²]	" to extend "
/ bunkun /	[bun ¹ . 'kun ²]	" favour "
/ ciŋku? /	[ciŋ ¹ . 'ku ³]	" a toad "

/ ? / [?] occurs with / Caŋ_, Cs?_ / [Caŋ..., Cs?...].

Examples:

/ paŋ?u:c /	[paŋ ¹ . 'u:c ³]	" window "
/ caŋ?i:at /	[caŋ ¹ . 'i:at ³]	" to be narrow "
/ caŋ?ɔ: /	[caŋ ¹ . 'ɔ: ²]	" to vomit "
/ caŋ?ə:t /	[caŋ ¹ . 'ə:t ³]	" to stand on tiptoe "
/ caŋ?ol /	[caŋ ¹ . 'ol ²]	" to point "
/ caŋ?a:e /	[caŋ ¹ . 'a:e ²]	" flat basket "
/ lɛ??ɛt /	[lɛ? ¹ . 'ɛt ³]	" finely powdered "

-2. Co-occurrence with implosives

The implosives / ɓ, d / [ɓ, d] occur in initial position of the major syllable in the following structures.

/ ɓ / [ɓ] occurs with / Cam_ / [Cam...].

Example:

/ lamba? /	[lam ¹ . 'ba? ³]	" to be hard, to be difficult "
------------	--	------------------------------------

/ d / [d] occurs with / Cam_, Can_, Caŋ_, Caʔ_, /
[Cam_., Can_., Caŋ_., Caʔ_..].

Examples:

/ tанда:ə / [.tam¹. 'da:ə²] " to compete "
/ санда:ек / [.san¹. 'da:ek³] " bean "
/ caŋда:ə / [.caŋ¹. 'da:ə²] " ladder "
/ kaʔда:h / [.kaʔ¹. 'da:h³] " paper "

-3. Co-occurrence with fricatives

The fricatives / s, h / [s, h] occurs in these structures
as follows.

/ s / [s] occurs with / Caj_, Coʔ_ / [Caj_., Coʔ_..].

Examples:

/ мајсу:а / [.maj¹. 'su:a²] " a float "
/ мoʔsom / [.moʔ¹. 'som²] " to be suitable "

/ h / [h] occurs with / Cam_, Cоm_, Caʔ_ / [Cam_.,
Cоm_., Caʔ_..].

Exanples:

/ камһм / [.kam¹. 'hmm²] " humming "
/ камһа:еŋ / [.kam¹. 'ha:ŋ²] " to threaten "
/ камһс:p / [.kam¹. 'hs:p²] " to trouble "
/ соһи:аŋ / [.com¹. 'hi:aŋ²] " a slice , a section "
/ таʔһа:w / [.taʔ¹. 'ha:w²] " to be fierce "
/ kaʔһoʔ / [.kaʔ¹. 'hoʔ²] " to tell a lie "

-4. Co-occurrence with nasals

There are only two nasals / m, n / [m, n] as follows.

/ m / [m] occurs with / Cɔn_, Ca:ŋ_, Cə:ŋ_, Cot_ /
[Cɔn_., Ca:ŋ_., Cə:ŋ_., Cot_].

Examples:

/ pɔnmɑ:n / [pɔn¹. 'mɑ:n²] " how much? "
/ ja:ŋme:c / [ja:ŋ¹. 'me:c³] " how? "
/ cə:ŋma: / [cə:ŋ¹. 'ma:²] " a bench, a stool "
/ kotma:j / [kot¹. 'ma:j²] " law "

/ n / [n] occurs with / Cam_, Cɔm_, Cɔm_, Ca:ŋ_, Cuŋ_ /
[Cam_., Cɔm_., Cɔm_., Ca:ŋ_., Cuŋ_] as follows.

Examples:

/ tamne: / [tam¹. 'ne:²] " to be free "
/ tannɔp / [tam¹. 'nɔp³] " dan "
/ tamnu:aŋ / [tam¹. 'nu:aŋ²] " melody "
/ camnɔ:ŋ / [cam¹. 'nɔ:ŋ²] " a lasso, a loop "
/ camnu:an / [cam¹. 'nu:an²] " number "
/ sannɛp / [sam¹. 'nɛp²] " fishing net "
/ kɔmnu:a / [kɔm¹. 'nu:a²] " heap "
/ cɔmnu:aj / [cɔm¹. 'nu:aj²] " a gift "
/ kɔmnɔp / [kɔm¹. 'nɔp³] " hold "
/ kɔmnɔ:t / [kɔm¹. 'nɔ:t³] " a log "
/ muŋnu:an / [muŋ¹. 'nu:an²] " certain "
/ ja:ŋna: / [ja:ŋ¹. 'na:²] " which one? "

-5. Co-occurrence with the lateral and trill

There are / l, r / [l, r] occur as follows.

/ l / [l] occurs with / Cam-, Com-, CDM-, Can-,
Can-, Cən-, Caŋ-, Caʔ-, Caw-, Cuʔ-, Ci:aj- / [Cam..., Com..., CDM..., Can...,
Can..., Cən..., Caŋ..., Caʔ..., Caw..., Cuʔ..., Ci:aj...].

Examples:

/ tamli:aj /	[tam ¹ . 'li:aj ²]	" to destroy "
/ camle:h /	[cam ¹ . 'le:h ³]	" to cut "
/ samlap /	[sam ¹ . 'lap ³]	" to kill "
/ samli:aŋ /	[sam ¹ . 'li:aŋ ²]	" to sharpen "
/ lamle:ŋ /	[lam ¹ . 'le:ŋ ²]	" sound "
/ komlo:h /	[kom ¹ . 'lo:h ³]	" boy, a young and single man "
/ tomloŋ /	[tom ¹ . 'loŋ ²]	"kind of ivy plant (คำลิง)"
/ panlɯ: /	[pan ¹ . 'lɯ: ²]	" sunshine "
/ kanle:k /	[kan ¹ . 'le:k ³]	" to glance "
/ kanlah /	[kan ¹ . 'la ^{h3}]	" to pin, to tag "
/ sanla: /	[san ¹ . 'la: ²]	" areca "
/ sanlop /	[san ¹ . 'lop ³]	" to be shocked, to be unconscious "
/ tonlop /	[ton ¹ . 'lop ³]	" to wrap up, to cover "
/ caŋle:n /	[caŋ ¹ . 'le:n ²]	" earth worm "
/ caŋlo:h /	[caŋ ¹ . 'lo:h ³]	" a torch "
/ caŋlu:a /	[caŋ ¹ . 'lu:a ²]	" to imitate "
/ taʔle: /	[ta ^{ʔ1} . 'le: ²]	" sea "
/ chaʔlo:m /	[cha ^{ʔ1} . 'lo:m ²]	" a round bamboo basket "
/ kawli: /	[kaw ¹ . 'li: ²]	" Korea "
/ kuʔla:p /	[ku ^{ʔ1} . 'la:p ³]	" rose "
/ li:ajlom /	[li:aj ¹ . 'lom ²]	" to combine "

/ r / [r] occurs with / Cam_, Com_, Caŋ_, Ciŋ_, Co:ŋ_, /
[Cam_, Com_, Caŋ_, Ciŋ_, Co:ŋ_] as follows.

Examples:

/ tamra: /	[tam ¹ . 'ra: ²]	" book "
/ tamro:ŋ /	[tam ¹ . 'ro:ŋ ²]	" a general name for small plant yeilding starchy root(cassva)(มัน)"
/ tamru:at /	[tam ¹ . 'ru:at ³]	" police "
/ camrup /	[cam ¹ . 'rup ²]	" to stimulate "
/ samra:m /	[sam ¹ . 'ra:m ²]	" hard dust "
/ komru:ap /	[kom ¹ . 'ru:ap ³]	" a lid "
/ paŋru:l /	[paŋ ¹ . 'ru:l ²]	" manis javanicus(ตัวนึ่ง)"
/ caŋraj /	[caŋ ¹ . 'raj ²]	" to be bad "
/ caŋruk /	[caŋ ¹ . 'ruk ³]	" grain barn "
/ caŋret /	[caŋ ¹ . 'ret ³]	" cricket "
/ ri:ŋru:aŋ /	[ri:ŋ ¹ . 'ru:aŋ ²]	" a centipede "
/ cho:ŋro:ŋ /	[cho:ŋ ¹ . 'ro:ŋ ²]	" to sit on heels "

-6. Co-occurrence with Semi-vowels

The semi-vowels / w, j / [w, j] occur as follows.

/ w / [w] occurs with / Caŋ_, Coŋ_, Coŋ_, Coŋ_ /
[Caŋ_, Coŋ_, Coŋ_, Coŋ_].

Examples:

/ Caŋwə? /	[caŋ ¹ . 'wə? ³]	" rhythm "
/ caŋwa: /	[caŋ ¹ . 'wa: ²]	" small fishes "
/ poŋwel /	[poŋ ¹ . 'wel ²]	" to turn with a lathe "
/ poŋwil /	[poŋ ¹ . 'wil ²]	" to turn around "
/ poŋwi:a /	[poŋ ¹ . 'wi:a ²]	" Indian "

/ kh / [k^h] occurs with / Cam_ / [Cam._]
as follows.

Examples:

/ samkhan / [sam¹. 'k^han²] " important "
/ ramkha:n / [ram¹. 'k^ha:n²] " to feel annoyed "

/ kr / [k^r] occurs with / Caŋ_ / [Caŋ._].

Example:

/ caŋkra:n / [caŋ¹. 'k^rra:n²] " stove "

/ md / [m^d] occurs with / Cam_ / [Cam._].

Example:

/ tammda: / [t^ham¹. 'm^dda:²] " normal "

/ lp / [l^p] occurs with / Cəl_ / [Cəl._].

Example:

/ hollpiŋ / [həl¹. 'l^ppiŋ²] " a kind of spider, mygale "

/ lm / [l^m] occurs with a / Cil_ / [Cil._].

Example:

/ tillmaw / [til¹. 'l^mmaw²] " leprosy "

/ lj / [l^j] occurs with a / Cal_ / [Cal._].

Example:

/ mallji:at / [mal¹. 'l^jji:at³] " a manner "

4.3. Co-occurrence of Syllabic Nasals

The syllabic nasals occur initially before the consonant of the major syllable indicated as in the following chart.

Initial Consonants of Major Syllable		p	t	c	k	ʔ	β	d	s	h	ɲ	n	p	ŋ	l	r	w	j	tn	
syllabic nasals of minor syllable	m	X					X					X								
	n			X				X	X										X	X
	ŋ		X	X	X	X		X	X						X	X	X			

Table 18: Co-occurrence of syllabic nasals with initial consonant in major syllables.

There are three nasal consonants / m-, n-, ŋ- / [m- ~⁷əm-, n- ~⁷ən-, ŋ- ~⁷əŋ-] which precede the major syllable as in the following description.

/ m- / [m- ~⁷əm-,] occurs with / p, β, ɲ / [p, β, ɲ].

Example

/ mɲl / [m¹. 'ɲl² ~⁷əm¹. 'ɲl²] " tamarind "

/ mɲŋ / [m¹. 'ɲŋ² ~⁷əm¹. 'ɲŋ²] " Adam's apple "

/ mβl / [m¹. 'βl² ~⁷əm¹. 'βl²] " salt "

/ mba:ɔ / [n̩¹. 'ba:ɔ² ~ ʔᵃ n̩¹. 'ba:ɔ²] " butterfly "

/ mmip / [n̩¹. 'mip² ~ ʔᵃ n̩¹. 'mip²] " moment of time "

/ n_ / [n_ ~ ʔᵃ n_] occurs with / c, d, s, j, tn /
[c, d, s, j, tn].

Example

/ ncsɛm / [n̩¹. 'csɛm² ~ ʔᵃ n̩¹. 'csɛm²] " to take care of "

/ ncu:n / [n̩¹. 'cu:n² ~ ʔᵃ n̩¹. 'cu:n²] " to transport "

/ nsa:j / [n̩¹. 'sa:j² ~ ʔᵃ n̩¹. 'sa:j²] " a rabbit "

/ nji:aj / [n̩¹. 'ji:aj² ~ ʔᵃ n̩¹. 'ji:aj²] " to say,
to speak "

/ ntnu: / [n̩¹. 't̩nu:² ~ ʔᵃ n̩¹. 't̩nu:²] " rainbow "

/ ŋ_ / [ŋ_ ~ ʔᵃ ŋ_] occurs with / t,c,k,ʔ,d,s,l,r,w /
[t,c,k,ʔ,d,s,l,r,w].

Example

/ ŋtuŋ / [ŋ̩¹. 'tuŋ² ~ ʔᵃ ŋ̩¹. 'tuŋ²] " eel "

/ ŋci:an / [ŋ̩¹. 'ci:an² ~ ʔᵃ ŋ̩¹. 'ci:an²] " a ring "

/ ŋks:p / [ŋ̩¹. 'ks:p³ ~ ʔᵃ ŋ̩¹. 'ks:p³] " a frog "

/ ŋkal / [ŋ̩¹. 'kal² ~ ʔᵃ ŋ̩¹. 'kal²] " when? "

/ ŋʔɛ:l / [ŋ̩¹. 'ʔɛ:l² ~ ʔᵃ ŋ̩¹. 'ʔɛ:l²] " to fondle "

/ ŋdo:ŋ / [ŋ̩¹. 'do:ŋ² ~ ʔᵃ ŋ̩¹. 'do:ŋ²] " a well "

/ ŋda:ək / [ŋ̩¹. 'da:ək³ ~ ʔᵃ ŋ̩¹. 'da:ək³] " turtle "

/ ŋsɔ:ŋ / [ŋ̩¹. 'sɔ:ŋ² ~ ʔᵃ ŋ̩¹. 'sɔ:ŋ²] " snapping
turtle "

/ ŋsd:m / [ŋ̩¹. 'sd:m² ~ ʔᵃ ŋ̩¹. 'sd:m²] " dew "

/ ŋluʔ / [ŋ̩¹. 'luʔ³ ~ ʔᵃ ŋ̩¹. 'luʔ³] " vegetable "

/ ŋrun / [ŋ̩¹. 'run² ~ ʔᵃ ŋ̩¹. 'run²] " to swing (leg) "

/ ŋwe:ŋ / [ŋ̩¹. 'we:ŋ² ~ ʔᵃ ŋ̩¹. 'we:ŋ²] " to lose "

/ ŋwe:l / [ŋ̩¹. 'we:l² ~ ʔᵃ ŋ̩¹. 'we:l²] " soul "

5. Syllable Function

In terms of phonological word there are two syllable classes nucleus and periphery in this dialect it is distinguished by differences in pitch. There are two stresses: strong stress and weak stress. The strong stress varies in pitch between [2] and [3] which depends on the final consonants. However the monosyllable always carries the strong stress on the nucleus. And the weak stress always occurs in the first syllable of a disyllabic word. Its pitch is [1] (low-level).

6. Nuclear Syllable

The nucleus of the syllable always takes a heavy stress. It is defined as a major syllable which occurs in monosyllabic words and disyllabic words. So the monosyllabic word structure is [S.] and the disyllabic word structure is [W.S.]. Weak stress is marked with [_] and strong stress is marked with [' _].

6.1. Monosyllabic Word

Examples:

/ pec /	[' pec ³]	" diamond "
/ pep /	[' pep ²]	" to be full "
/ puh /	[' pu ^{h3}]	" poisonous "
/ da:əm /	[' da:əm ²]	" to be in the old time, tree trunk "
/ seh /	[' se ^{h3}]	" horse "
/ sən /	[' sən ²]	" before "

6.2. Disyllabic Word

According to Jacob, Judith M. (1960) disyllable is here defined as two monosyllable operating together as one word or free from; each of the two parts can be analysed in the terms applied to monosyllables.

Examples:

/ pi:ruh /	[pi: ¹ . 'ru ^{h3}]	" to be melodious "
/ ci:wot /	[ci: ¹ . 'wot ³]	" life "
/ ke:ra:e /	[ke: ¹ . 'ra:e ²]	"to be naughty, to be bad"
/ we:li:a /	[we: ¹ . 'li:a ²]	" time "
/ ?a:tih /	[?a: ¹ . 'ti ^{h3}]	" oxcart "
/ ma:tɔ: /	[ma: ¹ . 'tɔ: ²]	" unit of four "

7. Peripheral Syllable

A peripheral syllable in the phonological word often occurs in disyllables before a the stressed nucleus in the word. Its quality is weaker than the nucleus (see the example for disyllable).

CHAPTER IV

THE PHONOLOGICAL WORD

1. General Definition

The phonological word or stress-group is defined as the rank at which units function in the intonation group and their structure is stated in terms of syllables which includes stress and pitch.

The phonological word has got main stress with prominent pitch. The major syllable always occurs with heavy stress in the nucleus of a word.

The phonological word in Khmer of Ban Nawattai may have one to three syllables. Each word has one stressed syllable as its nucleus and may have one weaker stress preceding the syllable at its periphery. Monosyllable in words only have one main stress.

2. Stress

According to Peter Ladefoged (A Course in Phonetics, 1982, page 224), stress is a suprasegmental feature of utterances. It applies not to individual vowels and consonants but to whole syllables whatever they might be. A stressed syllable is pronounced with a greater amount of energy than an unstressed syllable.

For this dialect the stress is predictable from the syllabic structure of the word. Though this dialect has stress in a word, it does not change the meaning. Therefore word stress needs to be marked at the phonetic level.

3. Degree of Stress

Pitch can be used to distinguish two or three degrees of stress, weak stress and strong stress but it is optional for medium stress (see word pitch).

4. Word Pitch

It has been found that there are three pitch levels, low-level [1], mid-level [2] and high-level [3] in Khmer, Ban Nawattai dialect. The mid-level [2] pitch occurs with single words which are monosyllabic and in disyllabic words. This pitch varies freely between the mid-level pitch [2] and the high-level [3], and it depends on the final consonants or the opened syllable of a word. Trisyllabic words carry a higher pitch on the second or the third syllable. The higher pitch may be chosen to be the main stress. If a trisyllabic word does not have any contrasts, the second syllable will be chosen as the main nucleus. Data for trisyllabic words are quite rare. It often occurs on the second syllable of the disyllabic word (see trisyllabic word).

4.1. The conditional Shift of Pitch

The discrimination of stresses on syllable indicates that it shifts in mid-level to high-level which is resegmented to be a phonetic feature of strong stress due to the influence of finals. It always occurs in closed syllables which is required by the finals / p,t,c,k,ʔ,h / [p,t,c,k,ʔ,h]. In this dialect the meaning of a word is not changed by the different pitches. Pitch is a natural feature and thus pitches do not need to be marked at the phonemic level. Moreover, the monosyllable is a nucleus. Both mid-level and high pitches level are the

components of the monosyllabic word. However, the low-level pitch occurs in any conditions on the first syllable (minor syllable) of the disyllabic word as indicated by the following examples.

4.1.1. Monosyllable

-1. Opened Syllable

Examples:

/ ppe: /	['p ^o pe: ²]	" to soothe "
/ pla: /	['p ^o la: ²]	" thorn "
/ pi: /	['pi: ²]	" two "
/ pu:a /	['pu:a ²]	" to pick up, a blessing "

-2. Closed Syllable

-2.1.1. The finals except / p,t,c,k,ʔ,h / [p,t,c,k,^ʔ,^h]

Examples:

/ pphu:m /	['p ^o phu:m ²]	" spirit house "
/ ppon /	['p ^o pon ²]	" wife "
/ ti:an /	['ti:an ²]	" to tie "
/ pɯŋ /	['pɯŋ ²]	" just, to take refuge "
/ dɔl /	['dɔl ²]	" to arrive, to box "

-2.2.1. The finals with / p,t,c,k,ʔ,h / [p,t,c,k,^ʔ,^h]

Examples:

/ tiap /	['tiap ³]	" to be short "
/ thət /	['thət ³]	" to be fat "
/ tu:c /	['tu:c ³]	" to be small "
/ tuk /	['tuk ³]	" to keep, sufficient "
/ tiaʔ /	['tia ^{ʔ3}]	" again "
/ tha:h /	['tha: ^{h3}]	" a tray "

4.1.2. Disyllable

The nucleus of the disyllabic word is on the second syllable, so it will be concentrated on the last structure as open or closed of syllable.

-1. Open Syllables

Examples:

- / ke:ra:e / [ke:¹. 'ra:e²] "to be naughty, to be bad "
- / ma:tɔ: / [ma:¹. 'tɔ:²] " unit of four "
- / siŋto: / [siŋ¹. 'to:²] " lion "
- / we:knə: / [we:¹. 'kənə:²] " ungrateful "
- / ntnu: / [n¹. 't^ənu:² ~ n¹.t^ənu:²] " rainbow "

-2. Closed syllables with the finals continuants and sonorants.

Example

- / samra:m / [sam¹. 'ra:m²] " hard dusty "
- / caŋkra:n / [caŋ¹. 'k^əra:n²] " stove "
- / camka:ŋ / [cam¹. 'ka:ŋ²] " to extend "
- / ŋkaŋ / [n¹. 'kaŋ²] "kind of flower (ดอกขี้เหล็ก)"
- / pɔŋwil / [pɔŋ¹. 'wil²] " to turn around "
- / taʔha:w / [ta¹. 'ha:w²] " to be fierce "
- / kotma:j / [kot¹. 'ma:j²] " law "

-3. Closed syllables with the final stops and fricatives

/ p,t,c,k,ʔ,h / [p,t,c,k,ʔ,h]

Example

- / tonlop / [tɔn¹. 'lop³] " to wrap up, to cover "
- / komno:t / [kom¹. 'no:t³] " a log "
- / kamtec / [kam¹. 'tec³] " dust "
- / lha:pe:k / [l^əha:¹. 'pe:k³] " to be immediate "

/ ɲluʔ /	[˧˥ ɲ ¹ . ˨˩ lu ²³]	" vegetable "
/ winiaɪ /	[wi ¹ . ˨˩ nia ^{h3}]	" to go to ruin "

5. Word Structure

There are three types of word structure in this dialect: words may be monosyllabic, disyllabic and trisyllabic. Trisyllabic words are rare, so very little will be said about them.

Low-pitch in a word corresponds to weak stress; mid-level and high-level pitches correspond to strong stress according to the following descriptions.

5.1. Monosyllabic Word

A monosyllabic word carries a strong stress on the syllable. Its structure is / C(C)(C)(C)V(:)(V)(C) / as follows.

Examples:

/ pi: /	[˨˩ pi: ²]	" two "
/ pu:a /	[˨˩ pu:a ²]	" to pick up, a blessing "
/ pec /	[˨˩ pec ³]	" diamond "
/ piaʔ /	[˨˩ pia ⁷³]	" word "
/ ka:ət /	[˨˩ ka:ət ³]	" to happen, to give birth "
/ pla: /	[˨˩ p ^ə la: ²]	" thorn "
/ pra:ə /	[˨˩ p ^ə ra:ə ²]	" to use "
/ phka: /	[˨˩ ph ^ə ka: ²]	" flower "
/ khma:e /	[˨˩ kh ^ə ma:e ²]	" Khmer "
/ tpsɲ /	[˨˩ t ^ə psɲ ²]	" young bamboo, swamp "
/ sna:j /	[˨˩ s ^ə na:j ²]	" a kind of tree(ต้นกล้วย) "
/ tciaʔ /	[˨˩ t ^ə cia ⁷³]	" ear "
/ pku:aj /	[˨˩ p ^ə ku:aj ²]	" chameleon "
/ phsma: /	[˨˩ ph ^ə s ^ə ma: ²]	" shoulder "

/ prŋəŋ / ['pʰr̄ŋəŋ²] " to compete "
 / phcu:a / ['ph̄cu:a²] " to plough "

5.2. The disyllabic Word

There are two types of disyllabic words in this dialect: one with a transitional structure and a syllabic nasal both of which have a weak stress in the first syllable of the word. The second syllable has a strong stress and is the nucleus of the word.

It can be divided into two subtypes, open and closed forms that occur in the first syllable as follows.

5.2.1. Open Structure (opened minor syllable + Major syllable)

Its structure is CV(:)(V)_.

Examples:

/ pika: / [.p̄i¹. 'ka:²] " handicapped "
 / pi:ruh / [.p̄i:¹. 'ruʰ³] " to be melodious "
 / wu:awuk / [.w̄u:a¹. 'wuk³] " to be very busy "

5.2.2. Closed Structure (closed minor syllable + major syllable)

Its structure is C(C)V(:)(V)C_.

Examples:

/ tanne: / [.t̄an¹. 'ne:²] " to be free "
 / panlu: / [.p̄an¹. 'lu:²] " sunshine "
 / piŋpi:aŋ / [.p̄iŋ¹. 'pi:aŋ²] " spider "
 / majsu:a / [.m̄aj¹. 'su:a²] " float "
 / rɪ:ŋru:aŋ / [.r̄ɪŋ¹. 'ru:aŋ²] " a centipede "
 / li:ajlɔm / [.l̄i:aj¹. 'lɔm²] " to combine "
 / prə:hi:am / [.p̄rə:¹. 'hi:am²] " dawn "

/ pɔahsa:j /	[p ^o da ^{h1} . 'sa:j ²]	" a cold "
/ kpɔ:jcən /	[k ^o pɔ:j ¹ . 'cən ²]	" a kind of herbal plant (สันตวา) "
/ ktiahlɔŋ /	[k ^o tia ^{h1} . 'lɔŋ ²]	" a water bug, the wirlingis "

5.3. Syllabic Nasal

A nasal syllable is found in the first syllable of a disyllabic word that has a weak stress. Its structure is N_ as follows.

Examples:

/ mpwɪ /	[m ¹ . 'pwɪ ²]	" tamarind "
/ mbel /	[m ¹ . 'bel ²]	" salt "
/ ncu:n /	[n ¹ . 'cu:n ²]	" to transport "
/ nsa:j /	[n ¹ . 'sa:j ²]	" a rabbit "
/ ŋkɛ:p /	[ŋ ¹ . 'kɛ:p ³]	" a frog "
/ ŋdo:ŋ /	[ŋ ¹ . 'do:ŋ ²]	" a well "

5.4. The Trisyllabic Words

This study has found only two words with three syllables:

/ ŋsɔlmil /	[ŋ ^{2o} sɔ ¹ . 'sɔl ² . 'mil ² ~ ŋ ¹ . 'sɔl ² . 'mil ²]	" yesterday "
/ na:lika: /	[na: ¹ . 'li ² . 'ka: ²]	" clock "

CHAPTER V

THE INTONATION GROUP

1. General Definition

The intonation group is defined as the unit of the highest rank of the phonological hierarchy has no stable function. The structure of the intonation group is described in terms of the stress group.

There are three types of intonation contours in Nawattai Khmer. These are characterized by the pitch on the last syllable of the utterance in the group as follows:

-1. The rising contour which has a rising slope and is represented as follows.

[_____]

-2. The falling contour which has a falling slope and is represented as follows.

[_____]

-3. The rising and falling contour which has a slope up and down slope and represented as follows.

[_____]

-1.1. The rising contour

It is used in polar questions, content questions and in the first clause of a sentence or unfinished utterances, *imperative statement, definite statement.

* Huffman, Franklin E. 1967. An Outline of Cambodian Grammar. p.41.

-1.1.1 Polar Question

_____ / ba:n cra:ən da:e /

" get much question word "

" Do you get much? "

_____ / cəh dsŋ /

" intelligent know "

" Do you know? "

_____ / mi:ən mʌh nɔw ptəh da:e /

" have human stay house question word "

" Does any body stay in this house? "

_____ / ?əm thə: sra:e mə:n təh /

" uncle do rice field correct not "

" Uncle did you plant rice or not? "

_____ / ?əm ba:n srə:w jɛ? təh /

" uncle get rice much not "

"Uncle did you get a lot of rice or not? "

_____ / ?əm thə: sra:e hɔ:j hɔ:j /

" uncle do rice field finish already "

" Uncle did you finish planting rice already? "

-1.1.2 Content Question

In this type of question the speaker would not need to know the answers which would be used as introductory question.

_____ / ke: thə: sʔʌj /

" 3pr do what "

" What did he do? "

_____ / ke: thə: ʔʌj nʌŋ /

" 3pr do what polite word "

" What did he do? "

_____ / ʃɔ:ŋ ʃa:n sʔʌj /

" older sibling get what "

" What do you get? "

_____ / ke: mɔ: ŋkal /

" 3prs come when "

" When did he come? "

_____ / wi:a tɔw thə: ka: ʔi:na: /

" 3prs go do a work where "

" Where did he go to work? "

_____ / thə: me:c thɯŋ wʌj ko:n /

" do why to hit child "

" Why did you hit a child? "

_____ / trɔ:lɔp ptɛh ja:ŋ me:c /

" return house how "

" How do you return to your home? "

_____ / thə: ja:ŋ me:c ci:a /

" do how good "

" How should we do? "

_____ / ?a:na: cɔŋ tow ?aŋ nom /

" who want go with me "

" Who wants to go with me? "

_____ / ?a:na: now ptsh /

" who stay house "

" Who stayed at home? "

-1.1.3. Unfinished Utterance

The rising contour was used in the first clause.

_____ / tha: ?a:ɔ tow sra:e nom tow phɔ:ŋ /

" if father go rice field I go with "

" If father goes to the field I will go "

_____ / tow sra:e sən cam tow knoŋ wɛŋ /

" go rice field wait go in city "

" Go to the field first and then go to the city "

_____ / thə: ja:ŋ me:c kɔ: man fa:n /

" do which how linking word not get "

" No matter what you do, can not get it "

_____ / ʔat si:am mɛ:n la:əŋ ʔat khma:e ɬa:n mli:an /
 " money Thai ten thousand on money Khmer get a hundred
 thousand "

" Ten thousand Thai money can be exchanged for a hundred
 thousand of Khmer money "

-1.1.4. Definite Statement

_____ / nom ju:a wi:a tow ʔi:nuh /

" I take 3prs go that "

" I will take it there. "

_____ / ke: ŋkuj now ʔi:nuh /

" 3pr sit stay that "

" He sits over there. "

_____ / ke: now ʔi:nɬ /

" 3pr stay this "

" He stayed here. "

-1.1.5. Imperative Statement

_____ / kom ɬa:t /

" don't run "

" Don't run. "

_____ / mɔ: nih /

" come here "

" Come here. "

_____ / la:əŋ chu:a /

" up stand "

" Stand up "

-2.1. The falling contour

It is used in negative questions and content questions.

-2.1.1. Negative question

/ man mi:an ne? na: now ptsh nih te: /
 " not have person who stay house this not "
 " There is nobody staying at this house "

/ man khe:p wi:a te: /
 " not see 3prs not "
 " I didn't see him. "

-2.1.2. The content question

In this type of question the content may be changed to the falling contour when the speaker wants to know answers.

/ ke: thə: sʔʌj /
 " 3prs do what "
 " What did he do? "

/ ke: thə: ʔʌj nʌŋ /
 " 3prs do what polite word "
 " What did he do? "

/ ɒd:ŋ ɒa:n sʔʌj /
 " older sibling get what "
 " What do you get? "

/ ke: ɲɔ: ŋkal /

" 3prs come when "

" When did he come? "

/ wi:a tow thə: ka: ?i:na: /

" 3prs go do a work where "

" Where did he go to work? "

/ thə: ɲe:c thɯŋ waj ko:n /

" do why to hit child "

" Why did you hit a child? "

/ trɔ:lɔp ptsh ja:ŋ ɲe:c /

" return house how "

" How do you return to your home? "

/ thə: ja:ŋ ɲe:c ci:a /

" do how good "

" How should we do? "

/ ?a:na: cɔŋ tow ?ɔŋ ɲom /

" who want go with me "

" Who wants to go with me? "

/ ?a:na: now ptsh /

" who stay house "

" Who stayed at home? "

-3.1. The rising and falling contour

It is used in the second clause of an unfinished utterance.

-3.1.1. Unfinished utterance

_____ / tha: ?a:ɔ tow sra:e nom tow pho:ŋ /

" if father go rice field I go with "

" If father goes to the field, I will go "

_____ / tow sra:e sən cam tow knoŋ wəŋ /

" go rice field wait go in city "

" Go to the field first and then go to the city "

_____ / thə: ja:ŋ me:c kɔ: man ba:n /

" do which how linking word not get "

" No matter what you do, you can not get it "

_____ / ?at si:am mss:n la:əŋ ?at khma:e ba:n mli:an /

" money Thai ten thousand on money Khmer get a hundred thousand "

" Ten thousand Thai baht can be exchanged for a hundred thousand units of Khmer money "

-3.1.2. Interjection Statement

_____ / ?o:! man ju:a pho:ŋ te: /

"interjection utterance not take with not"

" Oh! I dont want to take it (or I dont agree with you)"

_____ / ?o:! wi:a thlaj pe:k tow /

"interjection utterance 3prs cost over go "

"Oh! It is too costly "

CHAPTER VI

CONCLUSION

I. A Summary

1. The Phonological Study of Khmer

1.1. Phoneme

1.1.1. Consonants

There are seventeen phonemes in Nawattai dialect /p, t, c, k, ʔ, b, d, s, h, m, n, p, ŋ, l, r, w, j/. All consonants can occur in the first and second position of the syllable. And all can occur in third position except for /ʔ/. Only /h, l/ were found to occur in the fourth position of the syllable. There are thirteen final consonant phonemes /t, p, c, k, ʔ, h, m, n, p, ŋ, l, w, j/ which can occur in major syllables and, except for /p, c, k, p/, can not occur finally in minor syllables.

The phonological system of consonants in three dialects: Northern Khmer (Surin), Central Khmer (Phnom Penh) and Nawattai Khmer are seventeen consonant phonemes. The outstanding final phoneme /_r/ is different among these dialects: Northern Khmer /_r/ is pronounced while the Central Khmer and Nawattai Khmer do not have /_r/ in final position. Thus there are fourteen final consonant phonemes in Northern Khmer, while Nawattai and Central Khmer have only thirteen final consonant phonemes. The phonemes /b, d, s/ do not occur finally in any of the three dialects.

1.1.2. Vowels

In Nawattai dialect there are 35 vowel phonemes, there are 14 single short vowels /i, ɪ, e, ɛ, ɨ, ʏ, ə, ʌ, a, u, ɔ, o, ɔ, ɒ/ and 13 single long vowels /i:, ɪ:, e:,

ɛ:, ɯ:, ʋ:, ə:, a:, u:, ɔ:, o:, ɔ:, ɒ: /. There are two short diphthongal vowels /ia, ua / and 6 long diphthongal vowels /i:a, a:e, ɯ:a, a:ə, u:a, a:ɔ:/. All the short single vowels can occur only in closed syllable except for /i/. /i/. Vowels phonemes of the three dialects will be compared with the other dialects in the figures below:

Central Khmer						Northern Khmer					
i	i:	ɯ	ɯ:	u	u:	i	i:	ɯ	ɯ:	u	u:
ɿ	ɿ:	ʋ	ʋ:	ɔ	ɔ:	ɿ	ɿ:	ʋ	ʋ:	ɔ	ɔ:
e	e:	ə	ə:	o	o:	e	e:	ə	ə:	o	o:
ɛ	ɛ:		ʌ:	ɔ	ɔ:	ɛ	ɛ:	ʌ	ʌ:	ɔ	ɔ:
		a	a:	ɒ	ɒ:			a	a:	ɒ	ɒ:
	i:a		ɯ:a	ua	u:a	ia	i:a	ɯa		ua	u:a
ea					o:a						
a:ɛ			a:ʌ		a:ɔ						

Nawattai Khmer

i	i:	ɯ	ɯ:	u	u:
ɿ	ɿ:	ʋ	ʋ:	ɔ	ɔ:
e	e:	ə	ə:	o	o:
ɛ	ɛ:	ʌ		ɔ	ɔ:
		a	a:	ɒ	ɒ:
ia	i:a		ɯ:a	ua	u:a
	a:e		a:ə		a:ɔ

Figure 6.: The Comparison of Vowels among three dialects

From the Figure 6 shows that the monophthong vowels /A, A: / are found in Northern Khmer, but only /A/ is seen in Nawattai Khmer while /A: / is observed in Central Khmer. The diphthongal vowels in Central Khmer and Nawattai Khmer comprise only nine phonemes and there are only five phonemes in Northern Khmer. It was found that some diphthongal vowels in both Central Khmer and Nawattai Khmer almost totally correspond, except for such phonemes as /ea, a:ɛ, a:A/. All of these may vary to phonemes /ia, a:e, a:ə/ in Nawattai dialect. The phoneme /ma/ is not noted in Central Khmer and Nawattai Khmer, but it is found in Northern Khmer. Although /m:a/ is found in Central and Nawattai Khmer, it is not heard in Northern Khmer. The diphthong /o:a/ is found only in Central Khmer.

1.2. Syllables

There are three types of syllables in Nawattai and Northern Khmer: major syllable, minor syllable and presyllable; however, there are only two types of major syllable and minor syllable in Central Khmer. There are two types of presyllable, open and with syllabic nasal, in Northern Khmer; but, there is only one type, syllabic nasal, in Nawattai Khmer.

There are both open syllable and closed syllables in all three dialects. The presyllables never occur in Central Khmer. There are two-consonant clusters / CC- /, three-consonant clusters / CCC- /, and four-consonant clusters / CCCC- / in Northern Khmer and Nawattai Khmer, while there are only two-consonant clusters / CC- / in Central Khmer.

Structure of Syllable	CNK	NK	NWK
1. Major Syllable			
a. Open Syllables	C(C)V	C(C)(C)V	C(C)(C)(C)V
b. Closed Syllables	C(C)VC	(C)(C)(C)(C)VC	C(C)(C)(C)VC
2. Minor syllables			
a. Open Syllables	C(C)V	CV	C(C)(C)V
b. Close Syllables	C(C)VC	C(C)VN	C(C)VC
3. Presyllable			
a. Open Syllables	--	Cə.C ^r ə	--
b. Syllabic Nasal	--	N	N

Table 19: Types of Syllabic Structures in Central, Northern and Nawattai Khmer

1.3. Intonation Groups

Each group exhibits three types of intonation: the falling contour, the rising contour, and the high level contour in Central Khmer, or the rising-falling contour in Northern Khmer and Nawattai Khmer. Intonation in Central Khmer is also affected by politeness and degree of formality or informality; however, this does not occur in Northern Khmer and Nawattai Khmer.

The contrast of the rising contour and falling contour of Central Khmer in content questions and polar questions is a clue to politeness; moreover, the rising contour is considered formal and polite, but the falling contour shows an implication that the speaker's status is equal to or superior to that of the addressee.

1.4. The Phonological Words

Phonological words in three dialects may have one or two syllables; three-syllable words are rare. The major syllable of the disyllabic words in these three dialects is in the last syllable and a monosyllabic word is usually a major syllable.

There are two types of non-contrastive stress in Nawattai Khmer and Central Khmer: strong stress and weak stress. The strong stress is on the major syllable and the weak stress is on the minor syllables.

But there are three types of non-contrastive stress in Northern Khmer: strong stress, weak stress and non-stress. Strong stress is on the major syllable, weak stress is on the minor syllable and non-stress is on the presyllable.

2. Some Comparative Phonetic variations

A comparison of some phonetic variations can be summarized here are as follows:

2.1. Central Khmer and Nawattai Khmer

In this study, based on the Cambodian writing system by Franklin E. Huffman (1969), it was found that some elements such as syllables and segments show variations in Nawattai Khmer as follows:

2.1.1. Variation of Syllable

a. Closed minor syllable

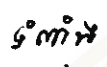
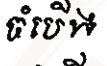
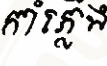
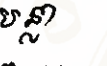


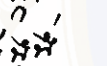
There are two types of variation in closed minor syllable.

a.1. Type 1.

The initial consonants of the first syllable remains

initially while the vowels and final nasal consonants *-um*, *-am*, *-DM*, *-DN*, *-DP*, *-Dŋ*, *-oŋ* of this syllable are lost, which makes the disyllabic words reduce to monosyllabic words.

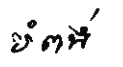
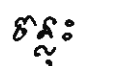
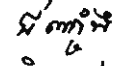
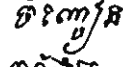
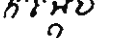
Examples.

Written Khmer	CNK Pronunciation	NWK Pronunciation	
	tumpi:an	tpɛŋ	"young bamboo"
	cɔmba:əŋ	cɛba:əŋ	"rice straw"
	kampha:əŋ	kphlɛ:ŋ	"gun"
	ɛnla:	pla:	"thorn"
	kɔpcoŋ	khcoŋ	"a kind of fish (ឯក)
	cɔŋka:	cka:	ឃ្នក "chin"
	cɔŋkaun	ckuŋ	"knee"

a.2. Type 2.

The initial consonants and vowels are lost while the final nasals *-m*, *-n*, *-p*, *-ŋ* of the first syllable remain initially. Sometimes they are varied to other final nasal consonants, and then the disyllabic words are reduced to monosyllabic words in Nawattai Khmer.

Examples.

Written Khmer	CNK Pronunciation	NWK Pronunciation	
	ɛmpuan	mɔpɔŋ	"Adam's apple"
	cɔnloh	ŋlo:h	"a torch"
	cuanɛaŋ	ncɛŋ	"a wall"
	cɔnci:an	ŋci:an	"a ring"
	kɔŋka:ep	ŋkɛ:p	"a frog"

b. Open minor syllable

It was found that which the consonant *_r_* is the second member of these clusters and the following vowels *_o_*, *_ɔ_* are lost, the initial consonants *p_*, *t_*, *c_*, *k_*, *s_* remained in the first position in Nawattai Khmer pronunciation.

Examples.

Written Khmer	CNK Pronunciation	NWK Pronunciation	
ប្រទេស	prɔtɛ:h	ptɛh	"a country"
ព្រលប់	prɔlɔp	plop	"at dawn, dusk"
ត្រចៀក	trɔciɑ?	tcia?	"ear"
ត្រជាក់	trɔciɑ?	tce?	"freeze"
ច្រមុះ	crɔmɔh	cmɔh	"nose"
ស្រូវ	crɔlɔɑ?	*cru?	"sauce"
ក្រណាត់	krɔnɑ:an	knɑ:an	"wax"
ត្រៃ	krɔwi:	kwi:	"to wave (flag)"
ស្រូវមាត់	srɔmɑ:ɔc	smɔ:c	"ant"
ស្រឡាញ់	srɔlɑp	slɑp	"to love"

2.1.2. Variation of Consonants

1. Initial consonants in minor syllables

Only five consonants were found to vary into other consonants as follows:

$d \sim t$, $s \sim t$, $k \sim c$, $c \sim ch$, $s \sim ch$, $r \sim l$

(see appendix I. 2.1. page 159)

2. Initial consonants in major syllables

This type may include the consonants in clusters.

Only the following three consonants were found:

s~ch, j~c, *¹f~sw (see appendix I. 2.1. page 160-161)

3. Final Consonants

There are only seven final consonants that varied to other consonants in Nawattai Khmer.

t ~ c,ʔ, k ~ c,ʔ, h ~ ʔ, m ~ p,n, ŋ ~ p, l ~ n, *²r ~ n,l
(see appendix I. 2.3. page 161-163)

2.1.3. Variation of Vowel

It was found that the vowels ua and u:a were lost the second member _a while the first member remained as the nuclear vowel of the syllable. Furthermore, at other times these may vary into relation other vowels in Nawattai Khmer.

- ua ~ u, o, ω and - u:a ~ u:, ua, ω: (see appendix I. 2.4. page 163-165)

*¹The labio dental-fricative /f/ occurs only in a few loanwords (Franklin E. Huffman, 1969: page 7); however, written Khmer represents the sound with two symbols ឆ (h) and ជ (w). Thus the consonant /f/ might be represented by hw or sw, even though the consonant /h_/ never occurs as the first consonant of a cluster. So it might vary its articulation and become /s_/, but /_w/ still remains with no variation in the original position of the cluster.

2.2. Speaker aged 63 and 20

The variations in this dialect, based on the pronunciation of a speaker aged 63, revealed that the four final consonants are variations of other consonants as follows:

c ~ t, k ~ c, ʔ, ʔ ~ k, ɲ ~ n, ŋ (see appendix I. 4. page 163-166)

For the vowels, the gliding vowels a:e, a:ə, a:ɔ vary to common monophthongs as follows:

a:e ~ e:, ɛ:

a:ə ~ ə:, ɔ:

a:ɔ ~ o:, ɔ:

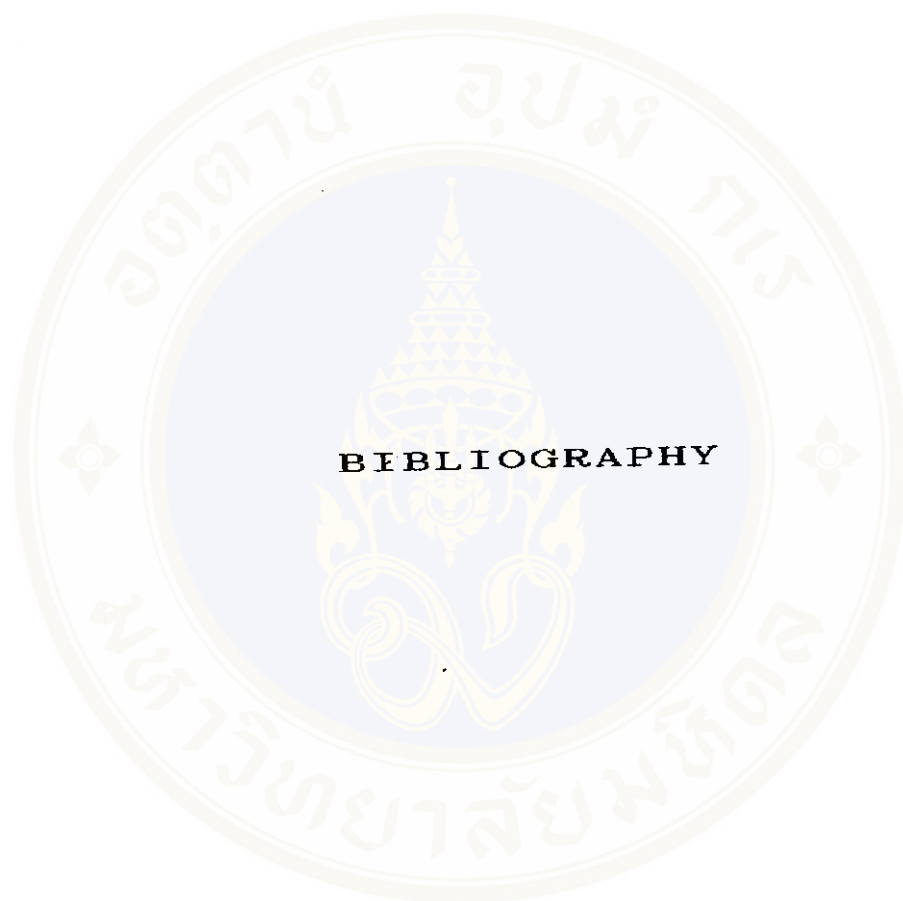
(see appendix I. 2.5. page 168-169)

II. Some suggestions for further studies

Topics for future might include:

- An acoustic phonetic study of Khmer dialects in Thailand and Cambodia.
- The status of Khmer linguistics from the past to the present.

^{*2} The consonant r (ʀ) occurs in written Khmer without being pronounced and sometimes is pronounced as l in Central Khmer.



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I. SOME COMPARATIVE PHONETIC VARIATION STUDIES

1. Some Comparative Phonetic Variations between Central Khmer and Nawattai Khmer

For this study the Standard Khmer writing system is based on Franklin E. Huffman's 1969 Cambodian System of Writing and Beginning Reader. However the consonants and vowels are transcribed in IPA. Moreover, the Khmer phonetics have been checked with a native speaker, Dr. Sok Serey Pen, who was my informant when he was studying at the Asean Institute for Health Development at Mahidol University. He instructs me on how to pronounce each letter of the alphabet. The elicited Nawattai Khmer lexicons are put into Huffman's 1969 writing system. These lexicons are also checked with the following dictionaries:


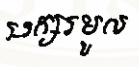
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1.1. Introduction to Standard Khmer

1.1.1 The History of the Alphabets

The earliest inscription of the Cambodia language was found at Angkor Borei in Takeaw Province of Southern Cambodia and is dated 611 A.D.* Since this inscription was found in the area of Funan, the first known Indianized Kingdom in Southeast Asia (first century A.D. to 550 A.D.) and since vernacular inscriptions dating from the time of Funan have been discovered in this area, Cambodian may have been the language of Funan.

However the Cambodian Alphabet comes from Southern India and was all derived from some form (or perhaps from various forms) of ancient Brahmi script of South Indian. The writing developed from Hindu prototype into Cambodian later.

According to Derek Tonkin (The Cambodian Alphabet 1962 p.4) there are two forms of writing the modern Cambodian script, the oblique script "  " /ʔaʔsd:cri:əŋ/ and the round script "  " /ʔaʔsd:mu:l/. The first is used for the vast majority of printed work of all descriptions and is based on the popular handwriting. The second, which is virtually identical with inscriptions of the 12th and 13th century at Angkor Wat, is reserved for religious texts, chapter headings, newspaper headlines, in lieu of italics, inscriptions on public monuments and buildings, and on other occasions where it is wished to make a contrast with the oblique script, to add a touch of formality, or to provide variation or emphasis.

* L.P. Brige, The Ancient Khmer Empire P.15, 18.

1.1.2. ALPHABETIC SYMBOL AND VALUE

-1. Consonant

There are thirty-three consonant symbols in the Cambodian writing system which are shown in the table as follow.

Point of Art.	Labial				Alvolar				Palatal			
Manner of Art.	Sym.	S.	In.	Cl. Fin.	Sym.	S.	In.	Cl. Fin.	Sym.	S.	In.	Cl. Fin.
Stop												
vl. unasp.	ព	2	/p/	/p/ /p/	ត	1	/t/	/t/ /t/	ច	1	/c/	/c/ /c/
vl. asp.	ព័	2	/ph	/p/ /p/	ត័	2	/t/	/t/ /t/	ច័	2	/c/	/c/ /c/
	ផ	1	/ph	/p/ /p/	ត្រ, ត្រ័	1	/th/	/t/ /t/	ច្រ	1	/ch/	/c/ /c/
					ត្រ	1	/th/	/t/ /t/	ច្រ	2	/ch/	/c/ -
					ត្រ	2	/th/	/t/ /t/				
					ត្រ	2	/th/	/t/ /t/				
Implosive	ប	1	/b/	/p/ /p/	ដ	1	/d/	/d/ /t/				
					ឌ	2	/d/	- /t/				
Fricative												
vl. unasp.					ស	1	/s/	/s/ /h/				
Nasal	ម	2	/m/	/m/ /m/	ណ	1	/n/	/n/ /n/	ញ	2	/ɲ/	- /ɲ/
					ន	2	/n/	/n/ /n/				
Lateral					ល	1	/l/	- -				
					ល	2	/l/	/l/ /l/				
Trill					រ	2	/r/	/r/ /r/				
Semi-vowle	វ	2	/w/	- /w/								

Table 20.1: The Cambodian Alphabet: Written Symbols and their Phonetic Values

Point of Art.	Velar			Glottal		
Manner of Art.	Sym.	S.	In. Cl. Fin.	Sym.	S.	In. Cl. Fin.
Stop						
vl. unasp.	ក	1	/k/ /k/ /k/*	ខ	1	/ʔ/ /ʔ/ -
	ក	2	/k/ /k/ /k/*			
vl. asp.	ខ	1	/kh/ /k/ /k/*			
	ខ	2	/kh/ /k/ /k/*			
Fricative				អ	1	/h/ /h/ -
Nasal	ន	2	/ŋ/ - /ŋ/			

Table 20.2: The Cambodian Alphabet: Written Symbols and their Phonetic Values.

The translated consonants are the main script, but the subscripts are not presented here.

* /k/ ~ /ʔ/ at the final position depend on vowels / a, a:, ɔ, ɔ:, ia, i:a, ua, u:a, ɯ:a/

2. Vowel

There are two sets of vowels in the Cambodian scripts. they have two series pronunciation.

The first set is called /sra? nihsaj/ (ស្រាជ័យ) which must have the symbol combined with one or more elements including the consonants. The second set is the independent vowel which is called /sra? pɔp tu:a/ (ស្រាប៊ុនតូ) .

The Cambodian vowel symbols never change when they are combined with different series of consonants, they may change their pronunciation values in combination with symbols. The reader has to know its value in difference environments.

My transliterated values of the vowels will present only the /sra? nihsaj/ except for the independent vowel /sra? nihsaj/. They have the same value but are represented with different symbols and are related to the rules of the writing system.

	Series 1	Series 2
1. _	/ɔ:/ ^{*1} (/ɑɑ/) ^{*2}	/ɔ:/ (/ɔɔ/)
2. _	/ɔ/ (/ɑ/)	/u/ (/u/) with labial finals ~ /ua/ (/uə/) elsewhere
3. _	/a/ (/a/)	/ia/ (/eə/) with velar finals ~ /oə/ (/oə/) elsewhere except final.. ឃ, ង
4. ឃ	/aj/ (/ay/)	/uj/ (/iy/)

*1 /_/ Transliterated by Amphon Wichitkhachee

*2 (/_/) Transliterated by Huffman

5. \checkmark $_r$ /ɔ:ə/ (/oə/) /ɔ:cə/ (/oə/)
6. $_r$ /a: / (/aa/) /i:a/ (/iə/)
7. $_r$ /a/ (/a/) /ia/ (/eə/) with velar finals
 ~ /oə/ (/oə/) elsewhere
8. $_r$ /eɔ/ (/eq/) /iɔ/ (/iq/) stressed syllable
 /e/ (/e/) unstressed sl* /i/ (/i/) unstressed syllable
9. $_r$ /ə/ (/ə/) with the finals /ɪ/ (/i/) with the finals
 except before ω
10. $_r$ /əj/ (/əy/) with final /i:/ (/ii/) with the final
11. $_r$ /eh/ (/eh/) /ih/ (/ih/)
12. $_r$ /əj/ (/əy/) /i:/ (/ii/)
13. $_r$ /ə/ (/ə/) /ɪ/ (/i/)
14. $_r$ /əh/ (/əh/) —
15. $_r$ /ə:ɪ/ (/əi/) /ɪ: / (/ii/)
16. $_r$ /oɔ/ (/oq/) stress sl. /uɔ/ (/uq/) stressed syllable
 /o/ (/o/) unstress sl. /u/ (/u/) unstressed syllable
17. $_r$ /o/ (/o/) /u/ (/o/)

*sl = syllable

18. $\frac{\text{๕}}{๑}$ /oh/ (/oh/) /uh/ (/uh/)
19. $\frac{\text{๕}}{๖}$ /o:u/ (/ou/) /u:/ (/uu/)
20. $\frac{\text{๕}}{๖}$ /əw/ (/əw/) with the final /mw/ (/iw/) with the final
21. $\frac{\text{๕}}{๗}$ /u:a/ (/uə/) /u:a/ (/uə/)
22. $\frac{\text{๕}}{๘}$ /a:ə/ (/aə/) /ə:/ (/əə/)
23. $\frac{\text{๕}}{๙}$ /əh/ (/əh/)
24. $\frac{\text{๕}}{๑๐}$ /ɯ:ə/ (/i:ə/) /ɯ:ə/ (/i:ə/)
25. $\frac{\text{๕}}{๑๑}$ /i:a/ (/iə/) /i:a/ (/iə/)
26. $\frac{\text{๕}}{๑๒}$ /e/ (/ei/) /e:/ (/ee/)
27. $\frac{\text{๕}}{๑๓}$ /ə/ (/ə/) with the palatal /ɯ/ (/i/) with the palatal
finals finals
28. $\frac{\text{๕}}{๑๔}$ /eh/ (/eh/) /ih/ (/ih/)
29. $\frac{\text{๕}}{๑๕}$ /a:e/ (/ae/) /ɛ:/ (/ɛɛ/)
30. $\frac{\text{๕}}{๑๖}$ /eh/ (/eh/)
31. $\frac{\text{๕}}{๑๗}$ /aj/ (/ay/) /ɯj/ (/ij/)

32. ខ័ណ្ឌ /a:ɔ/ (/ao/) /o:/ (/o:/)
33. ខ័ណ្ឌៈ /ɔh/ (/ah/) /ua/ (/uə/)
34. ខ័ណ្ឌី /aw/ (/aw/) /mw/ (/iw/)
35. ខ័ណ្ឌៈ /om/ (/om/) /um/ (/um/)
36. ខ័ណ្ឌៈ /ɔm/ (/ɔm/) /um/ (/um/)
37. ខ័ណ្ឌៈ /am/ (/am/) /oəm/ (/oəm/)
38. ខ័ណ្ឌៈ /aŋ/ (/aŋ/) /iaŋ/ (/eəŋ/)
39. ខ័ណ្ឌៈ /ah/ (/ah/) /iah/ (/eəh/)

2. Some Comparative Data

2.1. Variation of Consonants

a. Initial Consonants

-1.1. d, s ~ t

Two alveolar consonants d, s sometimes vary with the voiceless unaspirated alveolar stop t.

Written Khmer CNK Pronunciation NWK Pronunciation

	-1. d	t	
ដំណើរ	dɔmna:ɔp	tɔmna:ɔp	"sticky rice"
ដំណើរ	dɔnkɛw	tkaw	"worm"
ដំណើរ	dɔnda:ɔm	tɔnda:ɔm	"to compete (ផ្សំ)"
ដំណើរ	dɔmrɛj	tɔmrɛj	"an elephant"

မိတ္တူ	dɔmro:uŋ	tamro:ŋ	"a general name for small plant yeilding starch roots(မိတ္)
	-2. s	t	
မိတ္တူ	sɔmma:et	tps:t	"flat"
လှာလှာ	sɔ:se:	tse:	"to write"
လှာလှာ	sɔ:saj	tsaj	"line"
လှာ ဟာ?	sa:ha:w	ta?ha:w	"to be fierce"
	-3. k	c	
မိတ္တူ	ki:ŋkua?	ciŋku?	"toad"
	-4. c	ch	
စိုကော့	cɔmpu:ah	chphɔ:?	"specialty"
	-5. s	ch	
လှာလှာ	sɔmle:h	chamle:h	"to cut"
လှာ	sko:	chku:a	"drum"
လှာ	smaw	chmaw	"grass"
လှာ	sŋa:ɔ	chŋa:ɔ	"curry"
လှာ	slɔh	chlɔh	"a barking deer"
	-6. r	l	
လှာ	rɔ?əl	l?əl	"to slide"
လှာ	rɔbɔ:ut	lɔbɔ:t	"to slip off, to come off"
လှာ	rɔhah	lhah	"to be rapid"
လှာ	rɔle:ŋ	lle:ŋ	"to tease"
လှာ	rɔlɔŋ	llɔŋ	"to be loose"
လှာ	rɔlu:t	llu:t	"to abort"

ខ្យល់' -7. j c
khjɔl khcɔl "the wind"

-8. f ~ sw

The labio dental fricative f phoneme occurs only in a few loanwords (Franklin E. Huffman, 1969: page 7); however, the Khmer writing system represents the sound with two symbols វ (/h/) and វ' (/w/). The f phoneme is represented by two consonants, thus the f might be represented hw or sw, even phoneme h_ never occurs as the first consonant of a cluster, so it might change its articulation to become s_ but _w still remains with no change as the same state.

Written Khmer CNK Pronunciation NWK Pronunciation

វ័រ' fo:uŋ swo:ŋ "herd of animals"

b. The Final Consonants

In Standard Khmer the following consonants final t, k, h, ɲ, n, ɲ, r on some occasions correspond to different consonants in Nawattai Khmer as follows:

-1. Final t sometimes varied to c, ʔ.

Written Khmer CNK Pronunciation NWK Pronunciation

វ័រ' វ័រ' វ័រ'
ʔɔnda:et ʔanda:c "to float"
ti:at tia? "again"

-2. Final k sometimes varied to c, ʔ.

Written Khmer CNK Pronunciation NWK Pronunciation

វ័រ' វ័រ' វ័រ'
ba:ek ba:c "to break"
sba:ek sba:c "skin"

ក្រែក	wə:k	we:k	"cobra"
ផឹក	phʔək	phaʔ	"to drink"

-3. Final h sometimes varied to ʔ.

Written Khmer	CNK Pronunciation	NWK Pronunciation	
ប្រតិបត្តិ	prətiah	ptaʔ	"to collide"
ទំនាញ	ɔmpu:ah	chphə:ʔ	"specialty"

-4. Final ɲ sometimes varied to p, n .

Written Khmer	CNK Pronunciation	NWK Pronunciation	
រំលឹម	rɔsa:ɲ	rsa:ɔp	"to tickle, to be ticklish"
កំពង់ចាម	kɔmphe:ɲ	kpe:n	"a kind of beetle with green integument (ណាងក្របី)"

-5. Final n sometimes varied to ɲ, ŋ .

This type the n varied in the first syllable in Nawattai Khmer as follows:

Written Khmer	CNK Pronunciation	NWK Pronunciation	
ប្រណិបត្តិ	ɔnda:ɲ	tanda:ɲ	"to compete (ប្រណិបត្តិ)"
ច្រណី	ɔnloh	caŋlo:h	"a torch"

6. Final p sometimes vary to n, ŋ .

This type the p occurred to vary in the first syllable in Nawattai Khmer as follows:

Written Khmer	CNK Pronunciation	NWK Pronunciation	
កញ្ចប់	kɔpcha:	kancha:	"marijuana"
ជញ្ជាំង	cuapcaŋ	cuancaŋ	"a wall"

7. Final ŋ sometimes varies to p .

Written Khmer	CNK Pronunciation	NWK Pronunciation	
បង្ហាញ	sda:ŋ	sda:p	"to show"

8. Final l sometimes varied to n.

Written Khmer	CNK Pronunciation	NWK Pronunciation	
វណ្ណ	nɔl	nɔn	"a blue sapphire"

9. Final r sometimes sometimes occurs to vary to n, l .

According to the Cambodian writing system, the final r (្រ) is never pronounced, nevertheless, it is pronounced in final position in Northern Khmer and sometimes it is replaced by n, l in Nawattai Khmer.

Written Khmer	CNK Pronunciation	NWK Pronunciation	
ខ្លាញ់	khɔ:ə	khɔ:an	"to shake"
ខ្លាញ់	*khpul	khpul	"to rinse"
រាត	*kɔndol	kɔdol	"a rat"
ខ្លាញ់	*khnol	khnɔl	"jackfruit"
ក្រហម	həl	hɔ:l	"to be hot(taste)"
កាត់	?a:	?a:l	"to saw, to cut"

2.2. Variation of Vowels

It was found that the vowels ua, u:a varied to the other vowels and reduced itself in Nawattai Khmer as follows:

-1. The short diphthong ua of Central Khmer varied to be u, ɔ, o, ɔ:, in Nawattai Khmer.

* sometimes r is pronounced l in Standard Khmer, usually it is not pronounced

Written Khmer CNK Pronunciation NWK Pronunciation

	-ua	u	
ផង	tuaŋ	tuŋ	"flag"
ជង	coŋkuaŋ	ckuŋ	"knee"
គល់	kual	kul	"the bole(of tree)"
បំពង់	boŋpuaŋ	mpuŋ	"adam's apple"
លក់	lua?	lu?	"to sell"
រស់	ruah	ruh	"alive"
វង់	wuaŋ	wuŋ	"cycle"

	- ua	o	
ពោះវិទ្រ	puahwi:an	pohwi:an	"intestine"
ច្បោះ	chluah	chloh	"to quarel"
ខ្ពស់	khpuah	khpoh	"to be tall"

	- ua	o	
ឆ្ងល់	thuan	thon	"to endure"
តូច	tuan	ton	"to be young"
ឈ្មោះ	chmuaŋ	chmoh	"name"
ល្ងាច	chŋual	chŋol	"to doubt"
សំពត់	sompuat	spot	"cloth"
លក់	lŋuaŋ	lŋoŋ	"to be stupid"

-2. The long diphthong u:a of Central Khmer varied to u:,o:,ua in Nawattai Khmer.

Written Khmer CNK Pronunciation NWK Pronunciation

	- u:a	u:	
បង្អួច	boŋ?u:ac	paŋ?u:c	"window"
ខ្សែ	khnu:ac	khnu:c	"bamboo cord"
កូន	kmu:aj	kmu:j	"grandson"
ត្រី	stu:ac	stu:c	"fishing, barb"

មួយ N	mu:aj	mu:j	"one"
រួច N	ru:ac	ru:c	"to survive, to finish"
	- u:a	o:	
ហ្វូង N	hu:ac	ho:c	"to whistle"
លួច N	lu:ac	lo:c	"to steal"
	- u:a	ua	
ចំនួន N	co:nu:an	canuan	"number"
ជួប N	cu:ap	cuap	"to meet"
សួន N	su:an	suan	"garden"
ល្បី N	lu:ah	luah	"iron line"

2. Some Comparative Phonetic Variations between Speaker aged 63 and 20 in Nawattai Khmer

This comparative study describes the differences in pronunciation of Nawattai Khmer between two speakers representing two generations: the first one is 63 years old and the second one is 20. Thus the study shows some features that may be innovations within this dialect.

a. Final consonants

It was found that the final consonants varied to other consonant which was the outstanding variations in this dialect as follows.

-1. The voiceless palatal fricative *c* was varied to the voiceless unaspirated alveolar stop *t* in final position.

Speaker aged 63	Speaker aged 20	
nds:c	nds:t	"to float"
lnic	lnit	"dim"
khma:ɔ	khma:c	"ghost"

-2. The voiceless unaspirated velar stop *k* was varied to the voiceless glottal stop *ʔ* and voiceless unaspirated palatal stop *c*.

Speaker aged 63	Speaker aged 20	
puk	puʔ	"to rot"
tʃɛ:k	tʃɛ:c	"guava"

-3. The voiceless glottal stop *ʔ* was varied to the voiceless unaspirated velar stop *k*.

Speaker aged 63	Speaker aged 20	
phlɔʔ	phluk	"mud"

-4. The voiced palatal nasal *ɲ* was varied to the voiced alveolar nasal *n* and voiced velar nasal *ŋ*.

Speaker aged 63	Speaker aged 20	
thɲip	thɲin	"tooth"
ceɲ	ceɲ	"Chinese"
le:ɲ	le:ŋ	"to free, to release"

-5. The voiced alveolar lateral *l* was varied to the voiced alveolar nasal *n*. For this final it follows after the vowels : *i, e, ɯ, a, u, o, ɔ, e:, ɛ:, u:, o:, ɔ:, i:a, u:a*.

Speaker aged 63	Speaker aged 20	
_il	_in	
khcil	khcin	"to be lazy"
wil	win	"to turn around"
_el	_en	
ɲɛl	ɲɛn	"salt"
lʔel	lʔel	"to slide"

_ul	_un	
mpul	mpun	"tamarind"
_al	_an	
ŋkal	ŋkan	"when?"
_ul	_un	
crul	crun	"to slide"
_ol	_on	
caŋ?ol	caŋ?on	"to point"
sɔl	sɔn	"colour"
kdol	kdon	"a rat"
_ɔl	_ɔn	
khcɔl	khcɔn	"wind"
khnɔl	khnɔn	"jackfruit"
_e:l	_e:n	
kte:l	kte:n	"mat"
ŋwe:l	ŋwe:n	"whorl"
_s:l	_s:n	
ŋʔe:l	ŋʔe:n	"to fondle"
ɗe:l	ɗe:n	"to be used to"
_u:l	_u:an	
cu:l	cu:an	"to employ"
_o:l	_o:n	
tɕo:l	tɕo:n	"roof"
chmo:l	chmo:n	"male animal"
co:l	co:n	"to enter"
_ɔ:l	_ɔ	
co:l	co:n	"to throw"
krɔ:l	krɔ:n	"animal stable"
_i:al	_i:an	
lmi:al	lmi:an	"to roll"
wi:al	wi:an	"field"

_u:al	_u:an	
du:al	du:an	"to fall"

b. The vowels

It was found that the gliding vowels a:e, a:ə, a:ɔ varied to the common single vowels in pronunciation of speaker aged 20 as follows.

-1 The long diphthong a:e varied to the long monophthongs e:, e:.

Speaker aged 63	Speaker aged 20	
_a:e	_e:	
caŋ?a:e	caŋ?e:	"flat basket"
ma:ek	me:k	"sky, branch (of tree)?"
ma:en	me:n	"to be correct, yes"
_a:e	_e:	
khla:en	khle:n	"a skink"
khla:en	khle:ŋ	"a hawk"
da:ek	de:k	"iron"
sra:e	sre:	"rice field"
chka:e	chke:	"dog"
ha:ek	he:k	"to tear"
wa:en	we:ŋ	"to spread, a ladle"

- The long diphthong a:ə varied to the short monophthongs ə:, ɔ:.

Speaker aged 63	Speaker aged 20	
_a:ə	_ə:	
ca:əŋ	cə:ŋ	"foot"
ma:ə	mə:	"to watch"
la:ə	lə:	"on above"
la:ək	lə:k	"to show (hand)"

_a:ə	_ɔ:	
thla:əm	thlɔ:m	"liver"
tha:əp	thɔ:p	"to kiss"
ŋca:əm	ŋcɔ:m	"eye-brow"
ŋɔa:ək	ŋɔɔ:k	"turtle"

- The long diphthong a:ɔ was varied to the long monophthong ɔ:, ɔ:

Speaker aged 63	Speaker aged 20	
_a:ɔ	_ɔ:	
cra:ət	cro:t	"to harvest"
la:ət	lo:t	"to hop, to jump"
_a:ɔ	_ɔ:	
ta:əŋ	tɔ:ŋ	"to tow"
cʔa:ɔ	cʔɔ:	"to roast"
chŋa:ɔ	ŋɔ:	"curry"
ca:ɔ	cɔ:	"robber"
khɔa:ət	khɔɔ:c	"ghost"
kra:əm	krɔ:m	"below"
ɓa:ək	ɓɔ:k	"to wrestle"
sra:ɔc	srɔ:c	"to water"
sa:ɔc	sɔ:c	"to laugh"

II. WORDS LIST

The entries in this glossary are listed in the following order.

1. The initial consonants are arranged in the following order.

p, t, c, k, ʔ, b, d, s, h, m, n, ɲ, l, r, w, j

2. The final consonants are ordered as follows.

p, t, c, k, ʔ, h, m, n, ɲ, l, w, j

3. The vowels are ordered as follows.

i, i:, ɪ, ɪ:, e, e:, ɛ, ɛ:, ɯ, ɯ:, ʏ, ʏ:, ə, ə:, ʌ, ʌ, a:, u,
u: ɔ, ɔ:, ɒ, ɒ:, ɔ, ɔ:, ɒ, ɒ:, ia, i:a, ɯ:a, ua, u:a, a:e, a:ə
a:ɔ

4. The entries with open syllables are before entries with closed syllables.

3. The Dong-noi accent entries are in the first column and the phonetic transcriptions are in the second column.

p

/ pp̄hu:m /	['p̄ ^ə phu:m ²]	"spirit house"
/ pp̄ri:a /	['p̄ ^ə p̄ ^ə ri:a ²]	"a kind of tree (ไม้ลาห)"
/ pp̄rwt /	['p̄ ^ə p̄ ^ə rwt ³]	"behave"
/ ppe: /	['p̄ ^ə pe: ²]	"to soothe"
/ pp̄uh /	['p̄ ^ə pu ^{h3}]	"bubble"
/ ppon /	['p̄ ^ə pon ²]	"wife"
/ pthaw /	['p̄ ^ə t ^h aw ²]	"an axe"
/ ptri:a /	['p̄ ^ə t ^{ri} :a ²]	"jujube"
/ pateh /	['p̄ ^ə te ^{h3}]	"a country"
/ pta? /	['p̄ ^ə ta? ³]	"to collide"
/ ptət /	['p̄ ^ə tət ³]	"a line"
/ pti:al /	['p̄ ^ə ti:al ²]	"general name for sedges (จ่า)"
/ peruj /	['p̄ ^ə c ^ə ruj ²]	"mold-mark"
/ pcoh /	['p̄ ^ə coh ³]	"satirize"
/ pkho:ŋ /	['p̄ ^ə kho:ŋ ²]	"to prop up"
/ pka: /	['p̄ ^ə ka: ²]	"a pen"
/ pkon /	['p̄ ^ə kon ²]	"toilet"
/ pkɔŋ /	['p̄ ^ə kɔŋ ²]	"roof frame"
/ pkɔ:ŋ /	['p̄ ^ə kɔ:ŋ ²]	"lobster"
/ pku:at /	['p̄ ^ə ku:at ³]	"to contest"
/ pku:aj /	['p̄ ^ə ku:aj ²]	"chameleon"
/ pʔε:m /	['p̄ ^ə ʔε:m ²]	"to be sweet"
/ pʔo:m /	['p̄ ^ə ʔo:m ²]	"to go sour"
/ pʔo:n /	['p̄ ^ə ʔo:n ²]	"younger sibling"
/ pɛɔ: /	['p̄ ^ə ɛɔ: ²]	"gruel"
/ pɛu:an /	['p̄ ^ə ɛu:an ²]	"to persuade"

/ pɔm /	['p ^ə ɔm ²]	"to spin"
/ pɔj /	['p ^ə ɔj ²]	"husband"
/ pɔhsa:j /	['p ^ə ɔ ^h 1.sa:j ²]	"a cold"
/ pɔm /	['p ^ə ɔm ²]	"to command"
/ pɔw /	['p ^ə ɔw ²]	"to teach"
/ pɔh /	['p ^ə ɔ ^h 3]	"to grow up (seed), to sprout"
/ pɔ: /	['p ^ə ɔ: ²]	"to change"
/ pɔ:l /	['p ^ə ɔ:l ²]	"banana flower"
/ pɔs: /	['p ^ə ɔs: ²]	"son in-law, language, to be painful"
/ pɔt /	['p ^ə ɔt ³]	"navel"
/ pɔp /	['p ^ə ɔp ³]	"to meet"
/ pɔt /	['p ^ə ɔt ³]	"mushroom"
/ pɔtɔl /	['ph ^ə tɔl ²]	"a bowl"
/ pɔtɔj /	['ph ^ə tɔj ²]	"land, surface, sheet"
/ pɔtɔh /	['ph ^ə tɔ ^h 3]	"house"
/ pɔtɔk /	['ph ^ə tɔk ³]	"to transport, to load"
/ pɔtɔ? /	['ph ^ə tɔ? ³]	"kind of fish (ปลาซิว)"
/ pɔtɔ:ŋ /	['ph ^ə tɔ:ŋ ²]	"a rafter, one of the sloping timber of a roof (จันทันบ้าน)"
/ pɔtɔ:ɔ /	['ph ^ə tɔ:ɔ ²]	"to set"
/ pɔtɔh /	['ph ^ə tɔ ^h 3]	"strom"
/ pɔtɔ:ɔ /	['ph ^ə tɔ:ɔ ²]	"to plough"
/ pɔtɔ:ɔp /	['ph ^ə tɔ:ɔp ³]	"to combine"
/ pɔtɔkɔp /	['ph ^ə tɔkɔp ³]	"to turn up side down"
/ pɔtɔkɔ: /	['ph ^ə tɔkɔ: ²]	"flower"
/ pɔtɔkɔ:j /	['ph ^ə tɔkɔ:j ²]	"star"

/ phku:a /	['ph ^ə ku:a ²]	"sky"
/ phsma: /	['ph ^ə s ^ə ma: ²]	"shoulder"
/ phsɛ:ŋ /	['ph ^ə sɛ:ŋ ²]	"smoke"
/ phne:k /	['ph ^ə ne:k ²]	"eye"
/ phnom /	['ph ^ə nom ²]	"mountain"
/ phnɔl /	['ph ^ə nɔl ²]	"to bet"
/ phpɛ? /	['ph ^ə pɛ? ³]	"to get up"
/ phpa:ə /	['ph ^ə pa:ə ²]	"to deposit"
/ phpɛ? /	['ph ^ə pɛ? ³]	"to take aback"
/ phŋa: /	['ph ^ə ŋa: ²]	"to turn up, to face up"
/ phlec /	['ph ^ə lec ³]	"to forget"
/ phle:ŋ /	['ph ^ə le:ŋ ²]	"song"
/ phleŋ /	['ph ^ə leŋ ²]	"kind of herbal plant (ต้นพญาปรากฏเด็ชว)"
/ phle: /	['ph ^ə le: ²]	"fruit"
/ phlu? /	['ph ^ə lu? ³]	"to taste"
/ phluh /	['ph ^ə lu ^{h3}]	"twin, duoble"
/ phlɛ: /	['ph ^ə lɛ: ²]	"to be absent-minded"
/ phlɛ:ŋ /	['ph ^ə lɛ:ŋ ²]	"fire"
/ phlyw /	['ph ^ə lyw ²]	"the thigh"
/ phla? /	['ph ^ə la? ³]	"to push"
/ phlaw /	['ph ^ə law ²]	"way"
/ phlɔk /	['ph ^ə lɔk ³]	"ivory tusk of elephant"
/ phlom /	['ph ^ə lom ²]	"to blow"
/ phloŋ /	['ph ^ə loŋ ²]	"truffle"
/ phlot /	['ph ^ə lot ³]	"to fan"
/ phlia? /	['ph ^ə lia? ³]	"to show up"
/ phli:aŋ /	['ph ^ə li:aŋ ²]	"rain"

/ phja:ji:am /	[₂ ph ⁰ ja: ¹ . ¹ ji:am ²]	"to try"
/ phji:at /	[¹ ph ⁰ ji:at ³]	"parasite"
/ phji:aɓa:n /	[₂ ph ⁰ ji:a ¹ . ¹ ɓa:n ²]	"nurse"
/ phe:da:n /	[₂ phe: ¹ . ¹ da:n ²]	"ceiling"
/ phɛ:ʔ /	[¹ phɛ: ²³]	"goat"
/ phɛ:h /	[¹ phɛ: ^{h3}]	"ash"
/ phəj /	[¹ phəj ²]	"harm"
/ phə:ŋ /	[¹ phə:ŋ ²]	"jar"
/ phʌʔ /	[¹ phʌʔ ³]	"to drink"
/ phu:m /	[¹ phu:m ²]	"place"
/ phɔʔ /	[¹ phɔʔ ³]	"mud"
/ phot /	[¹ phot ³]	"to be back"
/ phoŋ /	[¹ phoŋ ²]	"to decompose"
/ phɔ: /	[¹ phɔ: ²]	"a big basket for containing grain for planting"
/ phɔ:ŋ /	[¹ phɔ:ŋ ²]	"also, with"
/ pha:en /	[¹ pha:en ²]	"floor, ground, sheet"
/ pɓaw /	[¹ p ⁰ ɓaw ²]	"a kind of bal fruit(มะขาม)"
/ pɓol /	[¹ p ⁰ ɓol ²]	"debt"
/ plɛ:h /	[¹ p ⁰ lɛ: ^{h3}]	"to pick up"
/ plɛ:ŋ /	[¹ p ⁰ lɛ:ŋ ²]	"a bed (flower), to tease"
/ plɛ:t /	[¹ p ⁰ lɛ:t ³]	"small lotus"
/ plɛŋ /	[¹ p ⁰ lɛŋ ²]	"soul"
/ plaʔ /	[¹ p ⁰ laʔ ³]	"to stain"
/ pla: /	[¹ p ⁰ la: ²]	"thorn"
/ ploŋ /	[¹ p ⁰ loŋ ³]	"at dawn"
/ plɔŋ /	[¹ p ⁰ lɔŋ ²]	"the shaft (ปล้อง)"
/ plɔ:ʔ /	[¹ p ⁰ lɔ:ʔ ³]	"a collar"

/ plɔ:m /	['p̄lɔ:m ²]	"artificial"
/ plɔn /	['p̄lɔn ²]	"to rob"
/ plɔ:ek /	['p̄lɔ:ek ³]	"to be strange"
/ prɔŋɔ /	[p̄rɔ ¹ . 'ŋɔ ²]	"to compete"
/ pre: /	['p̄re: ²]	"silk fabric"
/ prɛ: /	['p̄rɛ: ²]	"vegetable"
/ pre:ŋ /	['p̄re:ŋ ²]	"oil"
/ prɔk /	['p̄rɔk ³]	"morning"
/ prɔj /	['p̄rɔj ²]	"forest"
/ prɔ:hi:am /	[p̄rɔ: ¹ . 'hi:am ²]	"dawn"
/ prɔp /	['p̄rɔp ³]	"to tell"
/ prɔ? /	['p̄rɔ? ³]	"silver"
/ prɔm /	['p̄rɔm ²]	"five"
/ prɔŋ /	['p̄rɔŋ ²]	"foriegner"
/ prɔj /	['p̄rɔj ²]	"to be salty"
/ prɔ:p /	['p̄rɔp ³]	"to suppress"
/ prɔh /	['p̄rɔ ^{h3}]	"to bark"
/ prɔ:h /	['p̄rɔ: ^{h3}]	"to sow"
/ prɔ:n /	['p̄rɔ:n ²]	"worm parasite"
/ prɔ:ŋ /	['p̄rɔ:ŋ ²]	"to season(meal)"
/ prɔm /	['p̄rɔm ²]	"to sprinkle"
/ prɔ? /	['p̄rɔ? ³]	"to cover (roof)"
/ prɔh /	['p̄rɔ ^{h3}]	"male, a young man"
/ pri:ap /	['p̄ri:ap ³]	"to compair, pigeon"
/ pri:an /	['p̄ri:an ²]	"hunter"
/ prɔ:am /	['p̄rɔ:am ²]	"to be ready, withdraw"
/ prɔ:e /	['p̄rɔ:e ²]	"to translate"
/ prɔ:ə /	['p̄rɔ:ə ²]	"to use"

/ pjuŋ /	['p ^ə juŋ ²]	"to support"
/ pju:a /	['p ^ə ju:a ²]	"to hang"
/ pja:ɔk /	['p ^ə ja:ɔk ²]	"sentence"
/ pika: /	['pika: ²]	"handicapped"
/ piŋpi:aŋ /	[piŋ ¹ . 'pi:aŋ ²]	"spider"
/ pi: /	['pi: ²]	"two, from"
/ pi:p /	['pi:p ³]	"a kerosene cane (ไฟ)"
/ pi:ruh /	[pi: ¹ . 'ru ^{h3}]	"to be melodious"
/ pec /	['pec ³]	"diamond"
/ pep /	['pep ²]	"to be full"
/ pe:k /	['pe:k ²]	"to be over, too much"
/ peʔ /	['pe ^{ʔ3}]	"to wear"
/ puh /	['pu ^{h3}]	"poisonous"
/ puŋ /	['puŋ ²]	"just, to take refuge"
/ pa:huʔ /	[pa: ¹ . 'huʔ ³]	"fermented fish"
/ paʔhɔh /	[pa ^{ʔ1} . 'hɔ ^{h3}]	"thursday"
/ panlw: /	[pan ¹ . 'lw: ²]	"sunshine"
/ paŋ /	['paŋ ²]	"a flute"
/ paʔ /	['pa ^{ʔ3}]	"to rest"
/ pah /	['pa ^{h3}]	"to patch"
/ pam-bu:an /	[pam ¹ . 'bu:an ²]	"nine"
/ pam-mu:j /	[pam ¹ . 'mu:j ²]	"six"
/ paŋʔu:c /	[paŋ ¹ . 'ʔu:c ³]	"window"
/ paŋru:l /	[paŋ ¹ . 'ru:l ²]	"Manis javanicus (ตัวนิ่ม)"
/ paŋra:ə /	[paŋ ¹ . 'ra:ə ²]	"to serve"
/ put /	['put ³]	"Wednesday"
/ puk /	['puk ³]	"to rot"
/ puh /	['pu ^{h3}]	"to split"

/ pu:t /	['pu:t ³]	"to squeeze, to squash"
/ pɔh /	['pɔ ^{h3}]	"boil, snake, abdomen"
/ pɔhwi:an /	[pɔ ^{h1} . 'wi:an ²]	"intestine"
/ pɔ: /	['pɔ: ²]	"aunt(male)"
/ pɔŋwel /	[pɔŋ ¹ . 'wel ²]	"to turn with a latse"
/ pɔ:p /	['pɔ:p ³]	"to crouch (หมอบราบกับพื้น)"
/ pɔn /	['pɔn ²]	"to be equal"
/ pɔnma:n /	[pɔn ¹ . 'ma:n ²]	"how much?"
/ pɔŋwil /	[pɔŋ ¹ . 'wil ²]	"to turn aaround"
/ pɔŋwi:a /	[pɔŋ ¹ . 'wi:a ²]	"Indian"
/ pɔm /	['pɔm ²]	"to hold (in the mouth)"
/ pia? /	['pia? ³]	"word"
/ pu:a /	['pu:a ²]	"to pick up, a blessing"
/ pu:a? /	['pu:a? ³]	"friend"
/ pu:aŋ /	['pu:aŋ ²]	"egg"

t

/ tpe:k /	['t ^ə pe:k ³]	"to be bald"
/ tpeŋ /	['t ^ə peŋ ²]	"young bamboo, swamp"
/ tpe:t /	['t ^ə pe:t ³]	"flat"
/ tpi:a /	['t ^ə pi:a ²]	"to chew"
/ ttra: /	['t ^ə t ^ə ra: ²]	"alphabet"
/ tteŋ /	['t ^ə teŋ ²]	"to grumble, to recite"
/ tte: /	['t ^ə te: ²]	"to be emty"
/ ttŋŋ /	['t ^ə tŋŋ ²]	"to obstruct"
/ ttak /	['t ^ə tak ³]	"to wet"
/ ttu: /	['t ^ə tu: ²]	"to absolute cover"

/ tce? /	['t ^ə ce? ³]	"freeze"
/ tcol /	['t ^ə col ²]	"a kind of herbal plant (ต้นเล็บเหยี่ยว)"
/ tcia? /	['t ^ə cia? ³]	"ear"
/ tkhop /	['t ^ə k ^h op ³]	"a kind of tree (ต้นคาขบ)"
/ tkaw /	['t ^ə kaw ²]	"worm"
/ tkɔ:l /	['t ^ə kɔ:l ²]	"family"
/ tka:un /	['t ^ə ku:an ²]	"morning glory"
/ tɛ:k /	['t ^ə ɛ:k ³]	"guava"
/ tɛal /	['t ^ə ɛal ²]	"mortar"
/ tɛa:p /	['t ^ə ɛa:p ²]	"to weave"
/ tɛo:ŋ /	['t ^ə ɛo:ŋ ²]	"south"
/ tɛo:l /	['t ^ə ɛo:l ²]	"roof"
/ tɔ: /	['t ^ə ɔ: ²]	"to shake"
/ tse: /	['t ^ə se: ²]	"to write"
/ tsaj /	['t ^ə saj ²]	"line"
/ tsɔ? /	['t ^ə sɔ? ³]	"melon"
/ tsɔ: /	['t ^ə sɔ: ²]	"a post, a pole"
/ thki:am /	['th ^ə ki:am ²]	"molar teeth"
/ thmip /	['th ^ə mip ²]	"tooth"
/ thmaj /	['th ^ə maj ²]	"to be new"
/ thmɔ: /	['th ^ə mɔ: ²]	"stone"
/ thnat /	['th ^ə nat ³]	"to be skillful"
/ thnam /	['th ^ə nam ²]	"medicine"
/ thŋaj /	['th ^ə ŋaj ²]	"sun, day"
/ thŋa: /	['th ^ə ŋa: ²]	"black scorpion"
/ thŋon /	['th ^ə ŋon ²]	"to be heavy"
/ thle? /	['th ^ə le? ³]	"to fall"

/ thlaj /	['th ^ə laj ²]	"daughter in-law, value"
/ thla: /	['th ^ə la: ²]	"clear"
/ thlɔh /	['th ^ə lɔ ^{h3}]	"to penetrate"
/ thlɔŋ /	['th ^ə lɔŋ ²]	"to be deaf"
/ thla:əm /	['th ^ə la:əm ²]	"liver"
/ thla:en /	['th ^ə la:en ²]	"to state"
/ thwɔŋ /	['th ^ə wɔŋ ²]	"caster bean"
/ thwi:a /	['th ^ə wi:a ²]	"door"
/ thə: /	['thə: ²]	"to make"
/ thət /	['thət ³]	"to be fat"
/ thəm̩da: /	[thəm ¹ . 'm̩da: ²]	"to be normal"
/ thəŋ /	['thəŋ ²]	"a tank"
/ thə:/	['thə: ²]	"to say, if, port, pier"
/ thə:cʔen /	[thə: ¹ . 'cʔen ²]	"if"
/ thə:h /	['thə:h ³]	"a tray"
/ thə:j /	['thə:j ²]	"to transfer"
/ thun /	['thun ²]	"fund"
/ thɔm /	['thɔm ²]	"big"
/ thɔ: /	['thɔ: ²]	"to be slack"
/ thon /	['thon ²]	"to endure"
/ thɔ:j /	['thɔ:j ²]	"to back"
/ thɔŋ /	['thɔŋ ²]	"bag"
/ thi:at /	['thi:at ³]	"slave"
/ thə:əp /	['thə:əp ³]	"to kiss"
/ thə:e /	['thə:e ²]	"to be real"
/ thə:en /	['thə:en ²]	"instead of"
/ thə:en /	['thə:en ²]	"a bar of"
/ thə:ew /	['thə:ew ²]	"row"

/ tma:t /	['t ^ə ma:t ³]	"vulture"
/ tnam /	['t ^ə nam ²]	"to cook rice"
/ tɲɔ:l /	['t ^ə ɲɔ:l ²]	"to be bald"
/ tndt /	['t ^ə ndt ³]	"a palm(tree)"
/ tloŋ /	['t ^ə loŋ ²]	"a kind of orange(ส้มโอบ)"
/ tlo:m /	['t ^ə lo:m ²]	"to reek"
/ tlok /	['t ^ə lok ³]	"to be funny"
/ tlop /	['t ^ə lop ³]	"kind of tree (ต้นพลับ)"
/ tlo:p /	['t ^ə lo:p ³]	"to turn, to roll"
/ trcia? /	['t ^ə racia? ³]	"ear"
/ tre:t /	['t ^ə re:t ³]	"to bend"
/ tram /	['t ^ə ram ²]	"to soak"
/ traj /	['t ^ə raj ²]	"fish"
/ traw /	['t ^ə raw ²]	"to be righth"
/ tra:w /	['t ^ə ra:w ²]	"taro"
/ tra:j /	['t ^ə ra:j ²]	"bank, side"
/ truŋ /	['t ^ə ruŋ ²]	"cage"
/ tru: /	['t ^ə ru: ²]	"fish trap (ไซ)"
/ trɔp /	['t ^ə ɔp ³]	"treasure, egg-plant"
/ trɔ:lop /	[t ^ə ɔ: ¹ . 'lop ³]	"to return"
/ trɔŋ /	['t ^ə ɔŋ ²]	"to be straight"
/ tru:a /	['t ^ə tu:a ²]	"to receive"
/ tru:aj /	['t ^ə ru:aj ²]	"green leaf"
/ tra:əŋ /	['t ^ə ra:əŋ ²]	"kind of melon(แตงร้าน)"
/ tjo:ŋ /	['t ^ə jo:ŋ ²]	"banana flow"
/ tintuŋ /	[tin ¹ . 'tuŋ ²]	"eel"
/ tillmaw /	[til ¹ . 'l ^ə maw ²]	"leprosy"
/ tic /	['tic ³]	"to sting(insect)"

/ tɪp /	['tɪp ²]	"to buy"
/ tɛh /	['tɛ ^{h3}]	"to tap"
/ tɔp /	['tɔp ³]	"to be dark"
/ tɔh /	['tɔ ^{h3}]	"direction"
/ tɛc /	['tɛc ³]	"to be little"
/ tɛ: /	['tɛ: ²]	"no, not"
/ tɪ:h /	['tɪ ^{h3}]	"to be impede"
/ tɔp /	['tɔp ³]	"just"
/ tɔh /	['tɔ ^{h3}]	"to arrive"
/ tɔk /	['tɔk ³]	"water"
/ tɔ ^h ha:w /	[tɔ ^h .'ha:w ²]	"to be fierce"
/ tɔ ^h le: /	[tɔ ^h .'le: ²]	"sea"
/ tɔmkɪc /	[tɔm ¹ .'kɪc ³]	"to throw, to putt"
/ tɔmkec /	[tɔm ¹ .'kec ³]	"to attack"
/ tɔmda:ɔm /	[tɔm ¹ .'da:ɔm ²]	"to compete (ပြိုင်)"
/ tɔmne: /	[tɔm ¹ .'ne: ²]	"to be free"
/ tɔmnam /	[tɔm ¹ .'nam ²]	"to grow by putting the seeds in soil"
/ tɔmnɔp /	[tɔm ¹ .'nɔp ³]	"dam"
/ tɔmnu:ɔŋ /	[tɔm ¹ .'nu:ɔŋ ²]	"melody"
/ tɔmna:ɔp /	[tɔm ¹ .'na:ɔp ³]	"sticky rice"
/ tɔmli:aj /	[tɔm ¹ .'li:aj ²]	"to destroy"
/ tɔmra: /	[tɔm ¹ .'ra: ²]	"book"
/ tɔmro:ŋ /	[tɔm ¹ .'ro:ŋ ²]	"a general name for small plant yeilding starchy roots(cassava)(ပိူ)"
/ tɔmru:at /	[tɔm ¹ .'ru:at ³]	"police"
/ tɔŋ /	['tɔŋ ²]	"as well as, as both "

/ ta: /	['ta:²]	"grand father"
/ ta:chan /	[ta:¹. 'cʰan²]	"a measure machine, lever scale"
/ ta:m /	['ta:m²]	"to follow"
/ tuk /	['tuk³]	"to keep, sufficient"
/ tuŋ /	['tuŋ²]	"flag"
/ tu: /	['tu:²]	"cupboard"
/ tu:c /	['tu:c³]	"to be small"
/ tu:k /	['tu:k³]	"boat"
/ tom /	['tum²]	"to be ripe"
/ top /	['top³]	"to tap"
/ to? /	['to?³]	"table"
/ tom /	['tom²]	"jar, to perch"
/ ton /	['ton²]	"to be young"
/ tow /	['tow²]	"to go"
/ to:c /	['to:c³]	"donkey"
/ to:h /	['to:h³]	"a crime, an offence"
/ to:w /	['to:w²]	"to last(year)"
/ tonlop /	['ton¹.lop³]	"to wrap up, to cover"
/ tok /	['tok³]	"building"
/ toh /	['toh³]	"to offend"
/ tomloŋ /	['tom¹.loŋ²]	"kind of creeping plant(คำลิง)"
/ ton /	['ton¹]	"to catch up with"
/ tiap /	['tiap³]	"to be short"
/ tia? /	['tia?³]	"again"
/ tian /	['tian²]	"to give"
/ ti:a /	['ti:a²]	"duck"
/ ti:ap /	['ti:ap³]	"a custard apple"
/ ti:an /	['ti:an²]	"candle"

/ ti:an /	['ti:an ²]	"to tie"
/ ti:aw /	['ti:aw ²]	"to travel"
/ ti:aj /	['ti:aj ²]	"to paddle"
/ tu:a /	['tu:a ²]	"ticket"
/ ta:e /	['ta:e ²]	"but"
/ ta:ɔŋ /	['ta:ɔŋ ²]	"to tow"

c

/ ckra:ɔm /	['c ^ə k ^ə ra:ɔm ²]	"kind of tree(ไม้แดง)"
/ ckɛ:h /	['c ^ə kɛ:h ³]	"waist"
/ cka: /	['c ^ə ka: ²]	"chin"
/ ckun /	['c ^ə kun ²]	"knee"
/ cko:m /	['c ^ə ko:m ²]	"a fang, a canine tooth"
/ ckɔ:m /	['c ^ə kɔ:m ²]	"a cluster, a bunch"
/ cʔɛ:t /	['c ^ə ʔɛ:t ³]	"to be full"
/ cʔaŋ /	['c ^ə ʔaŋ ²]	"bone"
/ cʔɔn /	['c ^ə ʔɔn ²]	"to be cooked"
/ cʔa:ɔ /	['c ^ə ʔa:ɔ ²]	"to roast"
/ cβɛc /	['c ^ə βɛc ³]	"to press, to massage"
/ cβaŋ /	['c ^ə βaŋ ²]	"to battle"
/ cβo:k /	['c ^ə βo:k ³]	"spear"
/ cβa:ɔŋ /	['c ^ə βa:ɔŋ ²]	"rice straw"
/ cdɔ: /	['c ^ə dɔ: ²]	"kind of fish(ปลาชะโศ)"
/ chpho:ʔ /	['ch ^ə p ^h o:ʔ ³]	"speciality"
/ chka:e /	['ch ^ə ka:e ²]	"a dog"
/ chku:a /	['ch ^ə ku:a ²]	"dram"
/ chmal /	['ch ^ə mal ²]	"lemon"

/ chmaw /	['ch ^ə maw ²]	"grass"
/ chma: /	['ch ^ə ma: ²]	"a cat"
/ chmoh /	['ch ^ə mo ^{h3}]	"name"
/ chmo:l /	['ch ^ə mo:l ²]	"male animal"
/ chneh /	['ch ^ə ne ^{h3}]	"to win"
/ chnam /	['ch ^ə nam ²]	"year"
/ chnot /	['ch ^ə not ³]	"kind, sort"
/ chnu:al /	['ch ^ə nu:al ²]	"to hire"
/ chŋa:j /	['ch ^ə ŋa:j ²]	"to be far"
/ chŋu:t /	['ch ^ə ŋu:t ³]	"to dry"
/ chŋol /	['ch ^ə ŋol ²]	"to doubt"
/ chŋa:ɔ /	['ch ^ə ŋa:ɔ ²]	"curry"
/ chlə:ŋ /	['ch ^ə lə:ŋ ²]	"a leech"
/ chla:t /	['ch ^ə la:t ³]	"to be clever"
/ chla:m /	['ch ^ə la:m ²]	"shark"
/ chluh /	['ch ^ə lu ^{h3}]	"a barking deer"
/ chlɔh /	['ch ^ə lɔ ^{h3}]	"to quarrel"
/ chlo:t /	['ch ^ə lo:t ³]	"to be honest"
/ chlo:p /	['ch ^ə lo:p ²]	"kind of fish(ปลาหมอค)"
/ chlo:ŋ /	['ch ^ə lo:ŋ ²]	"to cerebrate, to go across"
/ chli:a /	['ch ^ə li:a ²]	"to average"
/ chli:aw /	['ch ^ə li:aw ²]	"wise"
/ chiq /	['ch ^ə iq ²]	"a small shaped cymbals"
/ chiqcha: /	['ch ^ə iq ¹ . 'cha: ²]	"a swing"
/ chm: /	['ch ^ə m: ²]	"to hurt, pain"
/ chə: /	['ch ^ə ə: ²]	"tree"
/ cha?lɔ:m /	['cha? ¹ . lɔ:m ²]	"a round bamboo basket"
/ chamle:h /	['cham ¹ . le: ^{h3}]	"to cut"

/ chaw /	['chaw ²]	"to be raw(meat)"
/ chu:k /	['chu:k ³]	"lotus"
/ chop /	['chop ³]	"to stop, to park"
/ cho:p /	['cho:p ³]	"to pounce upon, to swoop down"
/ cho:k /	['cho:k ³]	"luck, fortune"
/ cho:ŋro:ŋ /	[cho:ŋ ¹ . 'ro:ŋ ²]	"to sit on the heels"
/ chɔ? /	['chɔ? ³]	"to break open, to chop"
/ chɔ:p /	['chɔ:p ³]	"to like"
/ chi:am /	['chi:am ²]	"blood"
/ chi:an /	['chi:an ²]	"to step"
/ chu:a /	['chu:a ²]	"to stand"
/ cmɔh /	['c ^ə mɔ ^{h3}]	"nose"
/ cŋap /	['c ^ə ŋap ²]	"delicious"
/ cli : /	['c ^ə li: ²]	"to crush"
/ cri:t /	['c ^ə ri:t ³]	"to be pale"
/ cre:h /	['c ^ə re: ^{h3}]	"to sleek , to be clean"
/ craw /	['c ^ə raw ²]	"to be deep"
/ cru? /	['c ^ə ru? ³]	"to pickle, sauce"
/ cruh /	['c ^ə ru ^{h3}]	"brook"
/ crun /	['c ^ə run ²]	"an angle, a ridge"
/ crul /	['c ^ə rul ²]	"to slide"
/ cru:k /	['c ^ə ru:k ³]	"a pig"
/ cru:p /	['c ^ə ru:p ²]	"a chopping block"
/ cro:ŋ /	['c ^ə ro:ŋ ²]	"to shine"
/ cro:ʔ /	['c ^ə ro:ʔ ³]	"a nook"
/ crɔʔ /	['c ^ə rɔʔ ³]	"channel"
/ cri:an /	['c ^ə ri:an ²]	"to sing"

/ cra:ən /	['c ^ə ra:ən ²]	"many"
/ cra:ət /	['c ^ə ra:ət ³]	"to harvest"
/ cih /	['ci ^{h3}]	"to ride"
/ ciŋku? /	['ciŋ ¹ .ku? ³]	"toad"
/ ci: /	['ci: ²]	"kind of vegetable(ผัก)"
/ ci:k /	['ci:k ³]	"to dig"
/ ci:t /	['ci:t ³]	"to close up"
/ ci:wət /	[ci: ¹ .wət ³]	"life"
/ ci: /	['ci: ²]	"fertilizer"
/ cen /	['cen ²]	"Chinese"
/ ceŋ /	['ceŋ ²]	"to exit"
/ ce: /	['ce: ²]	"to curse"
/ ce:k /	['ce:k ³]	"banana"
/ cɛh /	['cɛ ^{h3}]	"to be intelligent"
/ cɛ:kan /	[cɛ: ¹ .kan ²]	"a vase"
/ cɛ:ŋ /	['cɛ:ŋ ²]	"to inform"
/ cə:ŋma: /	[cə:ŋ ¹ .ma: ²]	"a bench, a stool"
/ cap /	['cap ³]	"to catch"
/ ca? /	['ca? ³]	"to pour, to stab"
/ ca?pɛ? /	[ca? ¹ .pɛ? ³]	"debt"
/ cah /	['ca ^{h3}]	"to be old"
/ cam /	['cam ²]	"to wait, to member"
/ camka: /	[cam ¹ .ka: ²]	"the farm"
/ camka:ŋ /	[cam ¹ .ka:ŋ ²]	"to extend"
/ camnɔ:ŋ /	[cam ¹ .nɔ:ŋ ²]	"a lasso, a loop"
/ camŋu: /	[cam ¹ .ŋu: ²]	"to be ill"
/ camnuan /	[cam ¹ .nuan ²]	"number"
/ camrup /	[cam ¹ .rup ²]	"to stimulate"
/ can /	['can ²]	"Monday"

/ canti: /	[.cən ¹ . 'ti:²]	"the cashew nut"
/ caŋkra:n /	[.cəŋ ¹ . 'k ^a ra:n ²]	"stove"
/ caŋʔə:t /	[.cəŋ ¹ . 'ʔə:t ³]	"to stand on tiptoe"
/ caŋʔol /	[.cəŋ ¹ . 'ʔol ²]	"to point"
/ caŋʔɔ: /	[.cəŋ ¹ . 'ʔɔ:²]	"vomit"
/ caŋʔi:at /	[.cəŋ ¹ . 'ʔi:at ³]	"to be narrow"
/ caŋʔa:e /	[.cəŋ ¹ . 'ʔa:e ²]	"flat basket"
/ caŋda:ə /	[.cəŋ ¹ . 'da:ə ²]	"ladder"
/ caŋle:n /	[.cəŋ ¹ . 'le:n ²]	"earthworm"
/ caŋlo:h /	[.cəŋ ¹ . 'lo:h ³]	"a torch"
/ caŋlu:a /	[.cəŋ ¹ . 'lu:a ²]	"to imitate"
/ caŋraj /	[.cəŋ ¹ . 'raj ²]	"to be bad"
/ caŋruk /	[.cəŋ ¹ . 'ruk ³]	"grain barn"
/ caŋret /	[.cəŋ ¹ . 'ret ³]	"cricket"
/ caŋwe? /	[.cəŋ ¹ . 'we ²³]	"rythm"
/ caŋwa: /	[.cəŋ ¹ . 'wa:²]	"small fishes"
/ caŋ /	['caŋ ²]	"to lost"
/ caj /	['caj ²]	"flea"
/ ca: /	['ca:²]	"the particle for female affirmitive polite answer"
/ ca:p /	['ca:p ³]	"bird"
/ ca:n /	['ca:n ²]	"plate"
/ ca:j /	['ca:j ²]	"to pay"
/ cut /	['cut ³]	"dresses"
/ cu? /	['cu? ³]	"a pipe "
/ cul /	['cul ²]	"to crash"
/ cu: /	['cu:²]	"to be sour"
/ cu:t /	['cu:t ³]	"to wipe, to band"
/ cu:n /	['cu:n ²]	"to send"

/ cu:l /	['cu:l ²]	"to employ"
/ cok /	['cok ³]	"to be punch-drunk"
/ coh /	['co ^{h3}]	"to get off"
/ coŋ /	['coŋ ²]	"at the end"
/ co:l /	['co:l ²]	"to enter"
/ cɔp /	['cɔp ³]	"to connect, to end"
/ cɔt /	['cɔt ³]	"to be astingent, acidulous"
/ cɔm /	['cɔm ²]	"a contusion, to be contused"
/ cɔmhi:aŋ /	[cɔm ¹ . 'hi:aŋ ²]	"a slice, a section"
/ cɔn /	['cɔn ²]	"to foot"
/ cɔ:p /	['cɔ:p ³]	"a spade"
/ cɔ:m /	['cɔ:m ²]	"top"
/ cɔ:ŋ /	['cɔ:ŋ ²]	"to tie"
/ cɔ:l /	['cɔ:l ²]	"to throw"
/ cɔmu:aj /	[cɔm ¹ . 'nu:aj ²]	"a gift"
/ cɔŋ /	['cɔŋ ²]	"to want"
/ cɔ:p /	['cɔ:p ³]	"a hoe"
/ cɔ:n /	['cɔ:n ²]	"a step, the floor"
/ ciat /	['ciat ³]	"mind"
/ ciaj /	['ciaj ²]	"victory"
/ ci:a /	['ci:a ²]	"to be well, to be good"
/ ci:at /	['ci:at ²]	"nation"
/ ci:amu:aj /	[ci:a ¹ . 'mu:aj ²]	"to be with"
/ ci:aŋ /	['ci:aŋ ²]	"more than"
/ ci:aj /	['ci:aj ²]	"edge"
/ cɯ:a /	['cɯ:a ²]	"to believe"
/ cuap /	['cuap ³]	"to meet"
/ cu:an /	['cu:an ²]	"almost"

/ cu:al /	['cu:al ²]	"to rent"
/ ca:əŋ /	['ca:əŋ ²]	"foot"
/ ca:ɔ /	['ca:ɔ ²]	"robber"

k

/ kphlə:ŋ /	['k ^ə p ^{hə} lə:ŋ ²]	"gun"
/ kphli:aŋ /	['k ^ə p ^{hə} li:aŋ ²]	"cheek"
/ kpri:a /	['k ^ə p ^ə ri:a ²]	"orphan"
/ kpiŋpu:aj /	[k ^ə piŋ ¹ . 'pu:aj ²]	"kind of water plant (ต้นแพงพวยน้ำ)"
/ kpiŋku:t /	[k ^ə piŋ ¹ . 'ku:t ³]	"bottom"
/ kpe:n /	['k ^ə pe:n ²]	"a kind of beetle with green integument (แมลงทับ)"
/ kpop /	['k ^ə pop ³]	"to drop, to spill"
/ kpɔ:ɟcən /	[k ^ə pɔ:ɟ ¹ . 'cən ²]	"kind of herbal plant (สันตวา)"
/ kpi:an /	['k ^ə pi:an ²]	"kind of fish (ปลาตะเพียน)"
/ kthɔ:/	['k ^ə thɔ: ²]	"a chamber pot"
/ kthw:an /	['k ^ə thw:an ²]	"to shake"
/ ktrɔ:ʔ /	['k ^ə t ^ə rɔ:ʔ ³]	"fish bamboo container, a fish-trap"
/ kte:l /	['k ^ə te:l ²]	"mat"
/ kte:/	['k ^ə te: ²]	"kind of squirrel"
/ ktuʔ /	['k ^ə tu ^{ʔ3}]	"rice bran"
/ ktumruj /	[k ^ə tum ¹ . 'ruj ²]	"a dragonfly"
/ ktuj /	['k ^ə tuj ²]	"tail"
/ ktontu:k /	[k ^ə ton ¹ . 'tu:k ³]	"a horseshoe crab"
/ kto:ŋ /	['k ^ə to:ŋ ²]	"a vessel made of banana leaves"
/ ktiahloŋ /	[k ^ə tia ^{h1} . 'loŋ ²]	"a water bug, the whirligig"

/ kti:at /	['k ² ti:at ²]	"to spread out (as water)"
/ ktu:at /	['k ² tu:at ³]	"the otuhite goose berry (มะยม)"
/ kchu:aj /	['k ² chu:aj ²]	"kind of plant (ต้นลำไย)"
/ kcha:et /	['k ² cha:et ³]	"kind of vegetable (ผักกะเจต)"
/ kcɔp /	['k ² cɔp ³]	"a pack"
/ kcɔʔ /	['k ² cɔʔ ³]	"mirror"
/ kcɾi:ap /	['k ² c ² ri:ap ³]	"kind of melon (แตงกวา)"
/ kcɾa:en /	['k ² c ² ra:en ²]	"a screen, a grate"
/ kci:al /	['k ² ci:al ²]	"bamboo basket"
/ kkrɔh /	['k ² k ² ɾɔ ^{h3}]	"to be harsh"
/ kʔat /	['k ² ʔat ³]	"to write"
/ kʔɔ:p /	['k ² ʔɔ:p ²]	"to be a good smell"
/ kʔɔ:ʔ /	['k ² ʔɔ:ʔ ³]	"to cough"
/ kʔa:ek /	['k ² ʔa:ek ³]	"crow"
/ kbet /	['k ² bet ³]	"knife"
/ kbəj /	['k ² bəj ²]	"buffalo"
/ kba:l /	['k ² ba:l ²]	"head"
/ kbɔt /	['k ² bɔt ³]	"to rebel"
/ kba:el /	['k ² ba:el ²]	"a ray fish"
/ kdec /	['k ² dec ³]	"to pinch"
/ kde:c /	['k ² de:c ³]	"to pluck"
/ kdap /	['k ² dap ³]	"to fist"
/ kdaŋŋa: /	['k ² daŋ ¹ .ŋa: ²]	"kind of flower (ดอกกระดังงา)"
/ kdaw /	['k ² daw ²]	"to be hot"
/ kda: /	['k ² da: ²]	"blackboard"
/ kda:h /	['k ² da:h ³]	"to sneeze"
/ kda:m /	['k ² da:m ²]	"a crab"
/ kda:l /	['k ² da:l ²]	"center"

/ kdu:c /	['k ^ə du:c ³]	"genous Diocorea (ถั่วถ้ำ)"
/ kdol /	['k ^ə dol ²]	"a rat"
/ kdo:p /	['k ^ə do:p ³]	"grasshopper"
/ kdi:a /	['k ^ə di:a ²]	"termite"
/ kdi:at /	['k ^ə di:at ³]	"to pick up flat basket a side"
/ kdi:aw /	['k ^ə di:aw ²]	"hook"
/ kse: /	['k ^ə se: ²]	"rope"
/ kse:ŋ /	['k ^ə se:ŋ ²]	"a lioncloth, a scarf"
/ ksac /	['k ^ə sac ³]	"sand"
/ khpul /	['k ^{hə} pul ²]	"to rinse"
/ khpəh /	['k ^{hə} pə ^{h3}]	"to be tall"
/ khtəh /	['k ^{hə} tə ^{h3}]	"a pan"
/ khtəh /	['k ^{hə} tə ^{h3}]	"pock"
/ khti:ap /	['k ^{hə} ti:ap ³]	"to be short"
/ khtu:aj /	['k ^{hə} tu:aj ²]	"scorpion"
/ khcil /	['k ^{hə} cil ²]	"to be lazy"
/ khcəj /	['k ^{hə} cəj ²]	"to borrow, raw(plant)"
/ khcaw /	['k ^{hə} caw ²]	"fibre, Bombay hemp"
/ khcu:ŋ /	['k ^{hə} cu:ŋ ²]	"charcoal"
/ khcoh /	['k ^{hə} co ^{h3}]	"kind of fish(ปลาหมึก)"
/ khcəl /	['k ^{hə} cəl ²]	"wind"
/ khcə:ŋ /	['k ^{hə} cə:ŋ ²]	"shell"
/ khbu:an /	['k ^{hə} bu:an ²]	"parade"
/ khmah /	['k ^{hə} ma ^{h3}]	"to be shy"
/ khmaw /	['k ^{hə} maw ²]	"to be black"
/ khnum /	['k ^{hə} num ²]	"bee"
/ khno:t /	['k ^{hə} no:t ³]	"a weevil"

/ khmuat /	['kh ^ə muat ³]	"to twist"
/ khma:e /	['kh ^ə ma:e ²]	"Khmer"
/ khma:ot /	['kh ^ə ma:ot ³]	"ghost"
/ khna? /	['kh ^ə na? ³]	"group"
/ khna: /	['kh ^ə na: ³]	"the participle for male affirmative polite answer to a monk"
/ khna:t /	['kh ^ə na:t ³]	"size"
/ khnu:c /	['kh ^ə nu:c ³]	"bamboo cord"
/ khnol /	['kh ^ə no:l ²]	"jackfruit"
/ khno:ŋ /	['kh ^ə no:ŋ ²]	"back"
/ khno:j /	['kh ^ə no:j ²]	"a pillow"
/ khnom /	['kh ^ə nom ²]	"I(polite)"
/ khlem /	['kh ^ə lem ²]	"core of tree"
/ khlah /	['kh ^ə la ^{h3}]	"some"
/ khlap /	['kh ^ə lap ²]	"fat"
/ khlaŋ /	['kh ^ə laŋ ²]	"to be strong"
/ khla: /	['kh ^ə la: ²]	"tiger"
/ khla:c /	['kh ^ə la:c ³]	"to fear"
/ khlo:ŋ /	['kh ^ə lo:ŋ ²]	"canal"
/ khli:at /	['kh ^ə li:at ³]	"to be distant"
/ khli:an /	['kh ^ə li:an ²]	"to be hungry"
/ khlu:an /	['kh ^ə lu:an ²]	"body"
/ khla:en /	['kh ^ə la:en ²]	"a skink"
/ khla:enŋ /	['kh ^ə la:enŋ ²]	"a hawk"
/ khweh /	['kh ^ə we ^{h3}]	"to gouge, to scratch"
/ khwen /	['kh ^ə wen ²]	"clipped, lame"
/ khwah /	['kh ^ə wa ^{h3}]	"to lack"

/ khjaʔ /	['kh ^ə jaʔ ³]	"garbage"
/ khem /	['khem ²]	"needle"
/ khəŋ /	['khəŋ ²]	"to be angry"
/ khə:p /	['khə:p ²]	"to see"
/ kham /	['kham ²]	"to bite"
/ kha:ŋ /	['kha:ŋ ²]	"side"
/ khom /	['khom ²]	"to be warm"
/ kho:c /	['kho:c ³]	"fail, to be bad to be fierce"
/ khə: /	['khə: ²]	"trousers"
/ khə:p /	['khə:p ³]	"edge"
/ khə:c /	['khə:c ³]	"to burn, to be burnt"
/ khi:am /	['khi:am ²]	"to be economical"
/ khi:aw /	['khi:aw ²]	"green"
/ khu:a /	['khu:a ²]	"to be suitable"
/ khu:at /	['khu:at ³]	"bottle"
/ kha:e /	['kha:e ²]	"moon, month"
/ kme:ŋ /	['k ^ə me:ŋ ²]	"child"
/ kmu:j /	['k ^ə mu:j ²]	"grand son"
/ kmom /	['k ^ə mom ²]	"girl"
/ kmol /	['k ^ə mol ²]	"kind of insect (แมลงกะดาด)"
/ kmi:al /	['k ^ə mi:al ²]	"to wallow"
/ kmu:an /	['k ^ə mu:an ²]	"wax"
/ knoŋ /	['k ^ə nnoŋ ²]	"inside, a room"
/ kni:a /	['k ^ə nni:a ²]	"friend"
/ kpaj /	['k ^ə paj ²]	"ginger"
/ kŋa:n /	['k ^ə ŋa:n ²]	"a goose"
/ kle:ŋ /	['k ^ə le:ŋ ²]	"place"

/ klwɰh /	['k ^ə l ^w h ³]	"the door bolt, the latch"
/ klat /	['k ^ə lat ³]	"to pin"
/ klaj /	['k ^ə laj ²]	"to be short"
/ kla:t /	['k ^ə la:t ³]	"the crockroach"
/ kla:m /	['k ^ə la:m ²]	"muscle"
/ klɔ: /	['k ^ə lɔ: ²]	"jar"
/ klɔ:ŋ /	['k ^ə lɔ:ŋ ²]	"box"
/ klɔn /	['k ^ə lɔn ²]	"to smell"
/ kli:aj /	['k ^ə li:aj ²]	"to be wide"
/ kreŋ /	['k ^ə reŋ ²]	"kind of fish(ปลาหมึก)"
/ kre: /	['k ^ə re: ²]	"horn"
/ kre:t /	['k ^ə re:t ³]	"cigarette"
/ krah /	['k ^ə ra ^{h3}]	"to be thick"
/ kraŋ /	['k ^ə raŋ ²]	"to be (กว้าง)"
/ kra:p /	['k ^ə ra:p ³]	"to respect by putting both hands together"
/ kra:pro:k /	['k ^ə ra: ¹ .p ^ə ro:k ³]	"squirrel"
/ kra:h /	['k ^ə ra:h ³]	"a comb"
/ kra:l /	['k ^ə ra:l ²]	"to lay, to pave, to spread"
/ kra:w /	['k ^ə ra:w ²]	"outside"
/ krun /	['k ^ə run ²]	"to get sick"
/ krop /	['k ^ə rop ³]	"to be all"
/ kroŋ /	['k ^ə roŋ ²]	"a sack"
/ kro:c /	['k ^ə ro:c ³]	"orange"
/ kro:ŋ /	['k ^ə ro:ŋ ²]	"frame"
/ krop /	['k ^ə rop ³]	"seed"
/ kro: /	['k ^ə ro: ²]	"to be poor"
/ kro:l /	['k ^ə ro:l ²]	"animal stable"

/ kri:am /	['k ^ə ri:am ²]	"to prepare"
/ kri:al /	['k ^ə ri:al ²]	"the Malayan parrot (นกกระเรียน)"
/ kɾu:an /	['k ^ə ɾu:an ²]	"machine"
/ kruap /	['k ^ə ruap ³]	"to cover"
/ kru:a /	['k ^ə ru:a ²]	"kitchen"
/ kru:an /	['k ^ə ru:an ²]	"to rule (ตัดสิน)"
/ kra:e /	['k ^ə ra:e ²]	"bamboo bed"
/ kra:om /	['k ^ə ra:om ²]	"below"
/ kra:on /	['k ^ə ra:on ²]	"a stable"
/ kwi: /	['k ^ə wi: ²]	"to wave (flag)"
/ kwan /	['k ^ə wan ²]	"kind of herbal plant (ต้นหญ้ามีฤทธิ์)"
/ kwa:n /	['k ^ə wa:n ²]	"a deer"
/ ki:lɛ:h /	[ki: ¹ . 'lɛ:h ^{h3}]	"desire"
/ kec /	['keɕ ³]	"to escape"
/ ken /	['ken ²]	"to be good"
/ ke: /	['ke: ²]	"he, she"
/ ke:ra:e /	[ke: ¹ . 'ra:e ²]	"to be naughty, to be bad"
/ kɛ? /	['kɛ ^{ʔ3}]	"sheep"
/ kɛh /	['kɛ ^{h3}]	"to prick"
/ kɛ:h /	['kɛ: ^{h3}]	"to remove, to flip, to snap"
/ kɯt /	['kɯt ³]	"to think"
/ kɯttia? /	[kɯt ¹ . 'tia ^{ʔ3}]	"to consider"
/ kɯ: /	['kɯ: ²]	"to be"
/ kə:ki: /	[kə: ¹ . 'ki: ²]	"a kind of tree (ไม้ตะเคียน)"
/ kap /	['kap ³]	"to cut, to timber"
/ kat /	['kat ³]	"to cut"
/ ka? /	['ka ^{ʔ3}]	"to obstruct, to dam"
/ ka?pi? /	[ka ^{ʔ1} . 'pi ^{ʔ3}]	"shrimp paste"

/ kaʔda:h /	[ka ⁷¹ . 'da:h ^{h3}]	"paper "
/ kaʔhɔʔ /	[ka ⁷¹ . 'hɔ ⁷³]	"to tell a lie"
/ kamphi:aj /	[kam ¹ . 'phi:aj ³]	"steam"
/ kampha:en /	[kam ¹ . 'p ^h a:en ²]	"wall"
/ kampuh /	[kam ¹ . 'pu ^{h3}]	"shrimp"
/ kamtec /	[kam ¹ . 'tec ³]	"dust"
/ kamhum /	[kam ¹ . 'hum ²]	"humming"
/ kamha:en /	[kam ¹ . 'ha:en ²]	"to threaten"
/ kan /	['kan ²]	"to hand"
/ kancha: /	[kan ¹ . 'c ^h a: ²]	"marijuana"
/ kanle:k /	[kan ¹ . 'le:k ³]	"to glance"
/ kanlah /	[kan ¹ . 'la ^{h3}]	"to pin, to tag"
/ kawli: /	[kaw ¹ . 'li: ²]	"Korea"
/ ka: /	['ka: ²]	"to marry, to work, a pot"
/ ka:c /	['ka:c ³]	"to be fierce"
/ ka:j /	['ka:j ²]	"to rummage"
/ kuk /	['kuk ³]	"prison"
/ kuʔla:p /	[kuʔ ¹ . 'la:p ³]	"rose"
/ kuh /	['ku ^{h3}]	"to hit"
/ kun /	['kun ²]	"boxing"
/ kul /	['kul ²]	"the bole (of tree)"
/ kuj /	['kuj ²]	"to be talkative"
/ ku:c /	['ku:c ³]	"knot"
/ ku:so:l /	[ku: ¹ . 'so:l ²]	"merit, a past good deed"
/ ko: /	['ko: ²]	"couple, ox"
/ kotma:j /	[kot ¹ . 'ma:j ²]	"law"
/ kok /	['kok ³]	"a heron"

/ kom /	['kom ²]	"bush of tree"
/ ko:n /	['ko:n ²]	"child"
/ kəp /	['kəp ³]	"to cover(hole)"
/ kəh /	['kə ^{h3}]	"to be wrong"
/ kəmnu:a /	[kəm ¹ . 'nu:a ²]	"heap"
/ kəmlə:h /	[kəm ¹ . 'lə:h ³]	"young man, single man"
/ kəmrु:ap /	[kəm ¹ . 'ru:ap ³]	"a lid"
/ kəŋ /	['kəŋ ²]	"wheel"
/ kəŋ-daj /	[kəŋ ¹ . 'daj ²]	"a bracelet"
/ kəŋwəl /	[kəŋ ¹ . 'wəl ²]	"to worry"
/ kə: /	['kə: ²]	"to build"
/ kə:hə:m /	[kə: ¹ . 'hə:m ²]	"red"
/ kəmnəp /	[kəm ¹ . 'nəp ³]	"hole"
/ kəmnət /	[kəm ¹ . 'nət ³]	"to fix, to set"
/ kəmnə:t /	[kəm ¹ . 'nə:t ³]	"a log"
/ kəŋwe: /	[kəŋ ¹ . 'we: ²]	"a hook for controlling an elephant"
/ kə: /	['kə: ²]	"neck"
/ ki:a /	['ki:a ²]	"to poke, to shove"
/ ki:ap /	['ki:ap ³]	"to nip, to pinch"
/ kuap /	['kuap ³]	"double"
/ ku:aŋ /	['ku:aŋ ²]	"to pile, to across"
/ ka:ew /	['ka:ew ²]	"glass"
/ ka:ət /	['ka:ət ³]	"to happen, to give birth"
/ ka:əm /	['ka:əm ²]	"a lamp"
/ ka:əŋ /	['ka:əŋ ²]	"to be curve, to cheat"

?

/ ?insi: /	[?in ¹ . 'si: ²]	"eagle"
/ ?i:tiə? /	[?i: ¹ . 'tiə? ³]	"others"
/ ?i:ti:al /	[?i: ¹ . 'ti:al ²]	"kind of tree(ไม้ยาง)"
/ ?i:ca:əŋ /	[?i: ¹ . 'ca:əŋ ²]	"south"
/ ?i:wan /	[?i: ¹ . 'wan ²]	"luggage"
/ ?wət /	[' ?wət ³]	"to be strong, to be patient"
/ ?w:t /	[' ?w:t ³]	"to be swollen, to be stuffed full"
/ ?ac /	[' ?ac ³]	"excrement"
/ ?aŋ /	[' ?aŋ ²]	"I (impolite)"
/ ?aŋ /	[' ?aŋ ²]	"to roast "
/ ?a:tih /	[?a: ¹ . 'ti ^{h3}]	"cart"
/ ?a:krə:ʔ /	[?a: ¹ . 'k ^ə rə:ʔ ³]	"to be rough"
/ ?a:krəʔ /	[?a: ¹ . 'k ^ə rəʔ ³]	"to be fierce"
/ ?a:ɔ:səl /	[?a: ¹ . 'ɔ:səl ²]	"to be original"
/ ?a:səj /	[?a: ¹ . 'səj ²]	"bamboo"
/ ?a:si:al /	[?a: ¹ . 'si:al ²]	"afternoon"
/ ?a:na: /	[?a: ¹ . 'na: ²]	"who?"
/ ?a:l /	[?a:l ²]	"to saw, to cut"
/ ?a:law /	[?a: ¹ . 'law ²]	"at present time, now"
/ ?a:lwi:at /	[?a: ¹ . 'l ^ə wi:at ³]	"to run amok"
/ ?a:w /	[' ?a:w ²]	"shirt"
/ ?əm /	[' ?əm ²]	"aunt"
/ ?oc /	[' ?oc ³]	"to light"
/ ?o:ka:h /	[?o: ¹ . 'ka: ^{h3}]	"chance"
/ ?o:h /	[' ?o: ^{h3}]	"to drag"
/ ?o:p /	[' ?o:p ³]	"to hold, to hug"

/ ʔɔ:h /	['ʔɔ:h ³]	"to be enough, to be all of "
/ ʔɔ:n /	['ʔɔ:n ²]	"to bow"
/ ʔɔ:j /	['ʔɔ:j ²]	"to give "
/ ʔɔp /	['ʔɔp ³]	"to clasp, to hold"
/ ʔɔ: /	['ʔɔ: ²]	"to be very glad"
/ ʔia:h /	['ʔia ^{h3}]	"to scratch"
/ ʔu:an /	['ʔu:an ²]	"fishing-net"
/ ʔa:ep /	['ʔa:ep ³]	"to hide"
/ ʔa:ɔ /	['ʔa:ɔ ²]	"father"

6

/ bɛ:p /	['bɛ:p ³]	"form"
/ bɛ:c /	['bɛ:c ³]	"to break"
/ bɛ:ŋ /	['bɛ:ŋ ²]	"to divide "
/ bəj /	['bəj ²]	"three"
/ bə:t /	['bə:t ³]	"to run"
/ bat /	['bat ³]	"to lose, to get over"
/ baʔ /	['baʔ ³]	"to break"
/ bah /	['ba ^{h3}]	"to tip , to tilt"
/ baɲ /	['baɲ ²]	"to shoot"
/ ba:p /	['ba:p ³]	"sin "
/ ba:t /	['ba:t ³]	"final particle for male affirmative response"
/ ba:h /	['ba:h ³]	"kind of ivy plant (ตำลึง)"
/ ba:n /	['ba:n ²]	"to get"
/ ba:j /	['ba:j ²]	"rice"
/ bʌnkun /	[bʌn ¹ . 'kun ²]	"favour"

/ bɔk /	['bɔk ²]	"to ranger"
/ bɔt /	['bɔt ³]	"to grind"
/ bɔn /	['bɔn ²]	"festival of Buddhism"
/ bɔk /	['bɔk ²]	"to pound"
/ bɔ:k /	['bɔ:k ²]	"to lash"
/ bɔ:ra:n /	[bɔ: ¹ . 'ra:n ²]	"anceint"
/ bɔ:t /	['bɔ:t ³]	"to fold"
/ bɔ:ŋ /	['bɔ:ŋ ²]	"elder brother"
/ bɔt /	['bɔt ³]	"lesson, to close"
/ bɔʔ /	['bɔ ² ʔ]	"to wave(hand)"
/ bɔŋ /	['bɔŋ ²]	"lake"
/ bi:at /	['bi:at ³]	"to press(แป้นกด)"
/ bi:am /	['bi:am ²]	"to dissolve in mouth"
/ bu:aʔ /	['bu:aʔ ³]	"to plus"
/ bu:an /	['bu:an ²]	"four"
/ ba:e /	['ba:e ²]	"to glance (with eyes)"
/ ba:ək /	['ba:ək ²]	"to open"
/ ba:ɔk /	['ba:ɔk ²]	"to wrestle"
/ ba:ɔh /	['ba:ɔ ^h]	"to sweep"

d

/ dɛp /	['dɛp ²]	"to chase"
/ dɛ: /	['dɛ: ²]	"to sew"
/ dɛ:k /	['dɛ:k ³]	"to sleep"
/ dɛŋ /	['dɛŋ ²]	"to know"
/ dɛ:n /	['dɛ:n ²]	"border"

/ dɛ:l /	['dɛ:l ²]	"to be used to"
/ dɯ: /	['dɯ: ²]	"to be naughty"
/ dɔj /	['dɔj ²]	"soil"
/ dɔt /	['dɔt ³]	"to close up"
/ dɔk /	['dɔk ³]	"to lead"
/ dɔt /	['dɔt ³]	"to be bent"
/ dɔc /	['dɔc ³]	"to tear"
/ dɔ? /	['dɔ ⁷³]	"to put"
/ dɔm /	['dɔm ²]	"to grow"
/ dɔp /	['dɔp ²]	"to be curly"
/ dɔw /	['dɔw ²]	"to guess"
/ dɔj /	['dɔj ²]	"hand"
/ dɔ:ŋ /	['dɔ:ŋ ²]	"to spot, to discolor"
/ dɔ:w /	['dɔ:w ²]	"a sword"
/ dɔ:t /	['dɔ:t ³]	"to suck"
/ dɔt /	['dɔt ³]	"to burn"
/ dɔh /	['dɔ ^{h3}]	"to brush, to wipe, to grow up from seed"
/ dɔm /	['dɔm ²]	"a piece , a lump"
/ dɔ:c /	['dɔ:c ³]	"to be similar "
/ dɔ:ŋ /	['dɔ:ŋ ²]	"coconut"
/ dɔl /	['dɔl ²]	"a piece of wood"
/ dɔ: /	['dɔ: ²]	"to shake"
/ dɔ:t /	['dɔ:t ³]	"to post, to pin"
/ dɔ:ŋ /	['dɔ:ŋ ²]	"handle of knife, to dip up"
/ dɔp /	['dɔp ³]	"ten"
/ dɔk /	['dɔk ³]	"to drag (cart)"
/ dɔ? /	['dɔ? ³]	"to fracture"

/ dɔh /	['dɔ ^{h3}]	"to trip, to loose "
/ dɔm /	['dɔm ²]	"to pound"
/ dɔl /	['dɔl ²]	"to arrive, to box"
/ dɔ:p /	['dɔ:p ³]	"bottle"
/ dɔ:c /	['dɔ:c ³]	"to get a headache "
/ dɔ:h /	['dɔ:h ³]	"milk, breasts"
/ du:ɑŋ /	['du:ɑŋ ²]	"luck "
/ du:al /	['du:al ²]	"to fall"
/ da:e /	['da:e ²]	"also "
/ da:ek /	['da:ek ³]	"iron"
/ da:ə /	['da:ə ²]	"to walk"
/ da:əm /	['da:əm ²]	"beginning, tree trunk"

s

/ spɛh /	['s ^ə pɛ ^{h3}]	"to respect by putting both hands together"
/ spɜ: /	['s ^ə pɜ: ²]	"a carambola(มะเฟือง)"
/ spɔt /	['s ^ə pɔt ³]	"cloth"
/ spi:an /	['s ^ə pi:an ²]	"brigde"
/ spi:aj /	['s ^ə pi:aj ²]	"to carry on the shoulder"
/ sti:p /	['s ^ə ti:p ³]	"to fondle"
/ sti:h /	['s ^ə ti:h ³]	"a very thin bamboo cord"
/ stɛ? /	['s ^ə te ³]	"to protect"
/ stu:c /	['s ^ə tu:c ³]	"fishing, barb"
/ sti:ap /	['s ^ə ti:ap ³]	"to stroke"
/ stu:ap /	['s ^ə tu:ap ³]	"banana leaf"

/ skəw /	['səkəw ²]	"to be silver grey (hair)"
/ ska: /	['səkɑ: ²]	"the scale of fish"
/ snuk /	['sənuk ³]	"to be enjoy"
/ skon /	['səkɔn ²]	"a stem of water lily"
/ skɔt /	['səkɔt ³]	"to overlie"
/ skɔ: /	['səkɔ: ²]	"sugar"
/ skɔ:c /	['səkɔ:c ³]	"bedbugs"
/ skɔt /	['səkɔt ³]	"to impress"
/ sku:am /	['səkɯ:am ²]	"to be thin"
/ sʔoj /	['sʔoj ²]	"to rot"
/ sʔɔp /	['sʔɔp ³]	"to disgust"
/ sʔɔm /	['sʔɔm ²]	"kind of vegetable(พืชผั)"
/ sʔɔ:ʔ /	['sʔɔ:ʔ ³]	"hoarse (voice)"
/ sʔɛ:c /	['sʔɛ:c ³]	"skin"
/ sʔɛ:k /	['sʔɛ:k ³]	"shoes"
/ sʔa:j /	['sʔa:j ²]	"to be comfortable"
/ sʔɔt /	['sʔɔt ³]	"letter"
/ sʔɔk /	['sʔɔk ³]	"webster, nest"
/ sʔɔl /	['sʔɔl ²]	"colour"
/ sʔɔw /	['sʔɔw ²]	"kind of glass(หน้าต่าง)"
/ sʔɔ:ʔ /	['sʔɔ:ʔ ³]	"bark"
/ sʔa:ɔ /	['sʔa:ɔ ²]	"catarrh"
/ sʔɛ:p /	['sʔɛ:p ²]	"to show"
/ sʔap /	['sʔap ³]	"to listen"
/ sʔa:j /	['sʔa:j ²]	"to pity"
/ sʔɔh /	['sʔɔh ³]	"to spit"
/ sʔu:aʔ /	['sʔu:aʔ ³]	"to be convenient"
/ sʔa:əŋ /	['sʔa:əŋ ²]	"to be thin"

/ smɔh /	['s ^ə mɔ ^{h3}]	"to be honest"
/ smɔ: /	['s ^ə mɔ: ²]	"kind of fruit (ลูกสมอ)"
/ smɔ:c /	['s ^ə mɔ:c ³]	"an ant"
/ sma:ɔl /	['s ^ə ma:ɔl ²]	"shadow"
/ sna:j /	['s ^ə na:j ²]	"kind of tree (ต้นน้ำจืด)"
/ sno:k /	['s ^ə no:k ²]	"pig's trough"
/ sna:en /	['s ^ə na:en ²]	"horn"
/ sɔat /	['s ^ə ɔat ³]	"to be silent"
/ sɔa:p /	['s ^ə ɔa:p ³]	"to yawn"
/ slɛ:h /	['s ^ə lɛ:h ³]	"phlegm, sputum"
/ slah /	['s ^ə la ^{h3}]	"to be clear"
/ slap /	['s ^ə lap ²]	"to love"
/ sla:p /	['s ^ə la:p ³]	"wing"
/ slɔ: /	['s ^ə lɔ: ²]	"to cook soup"
/ slɔk /	['s ^ə lɔk ³]	"leaf"
/ slia? /	['s ^ə lia? ³]	"to wear"
/ srɛ: /	['s ^ə rɛ: ²]	"rice field"
/ srɛ:k /	['s ^ə rɛ:k ³]	"to scream"
/ srɔw /	['s ^ə rɔw ²]	"kind of melon (แตงไทย)"
/ srɔ:w /	['s ^ə rɔ:w ²]	"grain, paddy rice"
/ srah /	['s ^ə ra ^{h3}]	"pond"
/ sra: /	['s ^ə ra: ²]	"whisky"
/ sra:l /	['s ^ə ra:l ²]	"to be light"
/ sra:w /	['s ^ə ra:w ²]	"to draw, to pull (string)"
/ sra:j /	['s ^ə ra:j ²]	"to loose (knot)"
/ sru:c /	['s ^ə ru:c ³]	"to be sharp"
/ srok /	['s ^ə rok ³]	"village"
/ srɔ:h /	['s ^ə rɔ:h ³]	"to be flesh (vegetable)"

/ sɾɔ:m /	['s ^ə ɾɔ:m ²]	"to wear (socks)"
/ sɾu:aj /	['s ^ə ɾu:aj ²]	"to be brittle ,to be fragile"
/ sɾa:ɔc /	['s ^ə ɾa:ɔc ³]	"to water"
/ swiŋ /	['s ^ə wiŋ ²]	"a hand net,a cip net"
/ swet /	['s ^ə wet ³]	"to be addle"
/ swaŋ /	['s ^ə waŋ ²]	"to be drunk"
/ swa: /	['s ^ə wa: ²]	"monkey"
/ swa:j /	['s ^ə wa:j ²]	"mango"
/ swo:ŋ /	['s ^ə wɔ:ŋ ²]	"herd of animal"
/ swɔʔ /	['s ^ə wɔʔ ³]	"to bleach, to wash"
/ siŋto: /	[siŋ ¹ .to: ²]	"lion"
/ si: /	['si: ²]	"to eat"
/ siw /	['siw ²]	"kind of fish (ปลาหัว)"
/ sɛh /	['sɛ ^{h3}]	"a horse"
/ sɛn /	['sɛn ²]	"before"
/ sɛ:p /	['sɛ:p ³]	"to inspect"
/ sɛc /	['sɛ:c ³]	"a kind of orange (มะกรูด)"
/ sap /	['sap ³]	"to chop"
/ sat /	['sat ³]	"animal"
/ sac /	['sac ³]	"meat"
/ samphaw /	[sam ¹ .phaw ²]	"a kind of boat,an argosy"
/ samkhan /	[sam ¹ .khan ²]	"important"
/ samnep /	[sam ¹ .nep ²]	"fishing net(แห)"
/ samlap /	[sam ¹ .lap ³]	"to kill"
/ samli:ŋ /	[sam ¹ .li:ŋ ²]	"to sharpen"
/ samra:m /	[sam ¹ .ra:m ²]	"hard dusty"
/ sandɛ:k /	[san ¹ .ɛ:k ³]	"bean"
/ sanla: /	[san ¹ .la: ²]	"areca"

/ sanlop /	[san ¹ . 'lop ³]	"to be shocked, unconcious"
/ sanksi: /	[san ¹ . 'k ³ si: ²]	"zinc"
/ sa:p /	['sa:p ³]	"to be fresh, to be tasteless"
/ sa:møn /	[sa: ¹ . 'møn ²]	"kind of tree, longon tree"
/ sa:ŋ /	['sa:ŋ ²]	"to build"
/ soc /	['soc ³]	"a gnat"
/ so?kprok /	[so ⁷ 1. 'k ³ p ³ rok ³]	"to be dirty"
/ som /	['som ¹]	"to beg"
/ somtu:c /	[som ¹ . 'tu:c ³]	"barb"
/ so? /	['so? ³]	"hair"
/ so?ljia? /	[so?l ¹ . 'jia? ³]	"benefit"
/ so: /	['so: ²]	"white"
/ so:p /	['so:p ³]	"to test"
/ so:m /	['so:m ²]	"to repair"
/ so:ŋ /	['so:ŋ ²]	"to pay debt"
/ so:l /	['so:l ²]	"to remain , to be left"
/ sok /	['sok ³]	"to leave from monkhood"
/ soŋ /	['soŋ ²]	"monk"
/ si:at /	['si:at ³]	"to attach"
/ si:am /	['si:am ²]	"Thai"
/ suan /	['suan ²]	"garden"
/ sua? /	['sua? ³]	"to wear"
/ su:a /	['su:a ²]	"to ask question"
/ su:at /	['su:at ³]	"lung"
/ su:aj /	['su:aj ²]	"to be unlucky"
/ sa:en /	['sa:en ²]	"to carry with both hands"
/ sa:əm /	['sa:əm ²]	"to be moisture"
/ sa:oc /	['sa:oc ³]	"to laugh"

h

/ he:w /	['he:w ²]	"an abyss , a chasm"
/ he:l /	['he:l ²]	"to swim"
/ hat /	['hat ³]	"to practice"
/ ha: /	['ha: ²]	"to open mouth"
/ ha:m /	['ha:m ²]	"to ban"
/ ha:l /	['ha:l ²]	"to air"
/ ha:w /	['ha:w ²]	"to call"
/ ho:c /	['ho:c ³]	"to whistle"
/ ho: /	['ho: ²]	"to flow"
/ ho:p /	['ho:p ³]	"to have(meal)"
/ ho:c /	['ho:c ³]	"to stretch"
/ ho? /	['ho? ³]	"to jump "
/ hollpi:ŋ /	[hɔl ¹ . l ¹ pi:ŋ ²]	"kind of spider,the mygale"
/ ho:l /	['ho:l ²]	"to be hot to taste"
/ ho:j /	['ho:j ²]	"already"
/ hɔt /	['hɔt ³]	"to be exhausted"
/ hi:an /	['hi:an ²]	"to be brave"
/ hu:ah /	['hu:a ^{h3}]	"to be over"
/ hu:aŋ /	['hu:aŋ ²]	"to be possessive"
/ ha:e /	['ha:e ²]	"to parad"
/ ha:ep /	['ha:ep ³]	"box ,casket"
/ ha:et /	['ha:et ³]	"cause"
/ ha:ek /	['ha:ek ³]	"to tare"
/ ha:eŋ /	['ha:eŋ ²]	"you(impolite)"
/ ha:əm /	['ha:əm ²]	"to swell"

/ mpe:c /	[⁷ əm ¹ . 'pe:c ³ ~ m ¹ . 'pe:c ³]	"now"
/ mpwl /	[⁷ əm ¹ . 'pwl ² ~ m ¹ . 'pwl ²]	"tamarind"
/ mpun /	[⁷ əm ¹ . 'pun ² ~ m ¹ . 'pun ²]	"Adam's apple"
/ mpa:c /	[⁷ əm ¹ . 'pa:c ² ~ m ¹ . 'pa:c ²]	"sugar cane"
/ mtru:ŋ /	[⁷ m ¹ t ^h ru:ŋ ²]	"chest"
/ mteh /	[⁷ m ¹ t ^h e ^h]	"chilli"
/ mcol /	[⁷ m ¹ c ^h ol ²]	"kind of fish(ปลาเทิ้ม)"
/ mbel /	[⁷ əm ¹ . 'bel ² ~ m ¹ . 'bel ²]	"salt"
/ mboh /	[⁷ əm ¹ . 'b ^h o ^h ~ m ¹ . 'b ^h o ^h]	"thread"
/ mba:c /	[⁷ əm ¹ . 'ba:c ² ~ m ¹ . 'ba:c ²]	"butterfly"
/ mdep /	[⁷ m ¹ d ^h ep ²]	"kind of fruit(มะดัน)"
/ mde:ŋ /	[⁷ m ¹ d ^h e:ŋ ²]	"a galingale"
/ msaw /	[⁷ m ¹ s ^h aw ²]	"powder"
/ mho:p /	[⁷ m ¹ h ^h o:p ³]	"food"
/ mmip /	[⁷ əm ¹ . 'mip ² ~ m ¹ . 'mip ²]	"moment of time"
/ mmh /	[⁷ m ¹ m ^h]	"hair(pubic)"
/ mmec /	[⁷ m ¹ m ^h ec ³]	"the fruitfly"
/ mnuh /	[⁷ m ¹ n ^h u ^h]	"human"
/ mnɔ:ŋ /	[⁷ m ¹ n ^h ɔ:ŋ ²]	"to be just enough"
/ mlɔ: /	[⁷ m ¹ l ^h ɔ: ²]	"betel"
/ mrec /	[⁷ m ¹ r ^h ec ³]	"pepper"
/ mɾɛ:h /	[⁷ m ¹ r ^h ɛ: ^h]	"kind of vegetable(มะระ)"
/ mri:am /	[⁷ m ¹ ri:am ²]	"finger"
/ mja:ŋ /	[⁷ m ¹ ja:ŋ ²]	"each of"
/ mi: /	[⁷ m ¹ i: ²]	"rice noodle"
/ mi:ŋ /	[⁷ m ¹ i:ŋ ²]	"aunt"

/ mɯ:n /	['mɯ:n ²]	"ten thousand"
/ mək /	['mək ³]	"octopus, squid"
/ mɛmpɛc /	[,mɛm ¹ . 'pɛc ³]	"just moment"
/ mɛn /	['mɛn ²]	"not, no"
/ mɛŋkʰut /	[,mɛŋ ¹ . 'kʰut ³]	"mangosteel"
/ mɛllji:at /	[,mɛl ¹ . 'l ^a ji:at ³]	"a manner"
/ mɛw /	['mɛw ²]	"to take all ,to transfer wholesale"
/ mɛjsu:a /	[,mɛj ¹ . 'su:a ²]	"float"
/ mɛ:tɕɔ: /	[,mɛ:t ¹ . 't ^a ɕɔ: ²]	"unit of four"
/ mɛ:j /	['mɛ:j ²]	"widow"
/ mɛt /	['mɛt ³]	"to be sharp"
/ mɛk /	['mɛk ³]	"face"
/ mɛm /	['mɛm ²]	"corner"
/ mɛn /	['mɛn ²]	"before , ^ŋ "
/ mɛŋnu:an /	[,mɛŋ ¹ . 'nu:an ²]	"certain"
/ mɛ: /	['mɛ: ²]	"roll"
/ mɛ:l /	['mɛ:l ²]	"circle"
/ mɛ:j /	['mɛ:j ²]	"one"
/ mɛ:h /	['mɛ:h ³]	"mosquito"
/ mɛ:ŋ /	['mɛ:ŋ ²]	"hour"
/ mɛʔsɔm /	[,mɛ ^{ʔ1} . 'sɔm ²]	"to be suitable"
/ mɛn /	['mɛn ²]	"hen"
/ mɛ:p /	['mɛ:p ³]	"to prostrate"
/ mɛt /	['mɛt ³]	"mouth"
/ mɛ:hɔ: /	[,mɛ: ¹ . 'hɔ: ²]	"to be very angry"
/ mɛ: /	['mɛ: ²]	"to come"
/ mɛiɛh /	['mɛiɛ ^{h3}]	"gold"

/ mi:am /	['mi:am ²]	"owl"
/ mi:an /	['mi:an ²]	"to have"
/ mu:aʔ /	['mu:aʔ ³]	"hat"
/ ma:e /	['ma:e ²]	"mother"
/ ma:ek /	['ma:ek ³]	"sky ,brance"
/ ma:en /	['ma:en ²]	"to be correct ,yes"
/ ma:ə /	['ma:ə ²]	"to watch"

n

/ ntnu: /	[ʔ ⁿ n ¹ . t ⁿ nu: ² ~ n ¹ . t ⁿ nu: ²]	"rainbow"
/ nceɯ /	[ʔ ⁿ n ¹ . ceɯ ² ~ n ¹ . ceɯ ²]	"to take care of"
/ nceŋ /	[ʔ ⁿ n ¹ . ceŋ ² ~ n ¹ . ceŋ ²]	"a wall"
/ nce:ŋ-tun /	[ʔ ⁿ n ¹ . ce:ŋ ² . tun ² ~ n ¹ . ce:ŋ ² . tun ²]	"a hut"
/ ncu:n /	[ʔ ⁿ n ¹ . cu:n ² ~ n ¹ . cu:n ²]	"to transport"
/ ndɛ:c /	[ʔ ⁿ n ¹ . dɛ:c ³ ~ n ¹ . dɛ:c ³]	"to float"
/ ndɛ:p /	[ʔ ⁿ n ¹ . dɛ:p ² ~ n ¹ . dɛ:p ²]	"kind of fish (ปลาตลก)"
/ nda:t /	[ʔ ⁿ n ¹ . da:t ³ ~ n ¹ . da:t ³]	"tongue"
/ nsa:j /	[ʔ ⁿ n ¹ . sa:j ² ~ n ¹ . sa:j ²]	"a rabbit"
/ nji:aj /	[ʔ ⁿ n ¹ . ji:aj ² ~ n ¹ . ji:aj ²]	"to say"
/ nisaj /	[ni ¹ . saj ²]	"character"
/ nih /	[ni ^{h3}]	"this"
/ nim /	[nim ²]	"a yoke"
/ nin /	[nin ²]	"a blue sapphire"
/ nil /	[nil ²]	"kind of fish (ปลาฉิ่ง)"
/ neʔ /	[neʔ ³]	"person"
/ nu:k /	[nu:k ³]	"to recall"

/ nat /	['nat ³]	"to appoint"
/ na: /	['na: ²]	"where?"
/ na:lika: /	[na: ¹ . 'li ² . ka: ²]	"clock"
/ nuh /	['nu ^{h3}]	"that"
/ nom /	['nom ²]	"sweet"
/ now /	['now ²]	"to stay"
/ no:m /	['no:m ²]	"urine"
/ nom /	['nom ²]	"to bring"
/ ni:am /	['ni:am ²]	"name"
/ ni:an /	['ni:an ²]	"a title of younger woman"
/ ni:aj /	['ni:aj ²]	"boss"
/ na:en /	['na:en ²]	"to be tight"

၂

/ ni: /	['ni: ²]	"female animal"
/ nep /	['nep ²]	"to stretch lips"
/ nuk /	['nuk ³]	"to be frequent"
/ nə:h /	['nə:h ³]	"sweat"
/ puh /	['pu ^{h3}]	"to incite"
/ nu:n /	['nu:n ²]	"kind of harvest hook"
/ nom /	['nom ²]	"I (polite)"
/ noŋ /	['noŋ ²]	"to carry"
/ no:p /	['no:p ³]	"to be rapid"
/ no:t /	['no:t ³]	"to stuff"
/ no:h /	['no:h ³]	"to hatch"
/ no:l /	['no:l ²]	"to tremble"
/ nom /	['nom ²]	"salad"

/ ni:at /	['ni:at ³]	"relationship"
/ nu:a /	['nu:a ²]	"kind of tree (ต้นขอ)"

๗

/ ntun /	[7๑ η ¹ . 'tun ² ~ η ¹ . 'tun ²]	"an eel"
/ nci:an /	[7๑ η ¹ . 'ci:an ² ~ η ¹ . 'ci:an ²]	"a ring"
/ nca:əm /	[7๑ η ¹ . 'ca:əm ² ~ η ¹ . 'ca:əm ²]	"eyebrow"
/ nke:p /	[7๑ η ¹ . 'ke:p ³ ~ η ¹ . 'ke:p ³]	"a frog"
/ nkə: /	[7๑ η ¹ . 'kə: ² ~ η ¹ . 'kə: ²]	"to bend(tooth)"
/ nkan /	[7๑ η ¹ . 'kan ² ~ η ¹ . 'kan ²]	"kind of flower(ดอกขี้เหล็ก)"
/ nkal /	[7๑ η ¹ . 'kal ² ~ η ¹ . 'kal ²]	"when?"
/ nkuŋ /	[7๑ η ¹ . 'kuŋ ² ~ η ¹ . 'kuŋ ²]	"kind of tree(ไม้เฒ่า)"
/ nkuj /	[7๑ η ¹ . 'kuj ² ~ η ¹ . 'kuj ²]	"to sit"
/ nkɔ:l /	[7๑ η ¹ . 'kɔ:l ² ~ η ¹ . 'kɔ:l ²]	"to plough(ไถดะ)"
/ nkɔ: /	[7๑ η ¹ . 'kɔ: ² ~ η ¹ . 'kɔ: ²]	"milled rice"
/ nʔɛ:l /	[7๑ η ¹ . 'ʔɛ:l ² ~ η ¹ . 'ʔɛ:l ²]	"to fondle"
/ nɔ:ŋ /	[7๑ η ¹ . 'ɔ:ŋ ² ~ η ¹ . 'ɔ:ŋ ²]	"well"
/ nɔ:a:ək /	[7๑ η ¹ . 'ɔ:a:ək ³ ~ η ¹ . 'ɔ:a:ək ³]	"turtle"
/ nsɔ:lmil /	[7๑ η ¹ . 'sɔ:l ² .mil ² ~ η ¹ . 'sɔ:l ² .mil ²]	"yesterday"
/ nsɔ:ŋ /	[7๑ η ¹ . 'sɔ:ŋ ² ~ η ¹ . 'sɔ:ŋ ²]	"snapping turtle"
/ nsɔ:m /	[7๑ η ¹ . 'sɔ:m ² ~ η ¹ . 'sɔ:m ²]	"dew"
/ nsɔ:ŋ /	[7๑ η ¹ . 'sɔ:ŋ ² ~ η ¹ . 'sɔ:ŋ ²]	"salamander"
/ nlu? /	[7๑ η ¹ . 'lu? ³ ~ η ¹ . 'lu? ³]	"vegetable"
/ nrun /	[7๑ η ¹ . 'run ² ~ η ¹ . 'run ²]	"to swing(leg)"
/ nwe:ŋ /	[7๑ η ¹ . 'we:ŋ ² ~ η ¹ . 'we:ŋ ²]	"to lose"
/ nwe:l /	[7๑ η ¹ . 'we:l ² ~ η ¹ . 'we:l ²]	"whorl"
/ nək /	['nək ³]	"to nod"

/ ηə:t /	['ηə:t ³]	"to crane"
/ ηap /	['ηap ³]	"to die"
/ ηu:t /	['ηu:t ³]	"to bathe"
/ ηu:η /	['ηu:η ²]	"to creep"
/ ηiat /	['ηiat ³]	"a kind of salty dried fish"
/ ηi:aj /	['ηi:aj ²]	"to be easy"
/ ηu:a /	['ηu:a ²]	"to be bend"
/ ηu:an /	['ηu:an ²]	"an elephant's trunk"
/ ηa:əp /	['ηa:əp ³]	"to look up ,to turn up "

1

/ lpe:n /	['l ^ə pe:n ²]	"kidney"
/ lpe:η /	['l ^ə pe:η ²]	"spear"
/ lpow /	['l ^ə pow ²]	"pumpkin"
/ lkε? /	['l ^ə kε? ³]	"to be rough"
/ lku? /	['l ^ə ku ⁷³]	"to be rough"
/ lku:an /	['l ^ə ku:an ²]	"drama"
/ l?el /	['l ^ə ?el ²]	"to slide"
/ l?ɔ: /	['l ^ə ?ɔ: ²]	"to be beautifull"
/ l?ɔ? /	['l ^ə ?ɔ? ⁷³]	"to be muddy,to be mucky"
/ lbo:t /	['l ^ə bo:t ³]	"to slip off,to come off"
/ lhah /	['l ^ə ha ^{h3}]	"to be rapid"
/ lha:pe:k /	['l ^ə ha:.'pe:k ²]	"immediate"
/ lhon /	['l ^ə hon ²]	"papaya"
/ lmal /	['l ^ə mal ²]	"kind of insect,a hornet,a wasp"
/ lmp ^h /	['l ^ə mp ^{h3}]	"to itch"
/ lmi:at /	['l ^ə mi:at ⁷³]	"the turmeric"

/ lmi:al /	['l ^ə mi:al ²]	"to roll"
/ lpuu /	['l ^ə puu ²]	"to smile"
/ lɔit /	['l ^ə ɔit ³]	"dim "
/ lɔə: /	['l ^ə ɔə: ²]	"to stumble"
/ lɔoŋ /	['l ^ə ɔoŋ ²]	"to be stupid"
/ lɔu:a /	['l ^ə ɔu:a ²]	"sesame"
/ lɔuj /	['l ^ə ɔuj ²]	"to be sleepy, drowsy"
/ lli:ŋ /	['l ^ə li:ŋ ²]	"to be smooth"
/ lle:ŋ /	['l ^ə le:ŋ ²]	"to tease"
/ liuk /	['l ^ə liuk ³]	"to get up"
/ llun /	['l ^ə llun ²]	"to be loose"
/ llut /	['l ^ə llut ³]	"to abort"
/ llot /	['l ^ə llo ³]	"to put out"
/ llɔh /	['l ^ə llɔ ^{h3}]	"to throw off"
/ llua? /	['l ^ə llua ³]	"dove"
/ llu:aj /	['l ^ə llu:aj ²]	"to rot"
/ lwi:ŋ /	['l ^ə lwi:ŋ ²]	"to be bitter"
/ lit /	['lit ³]	"to lick"
/ lic /	['lic ³]	"to sink"
/ li: /	['li: ²]	"to carry on shuolder"
/ lec /	['lec ³]	"to leak out"
/ le:p /	['le:p ²]	"to free"
/ le:ŋ /	['le:ŋ ²]	"to play"
/ lɛ? /	['lɛ ³]	"to hide"
/ lɛ??et /	[lɛ? ¹ . 'ʔɛt ³]	"finely powdered"
/ lɛ:w /	['lɛ:w ²]	"button"
/ lɛ: /	['lɛ: ²]	"to hear"
/ lɛ:n /	['lɛ:n ²]	"fast"

/ lə: /	['lə:²]	"to pile up"
/ lə:k /	['lə:k²]	"to weave"
/ laʔ /	['laʔ³]	"a post"
/ lamba:ʔ /	[lam¹ . 'ba:ʔ³]	"to be hard ,to be difficult"
/ lamle:ŋ /	[lam¹ . 'le:ŋ²]	"sound"
/ lamhs:p /	[lam¹ . 'hs:p²]	"to trouble"
/ laŋ /	['laŋ²]	"box"
/ la:n /	['la:n²]	"kind of palm(ต้นลาน)"
/ luʔ /	['luʔ³]	"to sell ,to fall asleep"
/ lu: /	['lu:²]	"to bay ,to howl"
/ lə:c /	['lɛ:c³]	"to steal"
/ lə:k /	['lɛ:k³]	"to reach with the arm,to grasp"
/ lɔp /	['lɔp²]	"to mould (mold)"
/ lɔ:p /	['lɔ:p³]	"to be eager"
/ lɔ:k /	['lɔ:k³]	"monk"
/ lɔn /	['lɔn²]	"to thunder"
/ lɔ:ʔ /	['lɔ:ʔ³]	"to be artificial"
/ li:a /	['li:a²]	"to say good-bye"
/ li:ap /	['li:ap³]	"to paint"
/ li:an /	['li:an²]	"field"
/ li:aŋ /	['li:aŋ²]	"to wash"
/ li:ajlɔm /	[li:aj¹ . 'lɔm²]	"to combine"
/ lɯ:an /	['lɯ:an²]	"to move"
/ lɯ:aŋ /	['lɯ:aŋ²]	"yellow"
/ luaʰ /	['luaʰ³]	"wire"
/ lu:a /	['lu:a²]	"to feed (a fish)"
/ lu:aʔ /	['lu:aʔ³]	"to copy"
/ lu:aŋ /	['lu:aŋ²]	"to try on"

/ la:ə /	['la:ə ²]	"on ,above"
/ la:ək /	['la:ək ³]	"to chow(hand)"
/ la:əŋ /	['la:əŋ ²]	"to get on"
/ la:əm /	['la:əm ¹]	"hair(body)"
/ la:ət /	['la:ət ³]	"to hop ,to jump"

r

/ rphi:an /	['r ^ə phi:an ²]	"opium"
/ rɛʔ /	['r ^ə ɛʔ ³]	"to be untidy"
/ rta:j /	['r ^ə ta:j ²]	"to be dilapidate"
/ raʔkəŋ /	[r ^ə ʔ ¹ . kəŋ ²]	"big bell"
/ rɔɔh /	['r ^ə ɔɔ ^{h3}]	"thing"
/ rsa: /	['r ^ə sa: ²]	"to work hard"
/ rsa:əp /	['r ^ə sa:əp ²]	"to tickle ,to be ticklish"
/ rnal /	['r ^ə nal ²]	"a saw"
/ rnoʔ /	['r ^ə noʔ ³]	"to be pitty"
/ rnoh /	['r ^ə no ^{h3}]	"to harrow"
/ rŋi:a /	['r ^ə ŋi:a ²]	"cold"
/ rŋi:aw /	['r ^ə ŋi:aw ²]	"to crow"
/ rloʔh /	['r ^ə lo ^{h2}]	"to wag ,to move"
/ rweŋ /	['r ^ə weŋ ²]	"to be careful"
/ rwyj /	['r ^ə wyj ²]	"to spin"
/ rwi:əŋ /	['r ^ə wi:əŋ ²]	"between"
/ rjɛʔ /	['r ^ə jɛʔ ³]	"distant"
/ ri:k /	['ri:k ³]	"to bloom"
/ ri:ŋ /	['ri:ŋ ²]	"to dry"
/ ri:t /	['ri:t ³]	"to iron"

/ ri:ŋru:əŋ /	['ri:ŋ ¹ . 'ru:əŋ ²]	"a centipede"
/ re:ŋ /	['re:ŋ ²]	"to sift"
/ rɛʔ /	['rɛ ⁷³]	"to be shallow"
/ rɛh /	['rɛ ^{h3}]	"to rise (sun)"
/ rɛŋ /	['rɛŋ ²]	"to confine, to imprison"
/ rɯh /	['rɯ ^{h3}]	"or"
/ rɯŋ /	['rɯŋ ²]	"to be hard"
/ rvh /	['rɯ ^{h3}]	"root"
/ rv:h /	['rɯ ^{h3}]	"to pick up"
/ rə: /	['rə: ²]	"to search"
/ rə:h /	['rə: ^{h3}]	"to choose"
/ rə:m /	['rə:m ²]	"to begin , to start"
/ rəŋ /	['rəŋ ²]	"to desert"
/ rəŋkha:n /	[rəŋ ¹ . 'k ^h a:n ²]	"to feel annoyed"
/ rə:ŋ /	['rə:ŋ ²]	"a groove"
/ rut /	['rut ³]	"to kneel"
/ ruh /	['ru ^{h3}]	"alive"
/ rum /	['rum ²]	"to crowd around"
/ rup /	['rup ²]	"to push"
/ ruj /	['ruj ²]	"house fly "
/ ru:c /	['ru:c ³]	"to survive ,to finish"
/ ru:ŋ /	['ru:ŋ ²]	"a cave"
/ rɔm /	['rɔm ²]	"to wrap ,to coil"
/ rɔ:p /	['rɔ:p ³]	"picture, photograph"
/ rot /	['rot ³]	"a car"
/ ron /	['ron ²]	"a hole"
/ ro:k /	['ro:k ³]	"disease ,affection"
/ ro:m /	['ro:m ²]	"to swarm"

/ ro:ŋ /	['ro:ŋ ²]	"a hall"
/ ro:j /	['ro:j ²]	"a hundred ,to sow"
/ rɔh /	['rɔ ^{h3}]	"a harrow"
/ rɔ:p /	['rɔ:p ³]	"to count"
/ rɔ:l /	['rɔ:l ²]	"all"
/ rɔm /	['rɔm ²]	"to dance"
/ ri:ap /	['ri:ap ³]	"to be smooth"
/ ri:an /	['ri:an ²]	"to study"
/ ri:aŋ /	['ri:aŋ ²]	"to reorder"
/ ri:al /	['ri:al ²]	"to spread(fire)"
/ ru:aŋ /	['ru:aŋ ²]	"story"
/ ru:aj /	['ru:aj ²]	"often"
/ ru:a /	['ru:a ²]	"to find"
/ ru:asɔp /	[ru:a ¹ . 'sɔp ³]	"to dream"
/ ru:am /	['ru:am ²]	"to combine"
/ ru:aŋ /	['ru:aŋ ²]	"track ,a rut"
/ ra:e /	['ra:e ²]	"mineral"
/ ra:ek /	['ra:ek ³]	"to carry (two loads)"
/ ra:ə /	['ra:ə ²]	"to demolish"

W

/ winiah /	[wi ¹ . 'nia ^{h3}]	"to go to ruin"
/ wil /	['wil ²]	"to turn around"
/ wɪp /	['wɪp ²]	"to return back"
/ wɪ:c /	['wɪ:c ³]	"curve, to be curved"
/ wec /	['wec ³]	"to wrap"
/ we:knə: /	[we: ¹ . k ^{nə:} ²]	"ungrateful"

/ we:li:a /	['we:¹. li:a²]	"time"
/ we:ŋ /	['we:ŋ²]	"long"
/ weŋ /	['weŋ²]	"palace"
/ we:ʔ /	['we:ʔ³]	"to call on"
/ we:h /	['we:h³]	"to cut"
/ waj /	['waj²]	"to hit"
/ wal /	['wal²]	"ivy"
/ wa: /	['wa:²]	"the wah, a linear measure equivalent to two metres"
/ wuŋ /	['wuŋ²]	"circle"
/ wɔ:t /	['wɔ:t³]	"the spawn (of fish)"
/ wɔt /	['wɔt³]	"to shove with the horns"
/ wɔ:t /	['wɔ:t³]	"scribbly (handwriting)"
/ wi:a /	['wi:a²]	"third person pronoun, to crawl"
/ wi:at /	['wi:at³]	"to draw"
/ wi:al /	['wi:al²]	"field"
/ wi:aj /	['wi:aj²]	"kind of herbal plant (ต้นกำแพงเจ็ดขึ้น)"
/ wu:awək /	['wu:a¹. wək³]	"to be very busy"
/ wa:ek /	['wa:ek³]	"to spread, a ladle"

j

/ jɛʔ /	['jɛʔ³]	"a lot of, giant"
/ jə:ŋ /	['jə:ŋ²]	"we"
/ ja:ʔ /	['ja:ʔ³]	"to be difficult"
/ ja:ŋ /	['ja:ŋ²]	"kind, sort"

/ ja:ŋmɛc /	[ˈja:ŋ ¹ . ˈmɛc ³]	"how?"
/ ja:ŋna: /	[ˈja:ŋ ¹ . ˈna: ²]	"which one?"
/ ju: /	[ˈju: ²]	"long time"
/ jom /	[ˈjom ²]	"to cry"
/ jo: /	[ˈjo: ²]	"to be curved"
/ jo:ŋ /	[ˈjo:ŋ ²]	"to tow"
/ jo:l /	[ˈjo:l ²]	"to swing"
/ jɔl /	[ˈjɔl ²]	"sup, gum, wood oil"
/ jɔ:l /	[ˈjɔ:l ²]	"to be bad"
/ jiah /	[ˈjia ^{h3}]	"kind of salamander, an edible ground lizard or skink"
/ ji:aj /	[ˈji:aj ²]	"grandmother"
/ juap /	[ˈjuap ³]	"night"
/ juan /	[ˈjuan ²]	"red ant"
/ ju:a /	[ˈju:a ²]	"to carry, to take"
/ ja:ek /	[ˈja:ek ³]	"to separate"