A PHONOLOGICAL COMPARISON OF SELECTED KARENIC LANGUAGE VARIETIES OF KAYAH STATE

The members of the Committee approve the master's thesis of Myar Doo Myar Reh

Dr. Brian Migliazza _____

Supervising Professor

Ajarn Ken Manson _____

Ajarn Noel Mann _____

Prof. Dr. Somsonge Burusphat _____

Asst. Prof. Dr. Saranya Savetamalya _____

Approval Date: 26 March 2004

A PHONOLOGICAL COMPARISON OF SELECTED KARENIC LANGUAGE VARIETIES OF KAYAH STATE

by

Myar Doo Myar Reh

Presented to the Graduate School of Payap University

in Partial Fulfillment of the Requirements

for the Degree of

MASTER OF ARTS IN LINGUISTICS

PAYAP UNIVERSITY, CHIANG MAI, THAILAND

March 2004

RESUME

Name: Myar Doo Myar Reh

Date of Birth: October 7, 1962

Place of Birth: Kwam Loan, Phekhone Township, Taunggyi District, South Shan State, Burma.

Education: State Agriculture High School, Demawso, Kayah State, Burma (1982-1984).

Basic Education High School, Phekhone, Taunggyi District, South Shan State, Burma (1985-1986).

University of Distance Education, Art and Science University of Taunggyi (Under Mandalay University of Upper Burma), South Shan State, Burma (1987-1994).

ACKNOWLEDGMENTS

First and foremost, I thank God for help, strength, wisdom and guidance throughout my study.

The author wishes to thank his advisor Ajarn Ken Manson, and his thesis committee members Dr. Brian Migliazza and Ajarn Noel Mann for helping me with their priceless advice, guidance, encouragement and care in order that this thesis will be a valuable paper.

I would like to express my sincere thanks and appreciation to Ajarn Ken Manson for giving his precious advice, guidance and supply of many valuable reference books belonging to Karenic and Burmic speech varieties to help with the analysis of this thesis. To analyze data in comfortable way, he also arranged the data of the four languages into Speech Manager for me. I am grateful to him for caring and helping me with what I need.

I am indebted to all of SIL International in the Mainland South East Asia Group for their support, care, prayer, encouragement and concern for me throughout the studies and I have benefited greatly from all my teachers and professors at the Linguistics Department of Payap University for their academic inspiration.

I would like to express my gratitude to Mr. Jeff German who was concerned for my trip, arranging every thing for me and praying for me. I wish to thank Mr. Herman Janzen, the supervisor of the Cross Cultural Training Center in Maerim, Chiangmai; and all of his staff for helping, encouraging and praying for me throughout my studies.

I would like to thank my helper, Matthew Thae Reh who led me from village to village, and from township to township for over a month to good informants and to get data smoothly.

ABSTRACT

A PHONOLOGICAL COMPARISON OF SELECTED KARENIC LANGUAGE VARIETIES OF KAYAH STATE

Myar Doo Myar Reh

Payap University, Chiang Mai, 2004

Supervising Professor: Brian Migliazza

This thesis is a phonological comparison of selected Karenic language varieties of Kayah state. They are Kayah, Kayaw, Monumanaw and Yintale. No researcher has yet studied them except for Kayah. The synchronic phonologies of Kayaw, Monumanaw and Yintale are compared with Kayah.

The study focuses on the comparison of consonants, vowels and tones in these four languages in order to know how closely they are related to each other. It also determines the correspondences between these elements.

The results of the synchronic phonologies show that they very similar. Only Yintale maintains the final nasal consonants and diphthong vowels. The rest of the three do not have the same as Yintale. Kayaw and Monumanaw do not have voiced labiodental fricative [v]. Kayah, Kayaw and Monumanaw have four contrastive tones. They are high, high-mid, mid and low, but Yintale has five contrastive tones. They are high, mid, low, falling and rising. Kayah has 24 consonant phonemes, Kayaw 22, Monumanaw 22 and Yintale 25, and all four languages have the same ten plain vowels: /i/, /e/, /ɛ/, /a/, /ɜ/, /ɯ/, /ɤ/, /u/, /o/ and /ɔ/. The result of the lexicostatistic analysis of four languages shows that they are quite close to each other.

บทคัดย่อ

การวิเคราะห์เปรียบเทียบระบบเสียงของภาษาในกลุ่มกะเรนนีในรัฐคายา

โดย เมียร ดู เมียร เร

มหาวิทยาลัยพายัพ จังหวัดเชียงใหม่ พ.ศ. 2547

อาจารย์ผู้ควบคุมวิทยานิพนธ์ อาจารย์ เคน แมนสัน

วิทยานิพนธ์ฉบับนี้ นำเสนอนอการวิเคราะห์ เปรียบเทียบภาษาในกลุ่ม *กะเรนนี (Karenic)* ในรัฐคายา ประเทศพม่า โดยเลือกศึกษาเฉพาะภาษาคายา กะยอ โมนูมานอ และ เยเต่อแล การวิเคราะห์จะทำโดยการเปรียบเทียบระบบเสียงภาษา กะยอ โมนูมานอ และ เยเต่อแล กับภาษาคายา ซึ่งนอกจากภาษาคายานี้แล้ว ยังไม่เคยมีใครศึกษาภาษานี้มาก่อน การวิจัยนี้เน้นไปที่การเปรียบเทียบ เสียงพยัญชนะ สระ และวรรณยุกต์ และลักษณะปฏิภาค *(correspondences)* ของเสียงในภาษาทั้งสี่ เพื่อศึกษาว่าภาษาเหล่านี้ มีความสัมพันธ์กันหรือไม่

ผลการศึกษาการเปรียบเทียบระบบเสียง แสดงให้เห็นว่า ภาษาทั้งสี่นี้มีความสัมพันธ์กันอย่างใกล้ชิด มีเพียงภาษา เยเต่อแล เท่านั้นที่มีพยัญชนะท้ายเสียงนาสิก และสระประสม ภาษากะยอ และโมนูมานอ ไม่มีเสียงเสียดแทรก [v] *(voiced labiodental fricative)* นอกจากนี้ยังพบว่า ภาษากะยอ และ โมนูมานอ มีวรรณยุกต์ 4 เสียง คือ สูง กลางค่อนข้างสูง กลาง และ ต่ำ ส่วนภาษาเยเต่อแล มี 5 เสียง คือ สูง กลาง ต่ำ สูงเลื่อนตก และต่ำเลื่อนขึ้น สำหรับเสียงพยัญชนะพบว่าภาษาคายามีเสียงพยัญชนะ 24 เสียง ภาษาเยเต่อแล มี 25 เสียง ส่วนภาษากะยอ และโมนูมานอมีเท่ากันคือ 22 เสียง ทั้งสี่ภาษามีเสียงสระเดี่ยว 10 เสียงเหมือนกันคือ /i/, /e/, /ɛ/, /a/, /ɜ/, /ɯ/, /ɤ/, /u/, /o/ และ /ɔ/

ผลของวิธีวิเคราะห์สถิติรูปศัพท์ *(lexicostatistic analysis)* ก็ชี้ให้เห็นเช่นกันว่า ภาษาทั้งสี่มีความสัมพันธ์กัน ทางเชื้อสาย

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND SYMBOLS

Aff	Affricate
Alv	Alveolar
App	Approximant
cda	Codas
C	Consonant
cons	Conservative
Den	Dental
dip	Diphthongs
Fri	Fricative
Glo	Glottal
H	High
HM	High-mid
Inv	Innovative
Lab	Labial
L	Low
M	Mid tone
mid	Middle
R.C	Roman Catholic
SOV	Subject Object Verb (Sentence Structure)
SVO	Subject Verb Object (Sentence Structure)
T	Tone
V	Vowel
Vd	Voiced
Vl	Voiceless

CHAPTER 1

INTRODUCTION

1.0 Introduction

This thesis looks at four "Central Karenic Languages"- Kayah[1], Monumanaw, Kayaw and Yintale. In order to limit the scope of the thesis, only four varieties were chosen. They are found primarily in Kayah State, Burma. Kayah State is located in the eastern part of Burma. It borders Shan State to the northeast, Karen State to the southwest and Thailand to the east. It is one of the smallest states in Burma. (See Figure 1).

Previous phonological studies have been done on one of the languages in this thesis: Kayah, although the other three languages discussed in this thesis-Kayaw, Monumanaw, and Yintale have never been analyzed.

Kayah has been taken as the basis to which the other three languages are compared for four reasons: 1) most linguistic research has focused on Kayah; 2) Kayah has the largest population, 3) Kayah is the most dominant politically, and 4) the author of this thesis is a native speaker of Kayah.

The purpose of this chapter is to present an overview of Kayah, Kayaw, Monumanaw and Yintale, as well as a discussion of previous research, external and internal classification of Karen, the purpose of this thesis and the methodology used.

[1] In this thesis I use the term "Kayah" to refer to Kayah spoken in Kebogyi.

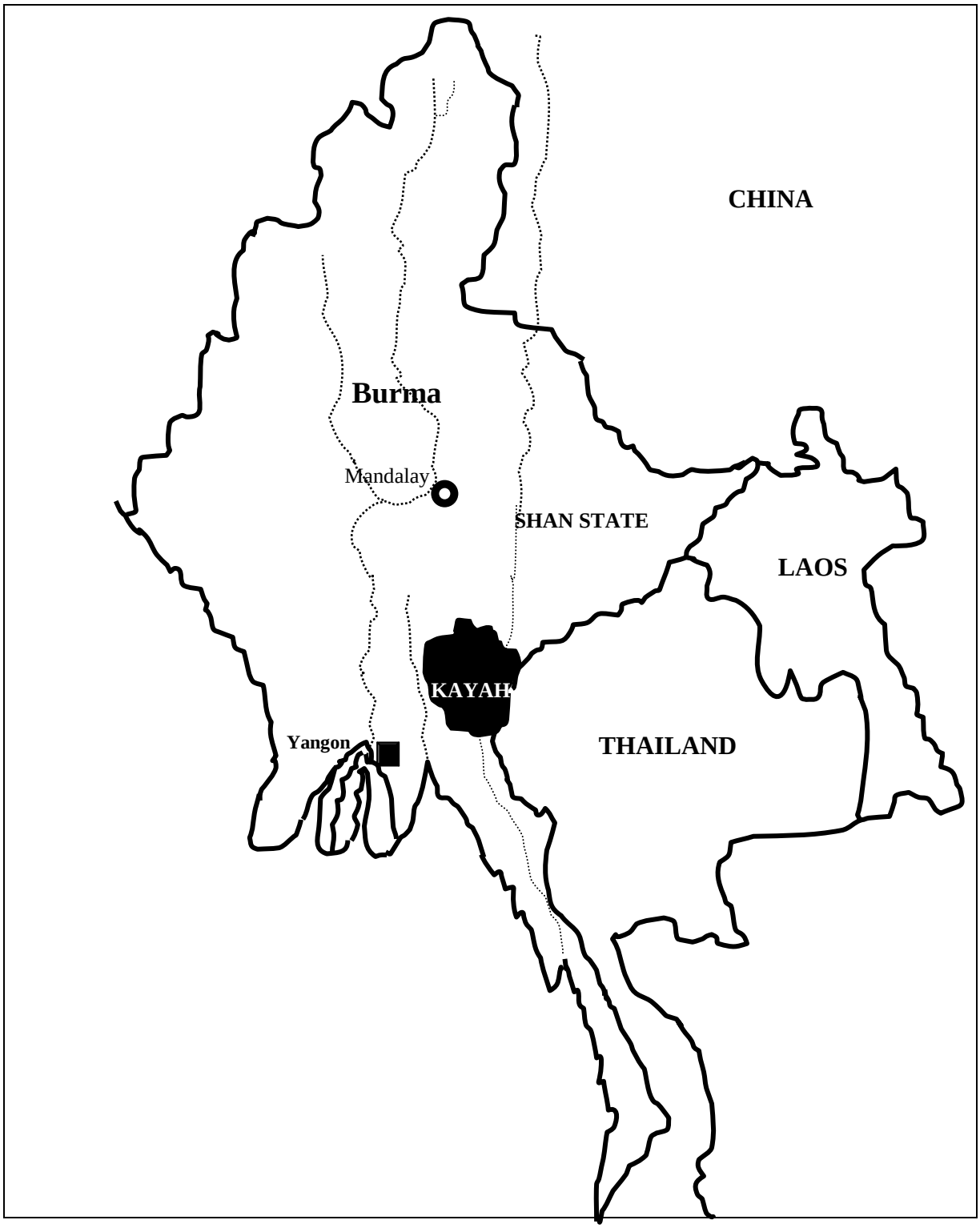

Figure 1. Map of Burma and Location of Kayah State

1.1 Background

The residents of Kayah State speak many languages. They are generally referred to as "Kayah" by others living outside of Kayah State. "Kayah" (or sometimes Karenii) is often used as a general name for all the Karenic groups residing in Kayah State. When other people living outside of Kayah State say, "Kayah" it includes Kayah Ljakja (Kebogyi), Kayah Mathe (Eastern Kayah), Kayah Shitja (Northern Kayah), Kayah Panu (Monumanaw), Kayah Phjatare (Kayaw), Kayah Talja (Yintale), Ljakhje Du (Kayan), Ljakhje Phu (Yinbaw), Geba, Gekho, and Bwe. But people living in Kayah State have to identify themselves specifically. When they identify themselves as Kayah they include all Red Karen (Eastern Kayah, Western Kayah, Northern Kayah, Dawtama, Dawsobi, Dawnyikhu and Bawlakhe Kayah). They do not include Kayaw (Bre), Kayan (Padaung), Kayan Kanga (Yinbaw), Latha, Yintale, Monumanaw, Bwe, Gekho or Geba. Some subgroups names include terms like "Upstream", "Downstream", or "terms that refer to the color of the women's clothing." For example, "Big Upstream People" are the Kayan, "Small Upstream People" are the Yinbaw, and both of them are called "Black People". Kebogyi Kayah are "Downstream People", Monumanaw are the "Western People," Eastern Kayah the "Green People" or "Kayah Mathe" which means "Eastern People". Furthermore, the Northern, Southern and Eastern varieties of Kayah are called "Red People" or "Kayah Li".

Since each group is called different names by different groups (and even by researchers) I will use the following four names, Kayah, Kayaw, Monumanaw and Yintale to refer to each group, (see section 1.2 for further details).

The Kayah people are spread all over Kayah State but the Kayan and Yinbaw live mostly in Demawso township, and also in Phekhon township, Shan State. Monumanaw and Kayaw people can be found in Phruso township. There is only one Yintale village in Phasaung township and one quarter in Bawlake township.

The following sections will present a historical background of Kayah State, geographic and demographic information, the socio-cultural and religious setting, communication, and an overview of each group.

1.1.1 Historical

Kayah State was initially called Karenii State. According to the constitution of the Union of Burma, Article 180 (1a), the word ***Karenii*** was eliminated and replaced with Kayah under the amendment made on 9th February 1950. The name of Karenii State was renamed as Kayah State on 5th October 1951 by the legislature.

LaPolla (1999:237) states that the Karen arrived in Burma from northern China some time before the eighth century (in fact they arrived before the Burmese). Because of insufficiency of food caused by irregular rainfall, increasing population size and warfare in China, the Karen (and other groups) moved southward looking for new lands until they finally entered what is present-day Burma.

1.1.2 Geography & Demography

Kayah State is one of seven states in the Union of Burma. It lies between latitude north 18.30 and 20 degrees and between longitude east 97 and 97.55 degrees. The state borders Shan State to the northwest, Karen State to southwest and Thailand to the east. (Figure 1).

The area of Kayah State is 4506 square miles BERG (2000) or 11,731.5 square kilometers making it the smallest state in Burma with a total population of 207,357 Bamforth (2000:11). It is composed of two districts: Loikaw and Bawlakhe. Under Loikaw district, there are four townships: Loikaw, Demawso, Phruso and Shadaw, but under Bawlakhe district, there are three townships: Bawlakhe, Phasaung and Meseh. Loikaw is also the state capital.

Kayah State, even though it lies within the tropics, is not unreasonably hot as it is located on a plateau. The average temperature of the capital city, Loikaw, is 22˚C. Kayah State has a moderate rainfall with an annual total rainfall between 100-130 cm. The capital Loikaw receives between 124-150 cm of rain annually. Generally, Kayah State is mountainous. Some plains exist, but only along the valleys of the Bilu river, the Salween River and Nam Pon rivers. Loikaw is situated 790 meters above sea level. It is on a plateau big enough to produce enough rice for all the people living in Kayah State. In general, the western part of the state is higher than the east. The average height of the west mountain range varies from 1200 to 1700 meters. The highest peak of the Loi Ho Hta range which runs north to south, Loilong, is 1684 meters high, Si Hso 1563 meters, and Hso Kli Hso 1570 meters. In the eastern part of the state the average altitude of the ranges is only 900 to 1200 meters. The Salween River flows from north to south through the eastern part of Kayah State (BERG 2000).

In 1941 (Hobbs 1956) the entire population of the state was about 71,000 of which over 50,000 were Kayah, and some 21,000 were about equally divided between two other Karen groups, Padaung and Yinbaw. Government estimates in 1961 showed little change with 71,500 people (Lehman 1963).

According to a 1983 census the population composition of Kayah State was Kayah 89,287 (56.12%), Burmese 27,975 (17.58%); Shan 26,515 (16.66%), Karen 10,272 (6.45%), and others 5,546 (3.19%). The total population of Kayah State according to UNICEF (1998) is 207, 357.

The number of Kayah Li people is estimated to be at around 280,000 (Grimes 2000), of which roughly 60% speak Kayah Li. Of the 280,000 Kayah people, it was estimated that in 1983 over one quarter of them were living in Thailand (Grimes 2000). Personal discussions with informants estimate the population of Yintale to be around 1,000, for Monumanaw approximately 4,000, for Kayaw 10,000.

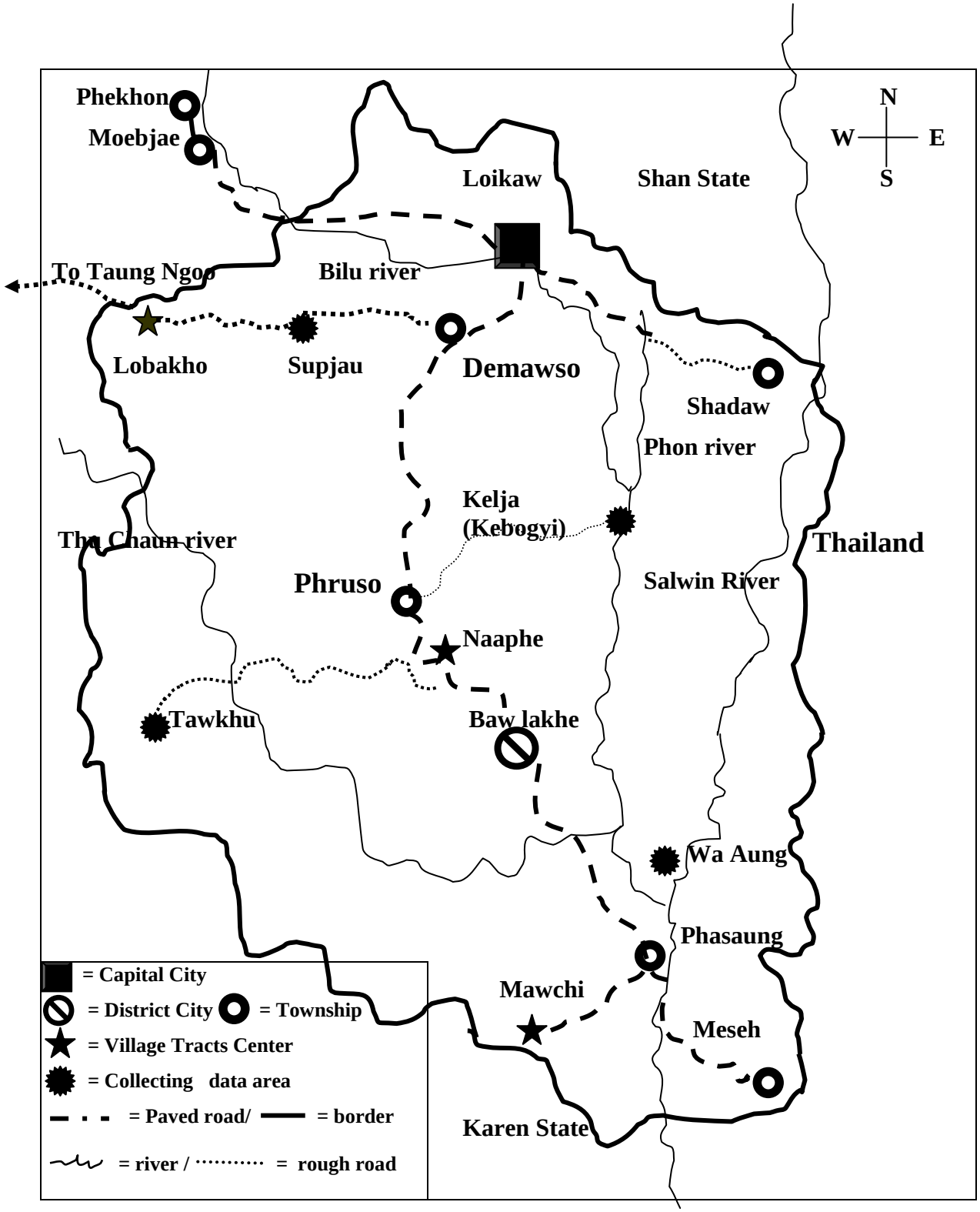

Figure 2. Map of Seven Townships and Village-tracts Centers

1.1.3 Socio-cultural & Religious Setting

Formerly, the people of Kayah had their own King (Sawbwa). The most famous was "Kephodu"[2]. The Burmese version of this name is "***Kebogyi***". Socially, it is customary for Kayah to give respect to a king, the village chief, a teacher and a religious leader called "Ke Bja Dse" and "Katjo Bja Dse", who represent the people to the spirits. Although at present there is no king, giving a respect to a leader is still widely practiced in many villages. If a village chief gives a command to do something, the whole community totally follows his command, even if they are unpleased with the decision. To work together is very common in Kayah.

"The Kayah people are very hard working and have very little free time. They wake at three o'clock in the morning, cook their meal and eat it and then leave to go the fields." (BERG 2000). If one family builds or repairs their house, at least one person in each family has to come to help. In the case of funerals, all the villagers come and some bring food, rice, drinks or money as they can afford.

The women and men do different work. Men do the main task such as cutting bamboo, wood, erecting posts, ploughing, carrying heavy things and butchering animals. The women do the cooking, weaving and doing all the domestic work in the home. Most Kayah work is cooperative, especially cultivating, ploughing, harrowing and harvesting.

Traditionally the **Kayah** believed in many kinds of spirits such as the guardians of the forest, mountains and the trees. Around 1890, a missionary came into Kephodu, a place where the Kayah's king lived, but the Kayah did not accept him. Around forty – five years later (1935), an Baptist American missionary came to a Kayah village named Lamaw Daw in South Shan State and built a church there but almost all the believers died in epidemics during World War II. Later on, the Karen Baptist Association came to Kayah State and has been working since. Today, Christianity

[2] The word "Ke" means "Country", "pho" means "Blossom" and "du" means "Big"

composes 30% of the Kayah population. The remainders of them are Buddhists and animists. Those who are animist celebrate the Kutjobo festival, celebrating the powerful spirit that can bring rain every year.

The **Monumanaw** used to be afraid of the spirits Kay Day, Gaboh and Thaw Baw. They would make sacrifices to Gaboh with pork meat and to Kay Day with dog or goat meat. Thaw Baw was believed to emanate from people who had suffered violent deaths (BERG 2000). In 1890, a Catholic missionary named Father Bo Sha Nu came to the Monu. The Baptists first came to the Muso area, Phruso township, southwest Kayah State. The village named Tsjelakwa accepted the Baptism but they were not allowed to drink the traditional wine, and so they became Roman Catholics. All Monu Manaw are Christians.

Formerly, the **Kayaw** were animists, but now all Kayaw are Christians. Most of them are Roman Catholic believers. 10% are Baptists. Around 1900, a Baptist group came to the Hoya area and they became Baptists, but later on they turned to Catholicism. In Kayaw society it is usually the man who initiates a divorce. No man can keep two women in one house, and so if he wishes to have a second wife, he must first leave the first one.

Nearly all **Yintale** are Buddhists and animists. Around five or six people are Christians. According to BERG (2000), Yintale has a similar culture to the other Kayah races. Boys go to court girls at their house in the evenings. They may even stay talking until dawn reciting poems and telling riddles. In such a way a boy may visit three or four girls and then make this choice from among them. Likewise a girl may be courted by more than one boy and make her choice from among them. Both girls and boys enjoy limitless freedom in seeing each other. They have no ‘bachelor clubs’ as do other Kayah races; they have full access to see the opposite sex though they never indulge in sexual relationships before marriage. They are honest and sincere in their relationships with each other. According to Lehman (1963), their dress is like the Shan and Burmese dress. They are chiefly located in the Bawlakhe

District, whose traditional ruling family is supposed to be largely of Yangtalai origins, as is most of the population. Their agriculture is much like that of the Kayah, but they grow a great deal of sesame, the oil of which is sold to Shan.

1.1.4 Communication

There are two major trade routes into the Kayah State. One via a road from Taungngoo, Magwe division to Loikaw, and the other road is from Taunggyi to Loikaw. In the south there is a road from Loikaw to Meseh. Meseh is located on the Thai-Burma border. There is a railway from Loikaw to Aung Ban Shan State (and then onto Yangon). In Loikaw there is a domestic airport. Within the state there is only one paved road running north to south from Loikaw to Bawlakhe, Pasaung and Mawchi. In the south, there is one paved road running east to west between Meseh and Mawchi. (See figure 2).

1.2 Overview of each group

Most people in Burma call all the Karen groups living in Kayah State Kayah. They generally do not know who is being referred to when terms like Kayaw, Monumanaw and Yintale are used. But in Kayah State, people are more specific. If one says “Kayah”, it refers to the Kayah Li does not include the Kayan, Kayaw, Yintale, Monumanaw, Yinbaw, Gekho, Geba, Latha and Bwe. Officially, the Burmese government calls them all Kayah. All Central Karenic groups are allowed to broadcast on the radio service only in Western Kayah Li, which the author will refer to as Kayah.

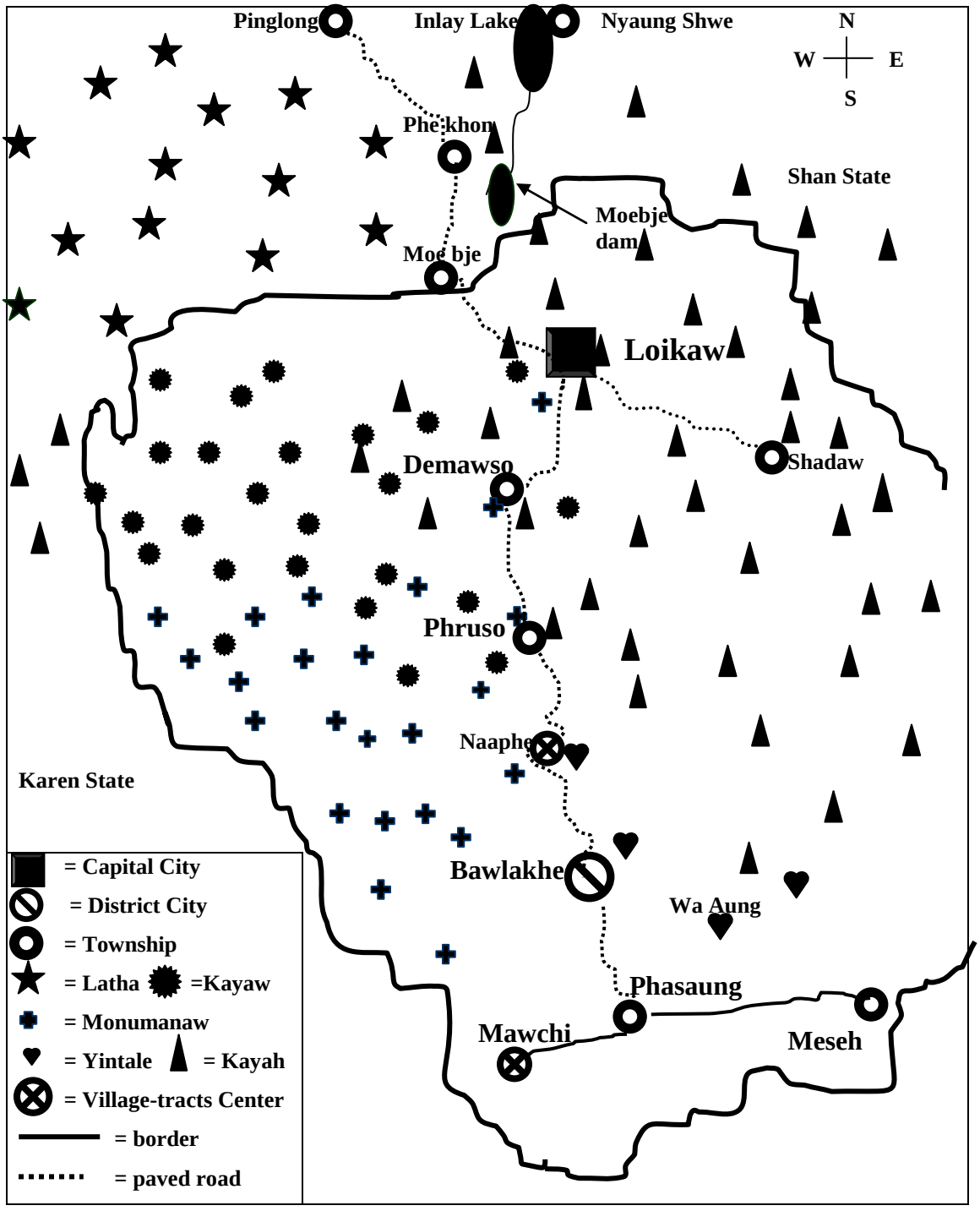

Figure 3. The Distribution of Karenic Languages in Kayah State of Burma

1.2.1 Kayah

Kayah can be found mostly to the east of the Phekone-Loikaw-Bawlakhe main road. They are not found in Meseh and Phasaung townships. They are mainly found in Loikaw and Shjadaw townships, also in Demawso and Phruso townships. In Bawlakhe township, they live only in the mountains to the east of Bawlakhe.

Researchers generally agree that there are two major divisions of Kayah with the Salween River being the dividing line between the two "dialects" (Lehman 1963, Solnit 1997). In fact, there are three main speech varieties spoken. There is "North Kayah", those who live to the north Loikaw, Kayah State and Mobye, Phekhon, Pilong, and Nyaung Shwe townships in Shan State. "South Kayah", refers to the Kayah living in South of Loikaw, Phruso and South Demawso. Scholars have called them "Western Kayah". Those who live in the east of Phon river and Salween river, in Maehongson Province, Thailand and Shadaw township, Kayah State, Burma, are called Eastern Kayah.

The dialect situation within Kayah is very complex and requires further study. In fact there are a lot of Kayah varieties that cannot understand each other. For example, Dawtama and Dawnjekhu dialects are harder than Eastern Kayah dialect for West and North Kayah to understand even though they live much closer to Western Kayah. The writer saw four villages approximately 12 miles east of Bawlakhe town and 4 miles north west of the Salween (Phasaung town) that are very different from Kayah (North, South and East), though they call themselves "Kayah". Their dialect is harder than Dawtama and Dawnyikhu to understand. The name of the villages are Soung Log, Chi Kwe, Nan Nok and Wan Cheh.

A more accurate estimate, based on statistical information from local officials, is around 150,000. However Bradley states:

"Officially Kayah Li has over 140,000 speakers in Burma, but this is underenumerated (and probably includes Manu, Yintale and perhaps some other

Karen languages within Kayah State). Including Thailand, there are probably a quarter of a million speakers".

1.2.2 Kayaw

The Kayaw are known by many different names. Bradley (1997:48) states "known to its speakers as [brɛʔ] and hence Bre or Brek, this Central Karen group now prefers the autonym Kayaw [kəjɔ]". People call them Paret, and they are reported as preferring this name (BERG 2000). Kayah call them [phjatərɛ].

The Kayaw people live west of Phruso, west of Dimawso and Southwest of Phekone townships and two quarters in Loikaw. A few people live in Thai-Burma border.

In fact, my informants said that people living in Gegaw village-tracts, west of Phruso, are called [brɛʔ], but those who living in west of Demawso and Southwest of Phekone townships are called [kəjɔ] "Kayaw". The term [brɛʔ] is totally different from the language called 'Eastern Bwe and Western Bwe'. Even though all researchers considered the Bre [brɛʔ] and Kayaw to be the same, they cannot understand each other. But they are considered by many people to be one language differing only in accents.

The population of Kayaw is approximately 10,000, according to one informant. "Kayaw probably totals about 25,000 speakers (Bradley 1997). According to the divisional supervisory committee, on the 18 Union Day, 1965, the population of Kayaw was estimated to be 7,000. As they mostly live in mountainous areas, they primarily cultivate dry rice on the hillsides. They raise cattle, pigs and chickens. They cultivate and trade several beans, chilies, various yams, sweet potatoes, potatoes, and cucumbers. Traditional woven clothes are found in Kayaw as well. The bags woven by Kayaw are well known for their skill in handicrafts. Kayaw have almost forgot their traditional festivals because nearly all of them have become Roman Catholics or Baptists. Therefore today there are no traditional celebrations in Kayaw. Most Kayaw

speak three or four languages. For example, those who live to the west of Phruso it is Sgaw Karen (neighborhood language and religious language for Baptists), Geba (religious language for Roman Catholics), and Burmese (national language). My informant said, 90% of them are Roman Catholic believers and 10% of them are Baptists. There are no Buddhists or animists. Figure 4 shows where Kayaw villages are located.

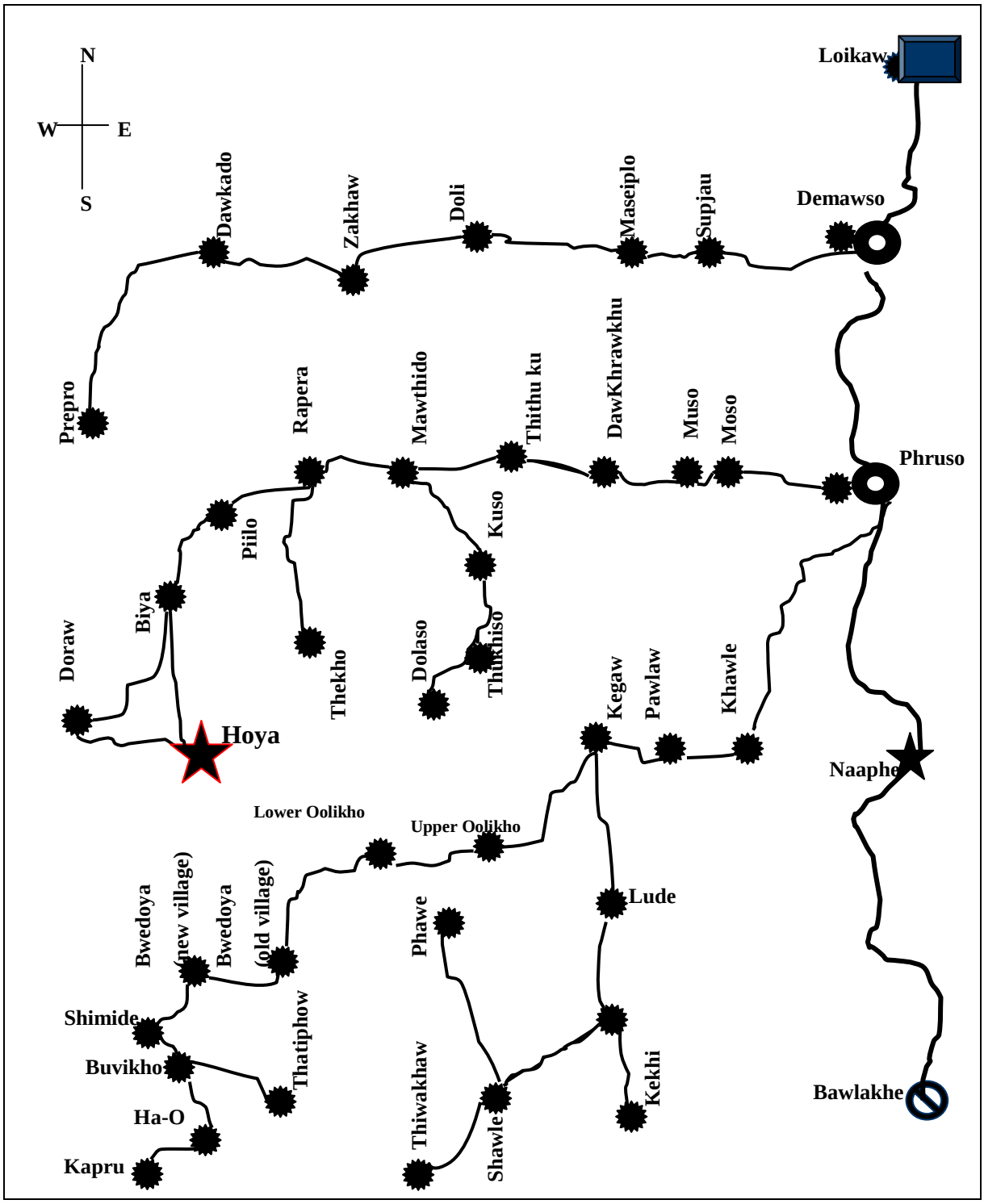

Figure 4. The Map of Kayaw Villages Area

1.2.3 Monumanaw

The Monumanaw includes two dialects- Monu and Manaw. Monu is the northern dialect and Manaw the Southern. They appear to be two separate languages because those who are Baptists live in the Manaw part, and those who are Roman Catholic live in the Monu part. They are not only different in the name of their locations and accents but they are also different in religious beliefs so they appear to outsiders to be two different languages. However they consider themselves to be the same. I will refer to both of them as Monumanaw.

Formerly they had a big clash due to the difference of religions. Some extremists still want to say that they are not the same language. Leaders in both sections have made peace recently. So they do not like anyone to say they are different. Actually, they are one language as they can understand and communicate with each other very well, as the author saw both Monu and Manaw informants talking with each other with no apparent difficulties.

Monumanaw can be found in the west of Bawlakhe and Phruso townships. They are one quarter of Loikaw, one quarter of Phruso and one quarter of Demawso. But, primarily, they are also found in Naaphe village-tracts, Bawlakhe township. There are a total of 21 villages and three town quarters. 70% are Baptists and 30% are Roman Catholic. The population of Monumanaw is estimated to be between 3,000 – 5,000 BERG (2000), however, a more accurate estimate, based on statistical information from local officials, is around 1,000. For the small western subgroup Manu, the Burmese name is Manumanaw, the Kayah name is [pɯnɯ]. This means “western” (dialect of Kayah); it may have 10,000 or more speakers. There were very large differences in the estimated population of Manumanaw given by the four people. For example; The estimate of a informant, he is an emigration officer, is around 50,000, the estimate of the population by the divisional supervisory committee (1965) was

over 3,000, and another one of my informants estimated around 10,000). But to the best of the researcher's estimate is around 10,000, too.

Cultivation is the main task of the Monumanaw people. Most of the work clearing the fields and harvesting is done by the whole village working cooperatively. They sell their goods in Phruso township. The main goods for sale are betel nuts and betel leaf; after this in order of importance are beans, plantain, and oranges. These are all sold in exchange for rice. The Monumanaw have had significant contact with other languages, including Sgaw, Kayah and Burmese. In the west of Bawlakhe, the Sgaw language is important to them to communicate with the neighboring Sgaw and use in the religious meeting. In Phruso township, Kayah and Burmese are very important languages of communication.

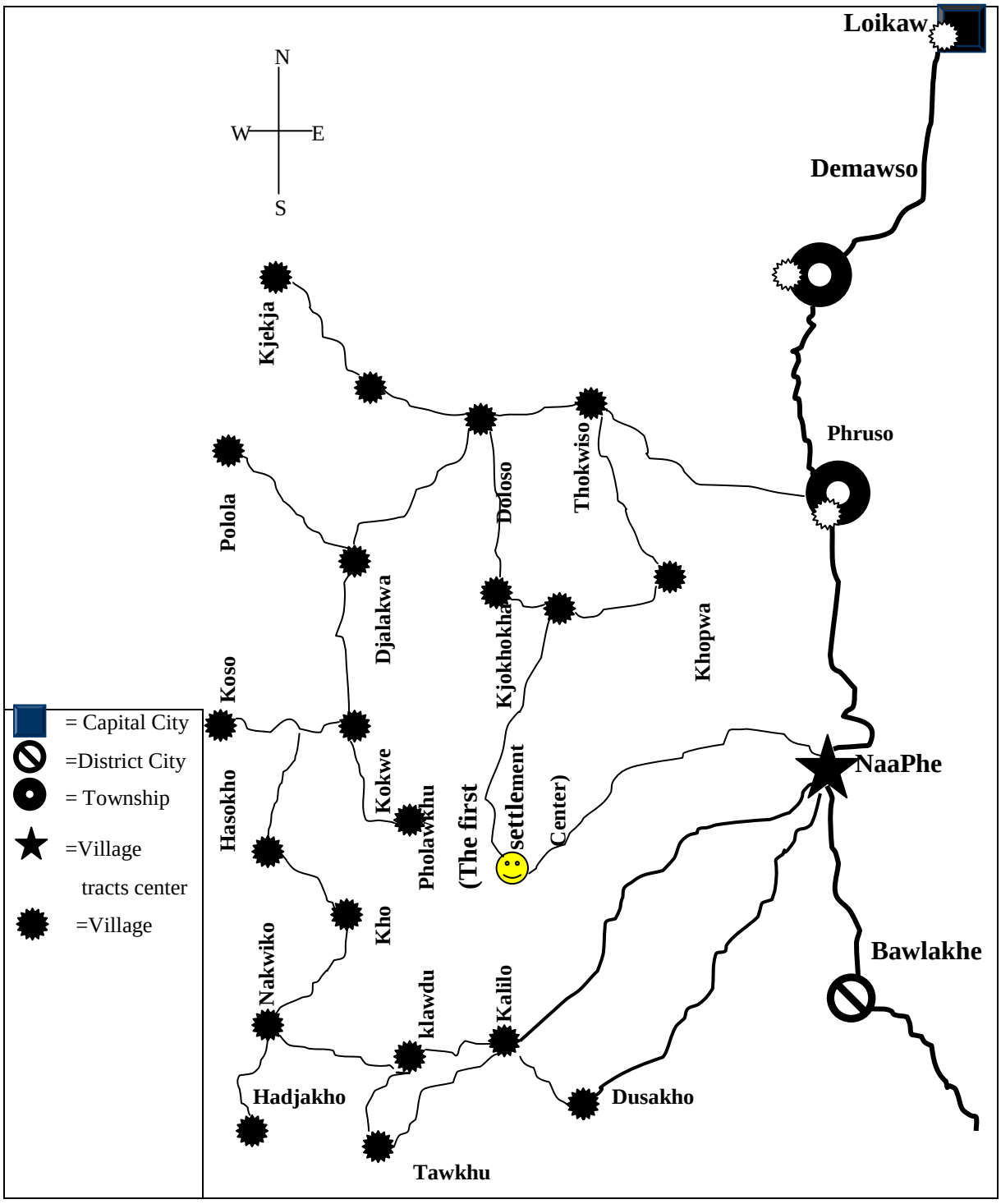

Figure 5. Map of Monumanaw Villages Area

1.2.4 Yintale

Yintale is also called Yintalaing or Yantalaing BERG (2000:6). ***Talai*** is said to come from ***Talaing***, which is the Burmese term for the people of Lower Burma, but c.f. the Kayah term. Tribal synonymy is as follows: "***talja***" (Kayah term, "southern"). ***Yangtalai*** is the Shan term, ***Yintale*** in its Burmese form, sometimes given a folk etymology deriving it, erroneously in all likelihood, from Kayin Talaing, "Mon (country) Karen," a term denoting the Pwo Karen (Lehman 1963:68). The author disagrees that the term "***Talai***" came from "***Talaing***". To the best of my knowledge, the Mon were formerly called [tɜlɜ] by Sgaw Karen. The Burmese formerly called a kind of Karen living in some areas of the lower Burma in "***Talaing Kayin***" which means "***Talaing Karen***", but it did not refer to the Yintale living in Kayah State. Nowadays even Burmese do not know what kind of people they called "***Talaing Kayin.***" It appears its usage is dying out. The Yintale are called "Tah-liah" by Kayah. Some Kayah say that because "Tah", which means 'go down' and "liah" which means "south" in Kayah that therefore the whole meaning may be "South people".

The Yintale are chiefly located in the Bawlakhe township, whose traditional ruling family is supposed to be largely of Yangtalai origins, as is most of the population (Lehman 1963:68). But nowadays, there are only four places where Yintale are found. Only one village with only Yintale is known, Wa Aung, which is located to the northeast of Phasaung town on the bank of the Salween (See Figure 2). There are two Yintale quarters in the towns of Bawlakhe and Naaphe. The fourth village is made up of both Shan and Yintale. It is Supha village located northeast of Wa Aung on the bank of the Salween river. There are only seven Yintale families there and they have intermarried with other groups.

The Yintale have a similar culture to the other Karenii. The choice of marriage partner and other important matters have to be decided by the parents. Their

agriculture is much like that of the Kayah, but they grow a great deal of sesame. The language differs from Kayah (Lehman 1963). My Yintale informant estimated the total population of Yintale to be around 1000. But based on the number of houses in each village, it is estimated that there are around 600. According to the chart was produced by the divisional supervisory committee, on the 18 Union Day, 1965, the population of Yintale is given as 500. The name of the subgroup Yintale has been folk-etymologized into the Burmese term Yin-Talaing or Mon Karen. It is a south-western group of Kayah, with perhaps 10,000 speakers (Bradley 1997:48). The author disagrees with this population estimate because of the area having only four small villages.

1.3 Previous Research

This section discusses the classification of the Karen languages within Sino-Tibetan, the internal classification of the languages and the phonological studies that have been done.

1.3.1 Classification of Karen

The Karen languages have always been considered part of Sino-Tibetan, but the exact position has changed over the years.

Shafer (1955:107-108) said that although the Karen group of languages is usually placed within the Sino-Tibetan branch, its position has remained in doubt.

Benedict (1972) places Karen as a sister to the Tibeto-Burman branch. He split Karen off from the Tibeto-Burman languages because of Karen's SVO word order and divergent morphological processes, see figure 6.

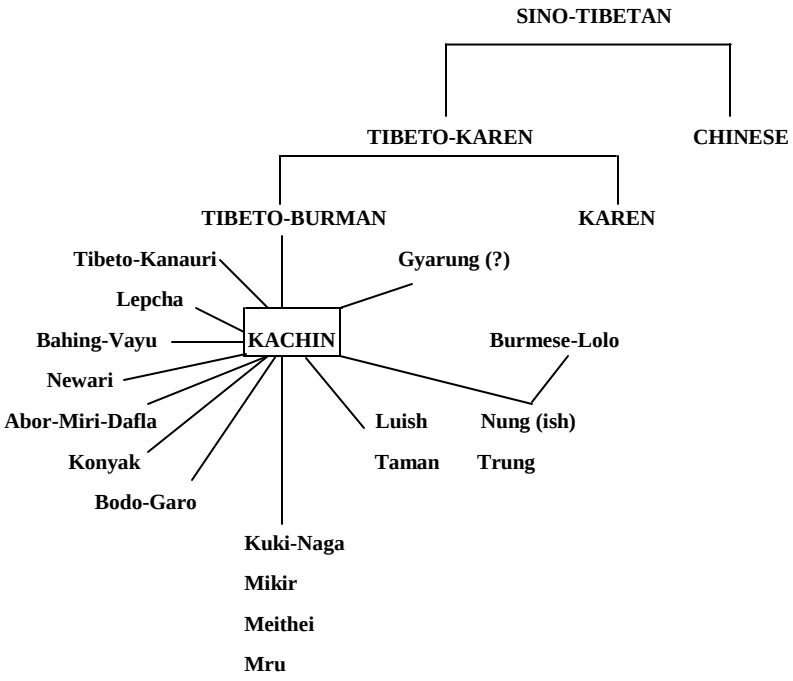

Figure 6. Classification of Sino-Tibetan (Benedict 1972:6)

Egerod (1973:796-7) states that he is uncertain whether the Karen languages are truly part of Sino-Tibetan, implying that they have as close a relationship to Tibeto-Burman as the Tai and Miao-Yao languages. He further considers that if Karen is to be included in Sino-Tibetan then it must be set up as an independent member of a Tibeto-Karen group that includes Tibeto-Burman and Karen. The special affinities between Chinese and Karen (especially in syntax) are secondary.

Matisoff (1978) following Benedict (1972) places Karen in the Tibeto-Karen branch of the Sino-Tibetan linguistic stock. However Matisoff's (1993) most recent thinking on the topic would place Karen as just another branch of Tibeto-Burman, see

Figure 7.

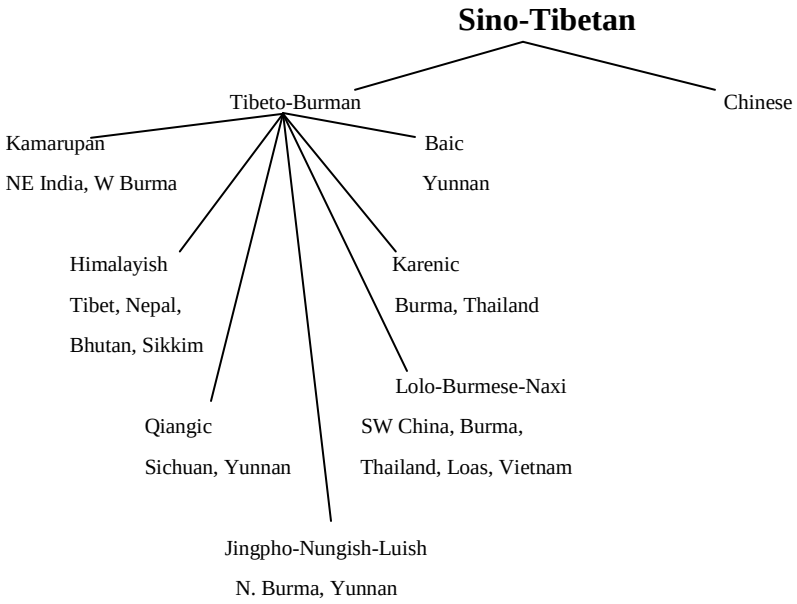

Figure 7. STEDT (2004) Classification of Sino-Tibetan

Bradley (1997) considers the Karen languages to be part of Tibeto-Burman, as does other Tibeto-Burma scholars including Van Driem (2002), DeLancey (2003), and Solnit (1997).

The normal sentence structure of Tibeto-Burman is SOV, whereas all Karen languages are SVO. Solnit (1997) disagrees with how Benedict (1972) separates the Karenic group from Tibeto-Burman. His view is that neither the cognates with Chinese nor the typological divergence is sufficient evidence for such a separation. Young (1962:69) notes that it is generally accepted that Karen is a branch of Tibeto-Burman, and its peculiar features, which are different from other Tibeto-Burman sub-groups, are a result of Mon-Khmer language influences.

1.3.2 Internal Classification

The first modern analysis of the internal relationships of Karenic languages was done by Jones (1961). Jones compared four Karen languages, and showed that Taungthu

(Pa-O) is more closely related to Pho Karen than Sgaw Karen. His work did not include any language spoken in Kayah State, see Figure 8.

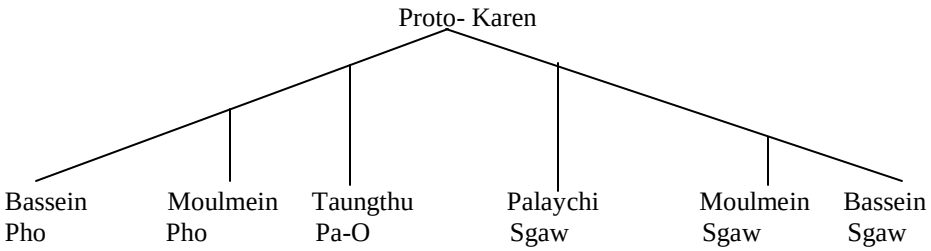

Figure 8. Karenic Language Relationships (Jones 1961:83)

According to Kauffman (1993), Karen is composed of three main branches (North, South, and Central) with Central Karen further classified as three groups and an unclassified. Kayah is classified as an East Central language, while Kayaw, Monumanaw and Yintale are unclassified, see figure 9.

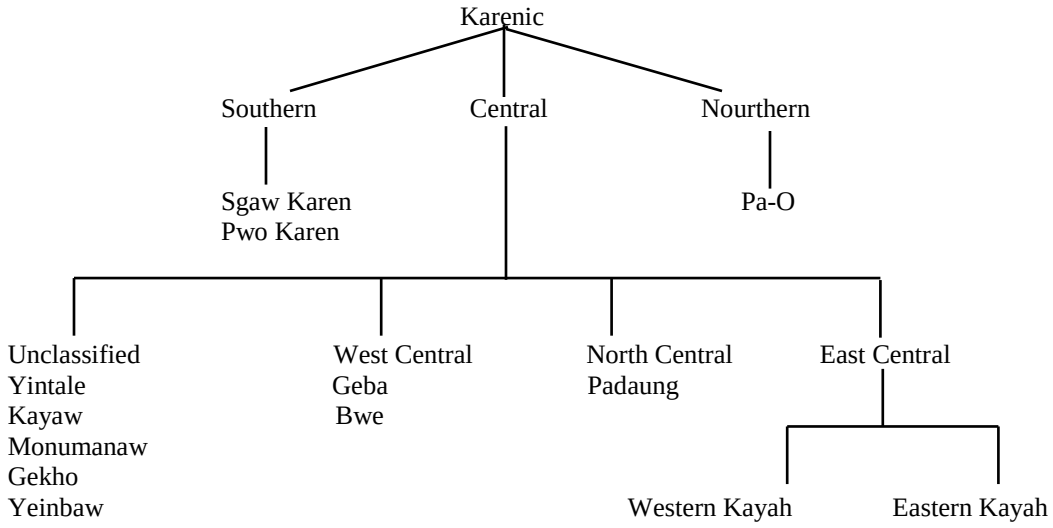

Figure 9. Classification of Karen (Kauffman 1993:5)

Bradley's classification (1997) is based on personal communication with Lehmann, Burling and Solnit, three Karen language researchers. Bradley presents three main groups of Karenic- Northern, Central/Bwe and Southern. Under these three groups, he

sub-classifies. Pa-O (Taungthu), and Padaung (Kayan (Yingbaw/Ka-ngan, Zayein/Latha and Gekhu) as the Northern group; Eastern Kayah (Kayah, Monu and Yintale) and Western Kayah (Blimaw, Bre and Geba) as the Central Karenic group; and (Mopwa, Palaychi, Paku, Wewaw, Monnepwa), Pho/Pwo/Phlong and Lekhe are put under the Southern Karenic group. Figure 10 shows the current thinking on the internal classification of Karen languages.

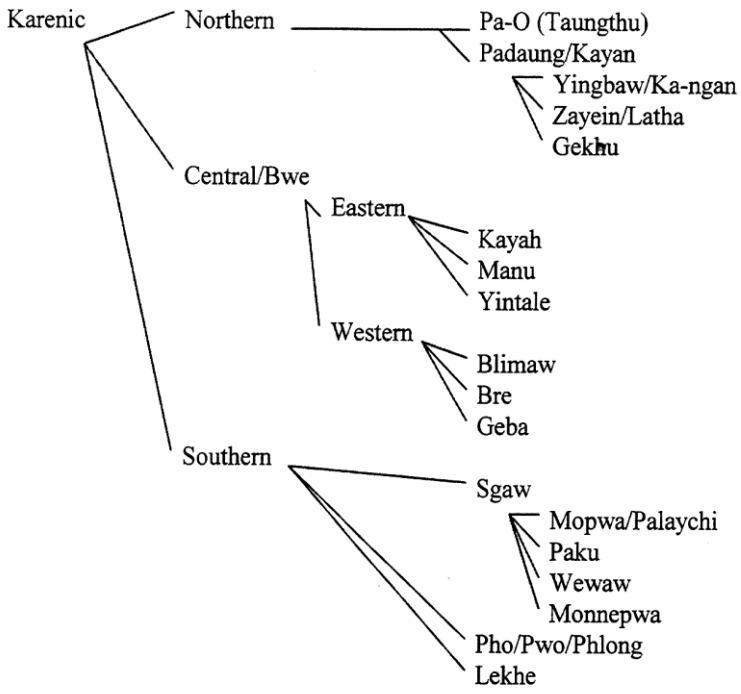

Figure 10. Classification of Karenic (Bradley 1997:47)

Manson (2002) analyzed over 20 Karenic languages and presented a diagram of relationships based on phonological similarity. He considers Karen to be composed of seven clusters – Sgaw/Paku; Pwo: Pa-O; Monu/Kayaw; Yeinbaw/Geker/Padaung; Bwe/Geba; and Kayah, with Bwe/Geba-Kayah being more different to the other Karenic languages. (Figure 11).

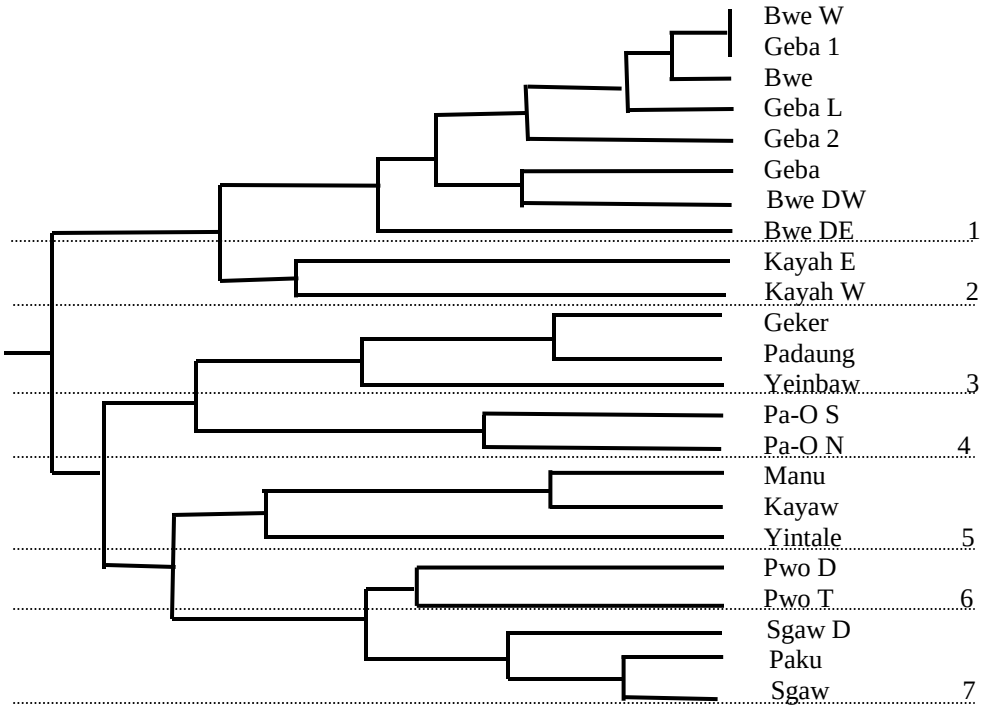

Figure 11. Karen Language Relationships (Manson 2002)

1.3.3 Phonological Studies

Phonological studies have been done on Kayah (Bennett, Bryant, Kauffman, Lar Baa, Solnit). Also, Henderson has analysed Blimaw Bwe. But apart from this research no studies have been presented for Kayaw, Monumanaw or Yintale[3].

[3] A recent MA Thesis on Kayaw phonology (Watchariya Bumrung Kiri. 2003. The phonological Study of Kayaw Language. Bangkok; Mahidol University: MA Thesis) come to my attention too late to be included in this thesis. It would be interesting to consider this thesis as well, but that will have to wait for a later publication.

1.3.3.1 Kayah (Western)

Bennett (1991) presents the following phonological inventories for Kayah.

dɔ tè má Kayah dialect

		Lab	Alv	Pal	Vel	Glo
Plo-sive	vl	p	t	c	k	ʔ
	vl asp	p^h	t^h		k^h	
	vd	d	d			
Frica-tive	vl		s			h
	vl asp		ch			
	vd	v				
Nasal		m	n		ŋ	
Trill		r				
Lat			l			
Appr	vd	w				

dɔ shò pia´Kayah dialect

		Lab	Alv	Pal	Vel	Glo
Plo-sive	vl	p	t	c	k	ʔ
	vl asp	p^h	t^h		k^h	
	vd	d	d			
Frica-tive	vl			ɕ		h
	vl asp		s^h			
	vd	v			ɟ	
Nasal		m	n		ŋ	
Trill		r				
Lat			l			
Appr	vd	w				

Table 1. dɔtèmá and dɔshòpiá Kayah dialect consonants (Bennett 1991)

dɔ tè má dialect

	Front	Central	Back	
	r̥	ɤ̥		ɣ̥
close	i		ɤ	u
close mid	e	ə		o
mid	ɛ	a		ɔ

dɔ shò piá dialect

	Front	Central	Back	
close	i			
close mid	e	ə ɤ	ɤv	o
	ɛ	a		ɔ

Table 2. dɔtèmá and dɔshòpia Vowels (Bennett 1991)

The author agrees with Bennett's description that /j/ is often realized as the palatal approximant [ɟ]. Often the same informant will give you a different pronunciation at a different time. Furthermore though they are the same dialect or village, different informants will have different pronunciation. And as Bennett said, he has not heard the sound [θ] in the ***dɔ tə ma*** dialect. That is because those who are influenced by Burmese express the sounds /s/ or /ɕ/ as [θ]. The author heard the consonant /s/ or

/ɕ/ described by Bennett as /ʂ/, not as /s/ or /ɕ/. It is often changed in speakers influenced by Burmese. Both Bennett and the author agree on the types and number of consonants and clusters although Bennett analyses /j/ and /w/ in clusters as vocalic elements rather than consonantal. For example while the author transcribes 'name' [mwi] Bennett transcribes it [mui], also for 'spear', the author uses [bja] while Bennett uses [bia].

The reason the author interprets /j/ and /w/ as consonants and not vowels is because there are no unambiguous VV sequences. The author agrees with Bennett (1997) description that Kayah syllables are always open, without any coda. Vowels may also occur with no initial consonant.

Bryant et. al. (1993) shows that Kayah has 22 phonemic consonants, 9 vowels and 4 tones. Each chart can be seen as followings.

Manners of Articulation	Points of Articulation	Bilabial	Interdental	Alveolar	Post-Alveolar	Retroflex	Palatal	Velar	Glottal
Plosives	vl. Unasp	p		t				k	
	vl. Asp	p^h		t^h				k^h	
	vd.	b		d					
Fricatives	vl		θ		ʃ	ʂ			h
	vl Asp			s^h					
	voiced	v		z			ʝ		
Affricate	vl				tʃ				
Nasals	vd	m		n				ŋ	
Trill				r					
Approx.		w					j		
Lateral				l					

Table 3. Kayah Phonemic Consonants (Bryant et. al. 1993)

	Front	Central	Back	
Close	i		ɯ	u
Half-Close	e	ə		o
Half-Open	ɛ			ɔ
Open		a		

Table 4. Kayah Vowels (Bryant et. al. 1993)

CCV	i	e	ɛ	a	ɯ	u	o	ɔ	ɯə
kl	+	+	+	+	+	+	+	+	-
kr	+	+	+	+	-	+	+	+	+
pr	+	+	+	+	+	+	-	+	-
pl	+	+	+	+	+	+	+	+	+

Table 5. Kayah CCV Clusters with Vowels (Bryant et. al 1992)

CCCV	klj	krj	prj	plj	klw	krw	prw	plw
e	+	-	-	+	-	-	-	-
a	+	+	+	+	-	-	-	-
i	-	-	-	-	+	+	-	-
o	-	-	-	-	+	+	+	+

Table 6. Kayah CCCV Clusters with Plain and Semi-vowels (Bryant et. al. 1992)

High	Mid-High	Mid	Low
˥	˦	˧	˩

Table 7. Kayah Tones (Bryant et. al. 1992)

Bryant et. al. (1993) analysis of palatalization is slightly different from this author's data. This may be a result of different sources. Even from the same family, village, and dialect, different pronunciations occur. Therefore the rule starting that [ʃ] only occurs before [+ high] vowels, and [sʰ] never does, is not consistent with this analysis, but it could be as Bryant analyzed because some speakers do not make clear between [ʃ] and [sʰ]. In this data number (9) [sʰi˩li˩bɔ˥] "lightning" and (56) [tʰje˧sʰi˥pre˥] "liquor", the word [sʰi] occurs before [+ high] vowels. In this analysis, the breathy vowels and non-breathy vowels do not make any difference in

meaning, it depends on the tone. When a native speaker consciously speaks two words that are the same pronunciation, he/she tries to pronounce them differently but when he speaks unconsciously, they are the same. In fact, many words in Kayah have breathiness mostly with the high-mid tone. According to my interpretation, the chart of the contrast between breathy and non-breathy vowels shown by Bryant et. al. (1993:6), some of them are not so determined by breathiness as by context. Some are different due to tones rather than breathiness. For example, according to the chart, [nel] "ghost" and [nɛ̤l] "body" but they should be [nɛ̤˧] "ghost" and [nel] "body". Another example is [pul] "square can" and [pṳl] "cow", which should be [pu˧] "square can" and [pul]. The author agrees with what he said (1993:9) that in most cases [ɲ] only occurs before [-back] vowels and [ŋ] never does. This agrees with the author's phonological analysis of the data. The writer of this thesis agrees with the tones analyzed because it is the same as the author did in this thesis. This article on Kayah phonology is very helpful and useful, though we differ on some analysis.

Kauffman (1993) shows that Western Kayah has 20 phonemic consonants, 8 plain vowels and 3 tones. Each chart can be seen as followings.

Manners of Articulation	Points of Articulation	Bilabial	Dental	Alveopalatal	Velar	Glottal
Plosives	vl. Unasp	p	t	c	k	(ʔ)
	vl. Asp	p^h	t^h	ch	k^h	
	vd.	b	d			
Fricatives	vl		s^h			h
	vd			z		
Nasals		m	n		ŋ	
Trill			r			
Approximant		w	l	j		

Table 8. Western Kayah Li Phonemic Consonants (Kauffman 1993)

	Front	Central	Back	
Close	i		ɯ	u
Half-Close	e			o
Half-Open	ɛ			ɔ
Open		a		

Table 9. Western Kayah Vowels (Kauffman 1993)

High	Mid	Low
˥ʔ	˧	˩ʔ

Table 10. Western Kayah Li Tones (Kauffman 1993)

Kauffman states that Western Kayah has 10 dipthong vowels. The author does not agree with these vowels he analyzed, because the author finds only one diphthongs /ɯə/ in my data. It is very rare to hear diphthong vowels in Karen except in Pwo, Padaung, Latha and Yintale. The author agrees with his Eastern and Western Kayah consonants and Eastern vowels. The author does not agree with the Western Kayah Li vowels and Eastern tones, the Western Kayah vowels are very complicated with diphthongs and the Eastern Kayah tones show a great deal of falling with glottal. The author does not hear the falling tones. The Western and Eastern phonological inventory charts can be seen as followings.

Eastern Kayah Li

Kauffman (1993) shows that Eastern Kayah has 19 phonemic consonants, 10 vowels and 5 tones. Each chart can be seen as follows.

Manners of Articulation	Points of Articulation	Bilabial	Dental	Alveopaltal	Velar	Glottal
Plosives	vl. Unasp	p	t	c	k	
	vl. Asp	p^h	t^h	ch	k^h	
	vd.	b	d			
Fricatives	vl Asp		s			h
Nasals		m	n		ŋ	
Trill			r			
Approximant		w	l	j		

Table 11. Eastern Kayah Li Phonemic Consonants (Kauffman 1993)

	Front	Central	Back	
Close	i		ɯ	u
Half-Close	e		(ɤ)	o
Half-Open	ɛ	ə		ɔ
Open		a		

Table 12. Eastern Kayah Vowels (Kauffman 1993)

High falling	High level	Low falling	Low level	Mid
˥˩ʔ	˥ʔ	˨˩ʔ	˩ʔ	˧

Table 13. Eastern Kayah Li Tones (Solnit 1997)

Lar Baa (2001) states that Kayah has 24 consonants 9 vowels. (See Tables 14 and 15). He also states that Kayah has the consonant cluster [d̥ʒɾ̥w] and four diphthong vowels /ie/, /io/, /ia/, /ɯə/ and /ɛa/, but the author does not agree with his analysis, the author does not find the cluster [d̥ʒ + ɾ̥] in the words he lists as having them except for diphthongs /ɯə/. And the author analyzes /ie/ /ia/ and /io/ as /je/, /ja/ and /jo/, respectively. The way the author hears the diphthong vowel /ɛa/ is the same as /ia/. For example, even though the wordlist number 85 and 270 are the same pronunciation with numbers 22, 24, 39, 49, 62, 92, 108, 115, 117, 179, 220, 319, 366, 408, 434, and so on, Lar Baa interpreted 85 and 270 as /ɛa/ but the rest of the

numbers were interpreted as /ia/. The numbers 153, 389 and 427 must be /ia/ but they were interpreted as /ea/ according to his wordlists. He did not express the diphthong /ea/ in the Kayah diphthong vowels though the diphthongs /ea/ was shown in his wordlist. The consonants that he demonstrated are almost the same as the writer of this thesis except /t̪/ and /sʲ/ which the author has not observed. He described five tones, mid-high, mid, mid-low, high-falling and low falling. The way he heard the tones was slightly different from the author because high-falling and low falling tones were not seen in my elicitations. The high and mid-high tones have different meanings but mid-high and high-falling do not result in different meanings, nor do mid-low and low falling tones result in different meanings.

		lab	**den**	**alv**	**post alv**	**vel**	**glo**
Plosive	fortis vl asp	pʰ	t̪	tʰ		kʰ	
	fortis vl	p		t		k	ʔ
	lenis vd	b		d			
Affricate	fortis vl				tʃ		
	lenis vl				dʃ		
Fricative	fortis vl			(s) sʰ	sʲ	(x)	h
	lenis vd	v		z			
Nasal		m		n		ŋ	
Trill				r			
App		w		l	j		

Table 14. Kayah Consonants (Lar Baa 2001)

	Front	Central	Back
High	i		ɯ u
High mid	e	ə	o
mid	ɛ		ɔ
low		a	

Table 15. Kayah Vowels (Lar Baa 2001)

Manners of Articulation	Points of Articulation	Bilabial	Dental	Alveo-palatal	Velar	Glottal
Plosives	vl. Unasp	p	t	c	k	(ʔ)
	vl. Asp	pʰ	tʰ	ch	kʰ	
	vd.	b	d			
Fricatives	vl					h
	vl Asp		s	(j)		
Nasals		m	n		ŋ	
Trill			r			
Vd. Continuant		w	l	(j)		

Table 16. Eastern Kayah Li Phonemic Consonants (Solnit 1992)

	Front	Central	Back	
Close	i		ɯ	u
Half-Close	e		ɤ	o
Half-Open	ɛ	ʌ		ɔ
Open		a		

Table 17. Eastern Kayah Vowels (Solnit 1997)

High falling	High	Low falling	Low level	Mid
˥˩ʔ	˥ʔ	˧˩ʔ	˩ʔ	˧

Table 18. Eastern Kayah Li Tones (Solnit 1997)

Solnit (1997) studied the Eastern variety of Kayah living in Mae Hong Son Province in northwest Thailand. The author agrees with what he mentions about complementary distribution in consonant clusters between aspiration and the l-r contrast; that is, the aspirated stop is only followed by /r/ and the unaspirated stop is only followed by /l/. The author agrees also with the vowels he described. But the author disagrees with the tones he presented. To the best of the researcher's knowledge of the Eastern Kayah, they do not have glottal constriction occurring only with the falling tone. Glottal constriction /ʔ/ is observed with the high, mid-low and low tones.

1.3.3.2 Kayaw

Henderson (1997) shows that Blimaw Bwe has 27 consonants and 9 vowels as can be seen in Table 1 and Table 2. Blimaw Bwe has three tones – High level, Mid level and Low level.

		Lab	Alv	Palatal	Velar	Glottal
Plosive	Voiced	b	d	j	g	
	Voiceless	p	t	c	k	
	Aspirated	p^h	t^h	c^h	k^h	
	Glottalised	ɓ	ɗ			
Nasal		m	n			
Fricatives			θ	ʃ	x	h
Semivowels	Plain	w		y	ʀ	
	Glottalised	ʔw		ʔy		
Liquids			l			
			r			

Table 19. Blimaw Bwe Consonants (Henderson 1997)

	Front	Central	Back
Close	i		u
Near-Close	ɪ		ʊ
Close-mid	e		o
Open-mid	ɛ		ɔ
Open		a	

Table 20. Blimaw Bwe Vowels (Henderson 1997)

Consonant clusters include the following:

	p	p^h	b	ɓ	m	t	t^h	d	ɗ	n	θ	l	ʃ	k	k^h	g
w	+	+	+	+	+		+		+	+	+	+	+	+	+	+
r	+	+	+			+		+			+			+	+	+
l	+	+	+											+	+	+

Table 21. Blimaw Bwe Consonant Clusters (Headerson 1997)

1.4 Purpose of this Thesis

Previously, since speakers of Kayah, Kayaw, Monumanaw, and Yintale could not understand each other (including the researcher's own experience), it was assumed that the languages were completely different. No scholarly research had been done comparing these particular languages. Since little is known about those languages, the researcher's desire is to clarify the language situation. The purpose of this thesis, therefore, is to describe and compare four languages of Kayah State (Kayah, Kayaw, Monumnaw and Yintale), with regard to (a) lexicon (b) synchronic phonology, and (c) phonological correspondences.

1.5 Methodology

In the summer of 2002, word lists were transcribed and recorded from the Southeast Asia 436 word list for each language. At the time four informants of each language were chosen. These four informants were different in two were male and two were female and age. After collecting, the word lists different pronunciations came up even in the same word, making it very difficult to choose which pronunciation was right. Then in the summer of 2003, the writer of this thesis rechecked the data collected the previous year.

This time the author chose only one person, between 35 and 55 years old. The reason why the author chose my informants between the age of 35 and 55 years old was that they had known their languages for quite a while. Consideration was also given to make sure these informants still had enough teeth to speak clearly. The first summer, some informants were too young – and didn’t know their languages well enough and some over 60 years old did not have enough air and or teeth to pronounce words clearly.

When collecting word lists, a tape recorder, and notebook were used. Before recording the data, each word is asked and the author tried to imitate the word till the

speaker agreed. Then the author transcribed it into my data book. The author did that for around 20 words, and then recorded those twenty words from the informant. Then the author rewound the tape and rechecked it to be sure. The author used this method until the wordlist was finished. The writers of this thesis spent at least one week during the two periods researching each language (summer 2002 and 2003).

The author traveled to a Yintale village named Wa Aung in Phasoung Township. No road is available to go there travel is by motorboat. It is located in the northeast of Phasoung town. Though the author does not know any one in the village, my hostess was known for her hospitality. The Yintale data collection went smoothly. The Yintale language teacher was a man born in the village. He was about 38 years old, and a teacher in his village. He spoke Burmese and Yintale only.

The Kayah data in this thesis is from the dialect spoken in Kebogyi. He was 51 years old. He was born in Keylia (Kebogyi) and grew up in the village but he moved to Phruso town a few years ago. According to native residents of the Kebogyi area, the Kebogyi dialect is the standard one. It is the dialect used on the radio.

The method used to collect data was the same used for Yintale. The author spent at least one week during two periods researching each language (summer 2002 and 2003). In 2002, the author chose four informants, a young man 19 years old, a man 38 years old, a girl 18 years old and a woman 38 years old. The writer of this thesis divided the list into four parts and the author recorded around 100 words from each of them. The author did all four languages like this. In 2003, my adviser suggested that the author should choose only one informant who is between forty and fifty-five years old. Therefore the author chose a man 38 years old and rechecked last year data in detail.

The Kayaw word list the author uses in this thesis is from the dialect spoken in Supjau, Demawso Township. He was about 40 years old. He was an officer literate in

Burmese. In 2002, the author traveled to their place to collect the data but in 2003, the author invited him to come to his hometown for elicitation.

The Monumanaw data in this study is from the dialect spoken in Dolaso, Phruso Township. He was 42 years old. He is a supervisor of the immigration office in Phruso. He speaks Kayah, Geba and English. His wife was also Monu, and they are enthusiastic to speak to their children in Monu though they live in town. Before investigating this language, it was considered to be two languages. During the first summers the author collected both Monu and Monaw data, but after initial analysis it was obvious that these two varieties are very close, and so the author chose Monu as the referent variety.

CHAPTER 2

LEXICAL COMPARISON

2.0 Introduction

Chapter 1 gave a brief background, overview of each language group, communication, previous research, purpose of this thesis and methodology used/employed. This next chapter will focus on a lexical comparison of the four languages. Lexicostatistic methods were applied to the four languages to give a lexical similarity count and to indicate the lexical relationships between the languages.

2.1 Lexicostatistic Analysis

Bradley (1997) classifies the four languages described this thesis as Central Karenic. This chapter studies the relationships of these four languages on the basis of lexical divergence. Lexicostatistic methods were applied to Kayah, Kayaw, Monumanaw and Yintale. One hundred words were used in this comparison. These words (listed in Appendix D) are based on the Swadesh 100 with some substitutions appropriate for Southeast Asian languages. These items were compared to determine the degree of lexical similarity. As Karenic languages are primarily isolating, only the root syllable was considered in this comparison. (See Matisoff 1993 for a discussion of Sino-Tibetan syllable structure). Furthermore, Solnit (1997), states that in Kayah most morphemes are monosyllables, though there are a few polysyllables.

Languages were compared word by word for similarity. Each initial consonant element is compared followed by a comparison of each second consonant and then each vowel; morphological markers and non-root syllables were ignored. They were assigned to one of three rankings, based on Table 22.

For each pair of languages a total was calculated by adding up the number of word-pairs that passed the limits set beforehand for determining sufficient similarity. These limits are shown in Table 23. So, for example, a word-pair with three items being compared would need to have at least two rank 1 elements and one rank 2 element to be considered lexically similar.

A similarity percentage was then calculated by dividing the number of apparent cognates with the total number of words compared.

Rank 1	a. Exact matches b. Phonetically similar segments in three or more pairs c. Vowels that vary by one feature d. Diphthongs that differ by one feature e. u vs. w, i vs. j f. p vs. b, t vs. d, k vs. g, θ vs. ʂ g. Segments that are labialized vs. unlabialized h. dz vs.z, ts vs. s, tʃ vs.ʃ, dʒ vs.ʒ i. A deletion that occurs 3 or more times.
Rank 2	a. Phonetically similar segments in fewer than three pairs. b. Vowels or diphthongs that differ by two or more features
Rank 3	a. Non phonetically similar segments b. A non-regularly occurring deletion
Ignored	a. ʔ vs. ø word initial or word final b. Reduced syllables ʔə c. Reduplicated syllables d. Differences due to syllable-level metathesis e. Differences in vowel length f. Syllables that do not appear to be part of the word root

Table 22: Phonetic Similarity Algorithm

Rank 1(b) and 2(a) relate to the frequency of occurrence of phonetically similar segments. 1(b) aims to capture regular sound changes, whereas 2 (a) aims to capture irregular sound changes. Rank 1(c) and 2(b) consider that vowels or diphthongs differing by one feature have a higher degree of similarity than those differing by two or more features.

Phones		Rank 1	Rank 2	Rank 3
1	=	1	0	0
2	=	2	0	0
3	=	2	1	0
4	=	2	1	1
5	=	3	1	1
6	=	3	2	1
7	=	4	2	1
8	=	4	2	2

Table 23. The Phone Table for Lexical Similarity (Blair 1990:32)

Many lexicostatistic comparisons have problems because there is no preset criterion used to establish cognate relationships between word pairs. Two different linguists often reach different conclusions even though they use the same data. Thus, it is important to apply systematic criterion in comparing word pairs. This allows the results to be duplicated.

In the following examples the methodology of determining the ranking correlations for each word are shown:

No	Gloss	Kayah	Monu	R. 1	R. 2	R. 3	Lex. Sim.
1.	Belly	h ɔ	p^h u	0	1	1	No
2.	Moon	l ɛ	l a	2	0	0	Yes
3.	Road	k l j a	k l ø ɛ	3	0	0	Yes

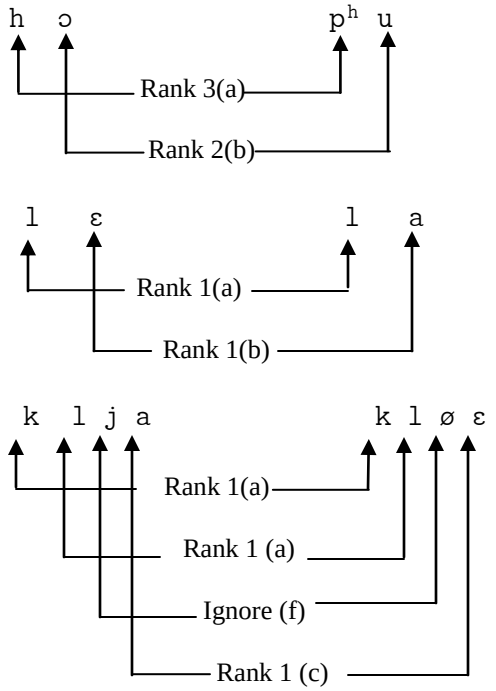

Figure 12. Examples of Comparison

The phone (Table 23) establishes the minimum conditions that pairs of words must satisfy in order to be considered lexically similar. In figure 12, the first item, the word for ***Belly,*** has two phones and has a 0-1-1 composite ranking. When compared to table 23, for a word with two phones, the minimum condition for lexical similarity is a 2-0-0. Since this pair of words has a fewer ranking than required for a 2 phone morpheme the minimum conditions are not met. Therefore this pair of words are not lexically similar.

The word ***Moon***, has two phones and a 2-0-0 composite ranking. Comparing this with Table 23, the minimum condition for lexical similarity satisfies the condition. Thus these two words are considered lexically similar. For ***Road***, with four phones, one of them is ignored, "Ignored a" (the third element [j] in Kayah), so it is considered to be a word of three phones in length. Looking at Table 23, a word with

three phones requires a rank of at least 2-1-0. The word "***road***" is 3-0-0. Since this word pair has more phones in rank 1 than the minimum conditions require, this pair of words are considered lexically similar.

In order to know how closely related the four languages are to each other lexically, the percentage of lexical similarity was calculated for pair-wise comparisons of the languages. The results of the lexical similarity were arranged into a matrix (Table 24).

Kayah			
81%	Yintale		
78%	82%	Monumanaw	
74%	74%	78%	Kayaw

Table 24. Matrix of Lexicostatistic Percentages of Similarity

Table 24 shows the lexicostatistic similarity between Kayaw, Monumanaw, Yintale and Kayah. The lexical similarity percentages linking Kayah and Kayaw is 74%, Kayah and Monumanaw is 78% and Kayah and Yintale is 81%, Kayaw and Monumanaw is 78%, and Kayaw and Yintale is 74%, Monumanaw and Yintale is 82%. Monumanaw and Yintale have higher figures of lexical similarity than other languages.

2.2 Family-tree Relationship

Based on the lexical percentages of these languages, a family tree is shown. This tree depicts how the lexical relationships between these languages can be visualized.

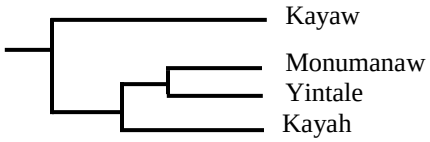

Figure 13. Family – tree Depicting Lexical Relationships

According to Manson (2002:10), Kayah and Yintale are closer to each other than Monu, but the author's analysis is different from what Manson's (2002:18) analysis of the phonological similarity phenogram. The results of the author show that there is a greater difference between Kayaw and the other three, but that there is a greater similarity between Monumanaw and Kayaw. The lexical percentages suggest that Yintale and Monumanaw are more closely related to each other than are the others. One alternative reason why Yintale and Monumanaw are more closely related to each other than the others is that geographically they live very close to each other. According to Matisoff (1978), geographically or culturally contiguous languages may come to have extremely similar phonological inventories by "diffusion," even though they are not genetically related. Kauffman (1993:14) said, "Of all the Central Karen languages, Eastern Kayah has the most contact with Thai. Its phonemic inventory has several similarities to Thai not found in the other Central Karen languages…" However Yintale and Monumanaw do not share any innovative lexical items that no other Karenic language has, which would point to the similarity between them being due to genetic inheritance.

In the following figure of the tree diagram with a scale is shown the lexical similarity relationships between the four languages. It is the same as the above family tree figure, but it is shown with scales for each language in order to be clearer for the reader.

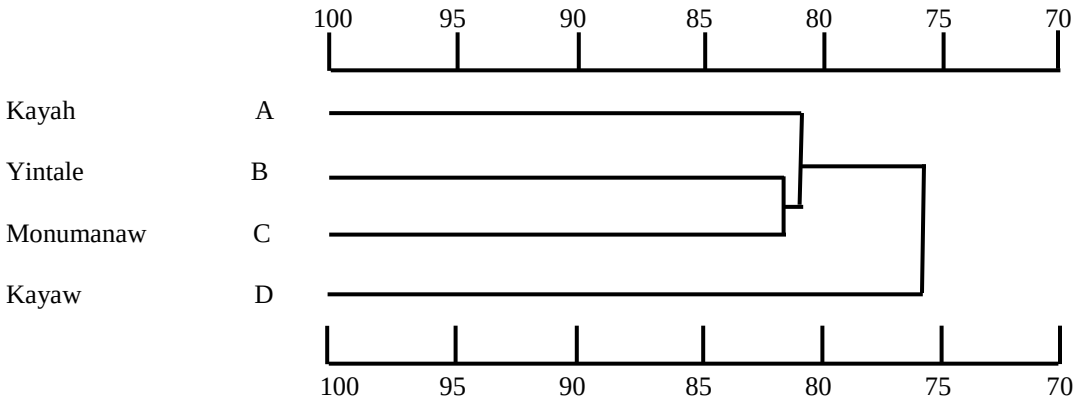

Figure 14. Central Karenic Languages Tree Based on average link method

CHAPTER 3

SYNCHRONIC PHONOLOGIES

Introduction

This chapter presents the phonological inventories of Kayah, Kayaw, Monumanaw and Yintale, including syllable structure, consonant charts and distributions, consonant clusters, vowel and diphthong vowels, tone phonemes, tone distributions and tone contrasts will be presented for each language in this chapter.

3.1 Kayah

3.1.1 Kayah Syllable Structure Types

There are four syllable types in Kayah namely, CVT, CVVT, CCVT and CCCVT. Vocalic elements with no obvious initial consonant are interpreted as having an initial glottal, thus having a CVT syllable structure.

Kayah CVT Syllable Structure

The syllable structure type of CVT includes a single consonant represented by C, a vowel represented by V and a tone represented by T.

2.	[mɔ˥]	‘sun’
29.	[lo̤˦]	‘stone’
3.	[lɛ˦]	‘moon’
18.	[na˩]	‘year’

Kayah CVVT Syllable Structure

The syllable structure type of CVV^{T} consists of a consonant, two vowels and a tone.

173.	mɯə̤˩	‘mother
180.	pɯə̤˩	‘younger brother’
114.	pʰɯə˦	‘mosquito’
20.	nɯə˦	‘north’

Kayah CCVT Syllable Structure

The syllable structure type of CCV^{T} consists of a two consonant cluster, a vowel and a tone.

288.	[dje˩]	‘to give’
23.	[tʰje˦]	‘water’
81.	[tʰwi˩˧]	‘dog’

Kayah CCCVT Syllable Structure

The syllable structure type of $CCCV^{T}$ consists of three consonants in a cluster. It consists of a vowel and a tone.

184.	[klja˩]	‘road’
159.	[krwi̤˩]	‘bone’
389.	[prja˦]	‘to be fast’
134.	[plje̤˩]	‘gums’

3.1.2 Kayah Consonants

Kayah has a phonological inventory of 24 consonants, as shown in the following table:

Manners of Articulation	Points of Articulation	Bilabial	Labiodental	Interdental	Alveolar	Post Alveolar	Retroflex	Palatal	Velar	Glottal
Plosives	vl. Unasp	p			t				k	ʔ
	vl. Asp	p^h			t^h				k^h	
	vd.	b			d					
Fricatives	vl			θ		ʃ	ʂ	ç		h
	vl Asp				s^h					
	voiced		v		z					
Affricate	vd					dʒ				
Nasals	vd	m			n				ŋ	
Trill					r					
approx.								j		
Lat. Appro					l					

Table 25. Observed Consonants

3.1.2.1 Kayah Plosives

The voiceless unaspirated bilabial plosive /p/ occurs with all vowels except the mid back unrounded vowel /ɤ/. It only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/p/	[tɜ˩pɛ˦]	281.	‘to kick’
	[pɔ˩]	205.	‘pot’
	[k^ha˦dɯə˩lɜ˩pɔ˩]	156.	‘shin’
	[pi˦ pjạ˥]	117.	‘butterfly’
	[pụ˥ wo˦]	111.	‘termite’
	[pa˦p^hɛ˥]	296.	‘to split’
	[ʔa˩pɜ˩rɯ˥]	344.	‘to be short’
	[pɯ̈ə̤˥]	180.	‘younger siblings’

There are no restrictions on the distribution of the voiceless aspirated bilabial plosive /pʰ/ as an initial consonant except the low front unrounded vowel /ɜ/ according to this data. It never occurs as the second or third element in consonant clusters. Some examples can be seen as follows.

/pʰ/	[pʰɛ˦]	172.	‘father’
	[pʰɔ˦]	116.	‘fly’
	[pʰo˦]	44.	‘flower’
	[pʰɤ˦ kja̤˥]	108.	‘spider’
	[pʰu˥ mɛ˦]	175.	‘son-in-law’
	[pʰɯ˩]	359.	‘to be near’
	[pʰi˦]	55.	‘opium’
	[pʰa˥]	126.	‘eyelid’
	[pʰɯə˩]	342.	‘to be short’

The voiced bilabial plosive /b/ occurs with all vowels except the central open mid /ɜ/ and close unrounded back vowel /ɤ/. It only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/b/	[di˦bo˦]	140.	‘navel’
	[bɔ˥]	196.	‘to weave’
	[he˥bɛ˩]	254.	‘to speak’
	[bi˥te˦]	403.	‘where’
	[bu˦]	363.	‘white’
	[bɯ˩]	347.	‘to be fat’
	[be˦]	210.	‘plate’
	[ba˦]	354.	‘to be full’
	[bɯə̤˥]	68.	‘paddy rice’

The voiceless aspirated alveolar plosive /tʰ/ occurs with the vowels /e/, /ɛ/, /ɯ/, /u/, /o/, /ɔ/ and diphthongs /ɯə/, but has not been observed with the vowels /i/, /a/, /ɜ/ and /ɤ/. This consonant only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/tʰ/	[tʰeꜜ]	74.	‘bear’
	[tʰuꜛ]	93.	‘bird’
	[tʰɔꜜ]	216.	‘drum’
	[tʰɛꜜ]	32.	‘gold’
	[tʰɯˀ]	290.	‘to wipe’
	[tʰoꜜ]	247.	‘to shout’
	[tʰɯəꜛ]	368.	‘to be heavy’

The voiceless unaspirated alveolar plosive /t/ occurs with the vowels /i/, /e/, /ɛ/, /a/, /ɜ/, /o/, /ɔ/ and diphthong /ɯə/, but has not been observed with the vowels of /u/, /ɯ/ and /ɤ/. However the vowels /u/ and /ɯ/ do occur with the consonant /t/ in Kayah, for example; /tuˀ/ ‘look over’ and /tɯꜜ/ ‘to break (rope or thread). This consonant only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/t/	[ti]	340.	‘to be small’
	[tɛꜜ]	101.	‘fish’
	[tɜꜛʃaꜜ]	91.	‘elephant’
	[teꜜ]	405.	‘what’
	[taꜜ]	283.	‘to fall’
	[toꜜ]	400.	‘to be correct’
	[tɔꜛ]	52.	‘kapok’
	[tɯ̈əˀ]	151.	‘buttocks’

The voiced alveolar plosive /d/ occurs with the vowels /ɛ/, /a/, /ɜ/, /i/, /u/, /ɯ/, /o/ and /ɔ/ but not with the vowels of /e/ and /ɤ/ in this data. However, /d/ also occurs with /e/ outside of this data, for example; /deꜜpʰɛˀ/ ‘to split bamboo with knife’, and /kjaꜜdeꜜ/ ‘be useless’. This consonant only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/d/	[diˊ]	69.	‘cooked rice’
	[du˩]	339.	‘to be big’
	[dɯˊ]	385.	‘to be blunt’
	[dɔˊ]	183.	‘village’
	[da˥]	95.	‘wing’
	[doˊ]	307.	‘to boil’
	[dɜ˥]	361.	‘that’
	[dɛˊ]	192.	‘mat’
	[dɯə˩]	152.	‘leg’

The voiceless aspirated velar plosive /kʰ/ occurs with the vowels /ɛ/, /a/, /e/, /i/, /u/, /ɯ/ and /o/ but not with in the vowels /ɔ/, /ɜ/, /ɤ/ and /ɯə/ in this data. However, it does occur with the vowels /ɔ/ and /ɤ/, for example; /kʰɔ˩/ ‘dam’ and /kʰɤˊ/ ‘relatives’. This consonant only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/kʰ/	[kʰɛ˩]	135.	‘chin’
	[kʰaˊ]	238.	‘to yawn’
	[kɯ˥]	236.	‘to cough’
	[kʰo˥]	373.	‘to be different’
	[kʰi˥]	370.	‘to be dark’
	[kʰu˩]	1.	‘sky’
	[kʰe˥]	66.	‘corn’

The voiceless velar plosive /k/ occurs with the vowels /ɛ/, /a/, /ɜ/, /i/, /ɔ/, /u/, /ɯ/ and /o/ but not with the vowels of /o/, /e/, /ɤ/ and /ɯə/. This consonant only occurs syllable initial, it never occurs as the second and third element in consonant clusters.

/k/	[kɔ˥]	213.	‘ashes’
	[kɛˊ]	194.	‘blanket’
	[kuˊ]	36.	‘cave’
	[ki˥]	112.	‘cockroach’
	[kɜ˩]	149.	‘finger’
	[kɯ˥]	77.	‘gibbon’
	[ka˥]	397.	‘naked’

The glottal stop /ʔ/ occurs with the vowels /ɛ/, /a/, /e/, /i/, /ɔ/, /u/, /ɯ/ and /o/ but not with the vowels of /ɜ/, /ɤ/ and /ɯə/. This consonant only occurs initially, it never occurs as the second or third element in consonant clusters.

/ʔ/	[ʔi˩]	167.	'excrement'
	[ʔɛ˩]	418.	'he/she/it
	[ʔɔ˩]	82.	'to bark'
	[ʔa˩]	83.	'to bite'
	[ʔe˩]	227.	'to eat'
	[ʔoꜜ]	232.	'to drink'
	[ʔuꜜ]	404.	'who'
	[ʔɯ˩]	11.	'shadow'

3.1.2.2 Kayah Fricatives and Affricates

The voiced labiodental /v/ becomes a voiced labial-velar approximate [w] in initial position before open-mid back rounded vowel /o/. This consonant only occurs syllable initial, it never occurs as the second and third element in consonant clusters. The labiodental fricative /v/ occurs with the vowels of /ɛ/, /ɔ/, /i/, /ɯ/ and /a/.

Rule 1. Weakening: /v/ ⟶ [w] _____ $ V [+ back, rounded]

/v/ ⟶ [v] /elsewhere

/v/	[vɛ˩]	48.	'bamboo'
	[vaꜜ]	416.	'I (1S)'
	[vɯ˩]	353.	'be round'
	[vɔꜜ]	311.	'play'
	[viꜜ]	282.	'throw'
	[pu̟ꜛwoꜜ]	111.	'termite'
	[woꜜ]	-	'cook (sth)'
	[woꜛ]	-	'to hide'

The phoneme of the voiceless dental fricative /θ/ occurs only in syllable initial position. This consonant is pronounced in different ways by different informants. Some pronounce it as /s̪/ but some pronounce it as /θ/. It depends on the social standard. Most people who are familiar or speak only Kayah pronounce it as /s̪/, but

people who are educated in Burmese pronounce it as /θ/. The literate people who speak Kayah at the beginning of their lives for more than ten years mostly pronounce it as /ʂ/ but when he/she is asked to pronounce articulately, the pronunciation is changed to /θ/. The voiceless dental fricative /θ/ occurs with the vowels /ɛ/, /ɔ/, /i/, /u/ and /ɯə/ in this data.

/θ/	[θɛ˥]	239.	'to breathe'
	[θɔ˧]	378.	'rotten'
	[θi˧]	420.	'you (2P)'
	[θu˥]	162.	'fat'
	[θɯə˩]	143.	'liver'

The consonant /sʰ/ associates with all vowels except the vowel close unrounded back vowel /ɤ/. It occurs only in the syllable initial position, never occurs as the second and third element in consonant clusters.

/sʰ/	[sʰɔ˧]	391.	'to be strong'
	[sʰɯ˩]	136.	'beard'
	[sʰɛ˩]	4.	'star'
	[sʰo]	35.	'mountain'
	[sʰi̱˥]	56.	'liquor'
	[sʰɜ˧]	208.	'pestle'
	[sʰa˥]	305.	'to pound'
	[sʰe˧]	259.	'to be afraid'
	[sʰu˩]	41.	'thorn'
	[sʰɯə˩]	124.	'eyebrown'

The consonant /z/ only occurs in the syllable initial position but it never occurs as the second and third element in consonant clusters. It occurs with the vowels of /ɛ/, /ɤ/, /a/, /i/, /ɔ/, /u/, /ɯ/, /o/ and /ɯə/ but not observed with the vowels of /e/ and /ɜ/.

/z/	[zɔꜜ]	76.	‘monkey’
	[zaꜛ]	413.	‘water leech’
	[zɯˀ]	228.	‘to swallow’
	[zoꜛ]	97.	‘shadow’
	[zɛ̤ˀ]	105.	‘crocodile’
	[zuꜜ]	435.	‘easy’
	[zɤꜜ]	284.	‘to swim’
	[zɯə̤ˀ]	80.	‘rat’

The phoneme /ʃ/ only occurs in the syllable initial position but it never occurs as the second and third element in consonant clusters. It occurs with the vowels /a/, /i/, /e/ and /o/

/ʃ/	[ʃeꜜ]	99.	‘chicken’
	[ʃaꜛ]	279.	‘to push’
	[ʃoꜛ]	391.	‘to be strong’
	[ʃiˀ]	114.	‘mosquito’

The phoneme /ʂ/ only occurs in the syllable initial position. It cannot be found in the second and third consonant clusters. It occurs with the vowels of /ɛ/, /a/, /ɔ/, /ɯ/ and /u/. Outside this data /ʂ/ also occurs with the vowels /e/, /i/ and /o/ For example; /ʂiˀʂeˀ/ “a kind of worm”, /ʂoꜛ/ “jute”, and /ʂiˀ/ “harpoon”.

/ʂ/	[ʂɯꜛ]	79.	‘porcupine’
	[ʂɛꜛ]	71.	‘salt’
	[ʂuˀ]	63.	‘peanut’
	[ʂaˀ]	100.	‘duck’
	[ʂɔꜛ]	185.	‘boat’

The phoneme voiceless glottal fricative /h/ has an allophone with the voiceless velar fricative [x]. The voiceless velar fricative [x] only occurs before unrounded back vowel /ɯ/, but /h/ occurs elsewhere. The voiceless velar fricative [x] only occurs in the initial position. The phoneme consonant /h/ occurs with the vowels of /o/, /ɔ/, /i/ and /e/. Outside this data /h/ also occurs with the vowels of /ɤ/, /a/, /u/ and /ɛ/. For example: /hɤˀ/ “to read or to sing”, /haꜜ/ “to be brave”, /huˀ/ “to throw pellets on a catapult”, and /hɛꜛ/ “to lament”.

Rule 2. Velarization: /h/ ⟶ [x] / _____ /ɯ/

/h/ ⟶ [h] /elsewhere

/h/	[laɻhoɬ]	249.	‘to lie or fib’
	[hɔɭ]	139.	‘belly’
	[hiɻ]	186.	‘house’
	[heɻkʰuɻ]	26.	‘earth’
	[xɯɬ]	70.	‘pounded rice’

The voiceless palatal fricative /ç/only occurs in the syllable initial position. There are only two vowels /a/ and /e/ occurring with the consonant /ç/.

/ç/	[ça˧]	276.	‘to come’
	[çeɻdʒaɻ]	195.	‘clothing’

The voiced palatal fricative [ʝ] has an allophone with the phoneme voiceless palatal approximate /j/. The voiced palatal fricative [ʝ]only occurs in the initial position but it never occurs as the second and third element in consonant clusters. Only two vowels are associated with the voiced palatal fricative [ʝ].

Rule 3. Palatalization: /j/ ⟶ [ʝ] / _____ $ V [+ back, rounded]

/j/ ⟶ [j] /elsewhere

[ʝ]	[ʝuɻ]	411.	‘pangolin’
	[ʝo̤ɬ]	431.	‘disgusting’
	[jeɻ]	358.	‘to be far’
	[vjaɭ]	115.	‘bee’
	[tʰjoɭ]	355.	‘right side’

The voiced palatal affricate /dʒ/ only occurs in the syllable initial position but it never occurs as the second and third element in consonant clusters. This consonant occurs with all vowels in Kayah except the diphthongs /ɯə/.

/dʒ/	[dʒa˩]	195.	‘clothing’
	[dʒoꜜ]	289.	‘to tie’
	[dʒiꜜ]	297.	‘to cut (hair)’
	[dʒɯ˩]	7.	‘rain’
	[dʒo˩]	381.	‘to be wet’
	[dʒɤ˥]	274.	‘to walk’
	[dʒu̟˥]	433.	‘cool’
	[dʒe˩]	204.	‘paper’
	[hɛꜜdʒɛ̟˥]	392.	‘to be weak’
	[dʒɜꜜ]	384.	‘to be sharp’

3.1.2.3 Kayah Nasals

The bilabial nasal /m/ occurs with the all vowels /ɛ/, /a/, /e/, /i/, /ɔ/, /u/, /ɯə/ and /o/, but never with the vowels /ɜ/ and /ɤ/. This consonant only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/m/	[mo˩]	217.	‘gong’
	[mɯꜜ]	295.	‘to hit’
	[meꜜ]	177.	‘wife’
	[mi˩]	212.	‘fire’
	[mo̟˥]	2.	‘sun’
	[maꜜ]	154.	‘knee’
	[mɛꜜ]	175.	‘son-in-law’
	[mɯə̟˥]	173.	‘mother’

The alveolar nasal /n/ occurs with the vowels /ɛ/, /a/, /e/, /i/, /ɔ/, /u/, /ɯə/ and /ɯ/ except the vowels /ɜ/, /o/ and /ɤ/. The vowel /o/ occurs with alveolar nasal [n] but this data does not support it, for example; /no˥/ ‘lake’ and /nɤ˥/ ‘to command a dog to chase a wild animal’. This consonant only occurs syllable initial, it never occurs as the second or third element in consonant clusters.

/n/	[nɛ˩]	417.	‘thou (2S)’
	[na˩]	18.	‘year’
	[nɔ˦]	149.	‘finger’
	[mo˩n̪i˦]	255.	‘to love’
	[nɯ˦]	228.	‘to swallow’
	[nu˩]	16.	‘yesterday’
	[ne˩]	251.	‘to think’
	[nɯə˦]	277.	‘to enter’

The voiced velar nasal [ŋ] occurs in complementary distribution with a voiced palatal nasal [ɲ]. This consonant only occurs syllable initial, it never occurs as the second or third element in consonant clusters. Outside of this data, there are a few of exception, for example; /ŋa˩/ ‘to turn neck’. The word /ɲa˦/ “to sit” occurs in this data, however the vowel /a/ is not back vowel, but central open vowel.

Rule 4. Fronting: /ŋ/ ⟶ [ɲ] / _____V [- back]

⟶ [ŋ] /elsewhere

/ŋ/	[ŋɔ˩dʒɤ˥]	275.	‘to crawl’
	[ŋ̈ɯ˦]	226.	‘to weep’
	[ɲe˦]	244.	‘to laugh’
	[ɲa˦]	271.	‘to sit’

3.1.2.4 Kayah Approximants

The voiced labial-velar approximate [w] only occurs before open-mid back rounded vowel /o/ in the initial position but it occurs elsewhere in the clusters of the second and third element positions. This consonant occurs as initial, second and third in consonant clusters. The voiced labial-velar approximate is only distributed with the vowel /o/ in the initial position, but it occurs elsewhere in the second and third element position.

Rule 5. Weakening: /v/ ⟶ [w] _____ $ V [+ back, rounded]

/v/ ⟶ [v] /elsewhere

[w]	[θwi˩]	164.	‘blood’
	[pu̟˥wo˧]	111.	‘termite’
	[vɛ˩]	48.	‘bamboo’
	[va˧]	416.	‘I (1S)’
	[vɯ˩]	353.	‘to be round’
	[vɔ˧]	311.	‘to play’
	[vi˧]	282.	‘to throw’

The phoneme voiceless palatal approximate /j/ has an allophone with the voiced palatal fricative /ʝ/. The phoneme voiceless palatal approximate /j/occurs with the open-mid and open front vowels while the voiceless palatal fricative [ʝ] occurs with the rounded back vowels. The consonant /j/ occurs in the initial and second position in consonant clusters. It is rare to be seen occurring in the initial position. Mostly it occurs in consonant clusters. In this data, there are only two words in which it occurs in the initial position but they occur with the same vowel and with a tone that give the words different meanings. Only three vowels occur with the consonant /j/.

Rule 6. Palatalization: /j/ ⟶ [ʝ]/ _____ V [+ back rounded vowel]

/j/ ⟶ [j]/elsewhere

/j/	[je˩]	358.	‘to be far’
	[vja˥]	115.	‘bee’
	[tʰjo˥]	355.	‘right side’
	[ʝu˩]	411.	‘pangolin’
	[ʝo̟˥]	431.	‘disgusting’

The voiced alveolar lateral approximate /l/occurs in the initial and second position in consonant clusters. All vowels occur with this consonant /l/.

/l/	[lo̤˥]	29.	‘stone’
	[li˩]	364.	‘red’
	[lɛ˦]	3.	‘moon’
	[lo˩]	285.	‘to float’
	[la˩]	249.	‘to lie or fib’
	[le˦]	312.	‘to dance’
	[lu˦]	304.	‘to dry’
	[lɯ˩]	314.	‘to hunt’
	[lɤ˦]	343.	‘to be tall’
	[lɜ˩po˩]	156.	‘shin’
	[lɯ̤˥]	302.	‘to bury’

The voiced alveolar trill /r/occurs with nearly all vowels except two plain vowels, /ɜ/, /ɤ/ and diphthongs /ɯə/. It mostly occurs as the second element.

/r/	[ri˥]	51.	‘cane/rattan
	[prɛ˩]	169.	‘man’
	[kro̤˥]	75.	‘deer’
	[ro˦]	250.	‘to sing’
	[pre˥]	56.	‘liquor’
	[rɯ˦]	33.	‘silver’
	[rṳ˥]	102.	‘snake’
	[kra˦]	380.	‘to be dry’

3.1.3 Kayah Consonant Clusters

All consonants occur in the syllable initial position. There are five consonants occurring in the second element. Only two consonants occur in the third element.

Second consonants	j, l, r, w
Third consonants	j, w

Table 26. Initial, second and third cluster consonants chart

3.1.3.1 Kayah Observed Consonant Clusters

The CCV Consonants Clusters With /w/ in Kayah

There are nine consonants, which occur with /w/.

Cluster consonants	Wordlist Number	Words	Gloss
pw	94.	tʰu˩ pwi˩	'bird's nest'
bw	291.	bwo˥ pli˦	'to rub, scrub'
tʰw	81.	tʰwi˩	'dog'
dʒw	280.	dʒwi˩	'to pull'
θw	164.	θwi˩	'blood'
ʂw	414.	ʂwo˥	'land leech'
mw	182.	mwi˦	'name'
rw	42.	θɔ˩ rwi˥	'root'
lw	325.	ʂɛ˥ lwi˦	'four person'

The CCV Consonants Clusters With /r/ in Kayah

There are only two kinds of CCV consonants cluster with /r/.

Cluster Consonants	Wordlist Number	Words	gloss
pr	393	ʂɛ˥prą̈˥	'to be tired'
kr	415	za˦kro˦	'earthworm'

The CCV Consonants Clusters With /l/ in Kayah

Only two CCV consonant clusters with /l/ are found in this data.

Cluster Consonants	Wordlist Number	Words	gloss
pl	291.	bwo˥ pli˦	'to rub, scrub'
kl	228.	zɯ˥klu˦nɯ˦	'to swallow'

The CCV Consonants Clusters With /j/ in Kayah

There are twelve CCV consonant clusters with /j/. Some researchers consider it a vowel used instead of the palatal approximate /j/, because it is also a semivowel. But

the author prefers using it as a consonant; it is heard stronger as consonant /j/ than as vowel /i/. This language also is richer in clusters than diphthong vowels. The author feels that it is slightly different to pronounce this phoneme as /j/ than as /i/. So choosing it as a cluster is clearer than choosing it as a vowel.

Cluster consonants	Wordlist Number	Words	gloss
pj	117.	pi˧pjạ̈˥	'butterfly'
bj	366.	ʔa˩bja˧	'yellow'
kj	108.	pʰɤ˧kjạ̈˥	'spider'
kʰj	133	ku˩kʰje˧	'tooth'
tʰj	23	tje˧	'water'
dj	98.	dje˩	'egg'
ʔj	360.	dɜ˥ʔje˧	'this'
ʂj	223.	nɯ˩ʂja˧bɛ˩	'to smell'
rj	310.	ʔe˩rja˩	'to work'
lj	24	lja˧mɯ̈ạ̈˥	'river'
mj	263.	ʔo˩mji˧mja˥	'to dream'
vj	179a	vja˥prɛ˩khu˧	'elder brother'

The CCCV Consonant Clusters With /j/ in Kayah

There are four kinds of the CCCV consonant clusters with /j/. They are voiceless bilabial and velar fricatives with the second consonant /l/ and /r/.

Cluster Consonants	Wordlist Number	Words	gloss
klj	218	klje˩	'bow, crossbow'
plj	134	ku˩kʰje˧plje̤˥	'gums'
prj	389	ʔa˩prja˧	'to be fast'
krj	348	ʔa˩krja˧	'to be skinny'

The CCCV Consonant Clusters With [w] in Kayah

There are three CCCV consonant clusters with [w].

Cluster Consonants	Wordlist Number	Words	gloss
klw	410	bɯə̯˥klwi˦	'rice seedling'
krw	159	krwi̯˥	'bone'
plw	203	tɜ˩plwo˥	'ring (finger)'

3.1.3.2 Kayah Description and distribution

The restriction of the co-occurrences with second consonants

The numbers represent the words that co-occur after the second element in the wordlist.

		Initial Consonants											
Second Consonants		p	pʰ	b	t	tʰ	d	k	kʰ	ʔ	m	ɲ	ŋ
	j	117	39	49	-	56	98	62	199	360	92	-	-
	l	155	-	-	-	-	-	37	-	-	-	-	-
	r	144	-	-	-	-	-	50	-	-	-	-	-
	w	94	-	291	-	31	-	-	-	-	-	-	-

		Initial Consonants												
Second Consonants		θ	sʰ	z	ʃ	dʒ	ʂ	ç	ʝ	h	j	l	w	r
	j	315	-	-	-	-	202	-	-	-	-	60	-	398
	l	-	-	-	-	-	-	-	-	-	-	-	-	-
	r	-	-	-	-	-	-	-	-	-	-	-	-	-
	w	164	-	-	-	280	240	-	-	-	-	57	-	42

Table 27. Restriction Chart

The restriction of the co-occurrence with the consonant clusters /kl/, /kr/, /pl/ and /pr/ in Kayah

While the consonant /w/ only co-occurs with /kl/ and /kr/, the consonant /j/ co-occurs with /kl/, /kr/, /pl/ and /pr/. The following chart shows where they co-occur.

Initial Consonants					
The third element		kl	kr	pl	pr
	j	53	348	134	389
	w	410	159	-	-

Table 28. The Consonant Clusters of /kl, kr, pl, pr/

Kayah Consonant Distributions

There is no data to support any word-close syllable occurrences. All consonants occur in the initial position except voiced labal-velar approximate /w/.

First Consonants														
	p	p^h	b	t	t^h	d	k	k^h	ʔ	m	n	ɲ	ŋ	v
$---------	219	419	196	101	201	69	395	119	82	233	417	244	226	48
------- V	140	306	245	283	34	95	426	376	435	170	255	268	273	311
-------- $	-	-	-	-	-	-	-	-	-	-	-	-	-	-

First Consonants														
	θ	s^h	z	ʃ	dʒ	ʂ	ç	ʝ	x	h	j	l	w	r
$ --------	239	4	76	279	297	110	276	411	70	186	-	3	-	102
$ ----- V	421	96	435	375	423	71	67	390	-	249	161	364	111	250
-------- $	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 29. Consonant Distribution Chart

Kayah Consonant Contrasts

Minimal Pair	No	Suspect Pair	Gloss	No	Suspect Pair	Gloss
/p//pʰ/	27.	paꜜʔaꜛ	‘mud’	40.	θɔꜜpʰaꜛ	‘three bark’
/p//b/	196.	bɔꜛ	‘to weave’	205.	di꜖pɔꜜ	‘pot’
/b//m/	196.	bɔꜛ	‘to weave’	2.	mo̤꜖	‘sun’
/b//w/	215.	bo꜖	‘candle’	111.	puꜛwo꜖	‘termite’
/m//w/	217.	moꜜ	‘gong’	111.	pṳ꜖wo꜖	‘termite’
/t//tʰ/	405.	meꜜte꜖	‘what’	74.	tʰe꜖	‘bear’
/t//d/	322.	tɜꜜprɛꜜ	‘one person’	360.	dɜꜛʔje꜖	‘this’
/d//n/	183.	do꜖	‘village’	149	kɜꜜnɔ꜖	‘finger’
/d//θ/	183.	do꜖	‘village’	38.	θɔꜜ	‘Tree’
/d//dʒ/	69.	di꜖	‘cooked rice’	297.	dʒi꜖	‘to cut’
/k//kʰ/	194.	hiꜛkɛ꜖	‘blanket’	135.	kʰɛꜜ	‘chin’
/k//ŋ/	202.	kɔꜛʂjeꜜ	‘comb’	275.	pṳ꜖ŋɔꜜdʒɤꜛ	‘to crawl’
/m//n/	2.	mo̤꜖	‘sun’	89.	nɔꜜ	‘horn’
/n//ŋ/	89.	nɔꜜ	‘horn’	275.	pṳ꜖ŋɔꜜdʒɤꜛ	‘to crawl’
/m//ŋ/	2.	mo̤꜖	‘sun’	275.	pṳ꜖ŋɔꜜdʒɤꜛ	‘to crawl’
/h//k/	230.	kɔꜛ hɔꜛ	‘to be full’	230.	kɔꜛ hɔꜛ	‘to be full’
/k//ç/	426.	taꜜkaꜜ	‘to bend’	276.	ça꜖	‘to come’
/h//ç/	26.	heꜜkʰuꜜ	‘earth’	195.	çeꜜdʒaꜜ	‘clothing’
/ç//j/	358.	ʔaꜜjeꜜ	‘to be far’	195.	çeꜜdʒaꜜ	‘clothing’
/j//w/	outside	joꜜ	‘to reduce’	111.	puꜛwo꜖	‘termite’
/r//l/	51.	riꜛ	‘cane/rattan’	364.	liꜜ	‘red’
/l//n/	364.	liꜜ	‘red’	255.	moꜜni̤ꜛ	‘love’
/dʒ//j/	355.	dʒɔꜛtʰjoꜛ	‘right side’	390.	ɟo̤ꜛ	‘disgusting’
/w//b/	416.	va꜖	‘I (1S)’	354.	ba꜖	‘to be full’
/z//ɟ/	435.	ʔaꜜzu꜖	‘easy’	411.	ɟuꜜ	‘pangolin’
/h//ʔ/	70.	xɯ꜖	‘pounded rice’	11.	zoꜜʔɯꜜ	‘shadow’
/ʔ//kʰ/	130.	kʰa꜖ʔuꜜ	‘mouth’	26.	heꜜkʰuꜜ	‘earth’
/ʔ//j/	227.	ʔeꜜ	‘to eat’	358.	ʔaꜜjeꜜ	‘to be far’

Table 30. Consonant Contrasts Chart

3.1.4 Kayah Vowels

There are ten clear vowels in this data. There is only one diphthong. The central open-mid vowel /ɜ/ is too rare to find it occurring with all consonants.

3.1.4.1 Kayah Observed Vowel Chart

	Front unrounded	**Central unrounded**	**Back unrounded**	**Back rounded**
Close	i		ɯ	u
Close-mid	e		ɤ	o
Open-mid	ɛ			ɔ
Open-mid		ɜ		
Open	a			

Table 31. Observed Vowel Chart

There are ten vowels in Kayah. There is only one diphthong /ɯə/ occurring in this data.

3.1.4.2 Kayah Phonemic description

The following chart shows the vowels that occur accompanied with phonemic consonants.

Consonants	Vowels									
	i	e	ɛ	a	ɜ	ɯ	u	ʏ	o	ɔ
pʰ	55	-	213	126	-	359	175	108	65	-
p	309	404	419	27	344	-	86	-	156	6
b	403	210	223	204	-	347	363	-	140	9
tʰ	-	74	201	-	-	290	319	-	247	34
t	340	405	101	286	105	-	-	-	400	52
d	69	-	396	95	19	385	339	-	307	183
kʰ	12	66	136	152	157	236	138	-	181	-
k	337	7	194	426	149	-	422	124	-	213
ʔ	167	227	418	83	-	11	404	-	232	82
m	212	315	54	30	-	295	367	-	217	2
n	222	251	417	18	-	223	16	-	-	89
r	367	56	169	304	-	33	102	-	250	160
ŋ	-	244	-	246	-	226	-	-	-	275
θ	420	67	45	-	-	-	162	-	-	43
sʰ	56	259	4	305	208	292	41	-	35	395
z	-	-	332	413	-	228	435	248	11	76
ʃ	114	99	-	275	-	-	-	-	391	-
dʒ	297	204	392	-	384	286	433	274	381	289
ʂ	-	-	266	165	-	327	63	-	-	185
ç	-	195	-	276	-	-	-	-	-	-
h	186	248	392	-	-	70	-	-	249	139
j	8	161	-	366	-	-	411	-	355	390
l	14	192	3	249	-	270	372	343	285	29
w	241	-	176	416	-	353	-	-	111	311

Table 32. Vowel Distribution Chart in Kayah

3.1.4.3 Kayah Revised Inventory

All vowels are in contrast by showing the following examples.

Minimal Pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/i/ /e/	167.	ʔiꜜ	‘excrement’	227.	ʔeꜜ	‘to eat’
/i/ /ɛ/	167.	ʔiꜜ	‘excrement’	418.	ʔɛꜜ	‘he/she(3S)’
/e/ /ɛ/	227.	ʔeꜜ	‘to eat’	418.	ʔɛꜜ	‘he/she(3S)’
/i/ /ɛ/	167.	ʔiꜜ	‘excrement’	418.	ʔɛꜜ	‘he/she(3S)’
/a/ /ɛ/	83.	ʔaꜜ	‘to bite’	418.	ʔɛꜜ	‘he/she(3S)’
/a/ /ạ/	351.	ʔaꜜzaꜛ	‘to be deep’	379.	ʔaꜜzạꜛ	‘to be swell’
/a/ /ɜ/	397.	ka˥	‘naked’	149.	kɜꜜ	‘finger’
/ɛ/ /ɜ/	194.	hi˥kɛꜛ	‘blanket’	395.	kɜꜜʔɔꜛ	‘to be deaf’
/e/ /ɜ/	405.	meꜜteꜛ	‘what’	251.	tɜꜜneꜜ	‘to think’
/i/ /ɯ/	212.	miꜜ	‘fire’	295.	mɯꜛ	‘to hit’
/ɯ/ /u/	246.	dɯꜜɲaꜛ	‘to tell’	339.	ʔaꜜduꜜ	‘to be big’
/ɤ/ /u/	108.	pʰɤꜛkja˥	‘spider’	175.	pʰu˥mɛꜛ	‘son-in-law’
/ɤ/ /o/	108.	pʰɤꜛkja˥	‘spider’	44.	tɛꜜpʰoꜛ	‘flower’
/o/ /ɔ/	217.	moꜜ	‘gong’	2.	mo̤ˀ˥	‘sun’
/u/ /o/	130.	kʰaꜛʔuꜜ	‘mouth’	232.	ʔoꜛ	‘to drink’
/ɤ/ /ɔ/	274.	dʒɤ˥klja˥	‘to walk’	289.	dʒɔꜛ	‘to tie’
/ɤ/ /ɜ/	124.	maꜛkɤꜛsʰɯꜜ	‘eyebrow’	149	kɜꜜnɔꜛ	‘finger’
/ɜ/ /ɯ/	360.	dɜ˥ʔjeꜛ	‘this’	385.	ʔaꜜdɯꜛ	‘to be blunt’
/ɯ/ /ɯə/	295.	mɯꜛ	‘to hit’	173.	mɯə̤˥	‘mother’
/ɜ/ /ɯə/	360.	dɜ˥ʔjeꜛ	‘this’	345.	dɯəꜛ	‘to be thick’
/ɤ/ /e/	343.	tʰjaꜜlɤꜛ	‘to be tall’	192.	le˥dɛꜛ	‘mat’
/a/ /ɔ/	83.	ʔaꜜ	‘to bite’	82	ʔɔꜜ	To bark

Table 33. Vocalic Contrast Chart

3.1.5 Kayah Tones

According to this data, there are four contrastive tones in Kayah. Each tone is referred to by demonstrating diacritics. They are high /˥/, high-mid /˦/, mid /ꜛ/ and low /ꜜ/. According to Bryant (1992) there are four tones, which are low (1), mid (3), high-mid (no marking) and high (5). According to this data, the high-mid tone is very often

confused with breathy vowels. Actually, whenever the speaker pronounces the high-mid tone, it can be heard as a breathy vowel. The author at first did not mark breathy vowels because high-mid tone is clearly heard. The author thought that because of the high-mid tone the breathy vowel could be heard especially when the diphthongs /ɯə/ occur with the high-mid tone. To be clear, from that time the author determined to mark both the high-mid tone and the breathy vowel. The shape of the tones will be seen in the following chart.

	High	High-mid	Mid	Low
Shape	˥	˦	˧	˩
	ma˥ (30)	mə̤˦ (424)	me˧ (177)	me˩ (428)

Table 34. Tonal Phoneme Chart

3.1.5.1 Kayah Description and distribution

Minimal pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/˥/ /˦/	30.	[lə̤˦ta˩] ma˥	‘sand’	424.	[ʔo˩] mə̤˦	‘disappear’
/˦/ /˧/	424.	[ʔo˩] mə̤˦	‘disappear’	177.	me˧	‘wife’
/˧/ /˩/	177.	me˧	‘wife’	428.	me˩	‘to do’
/˦/ /˩/	424.	[ʔo˩] mə̤˦	‘disappear’	428.	me˩	‘to do’

Table 35. Tone Contrast Chart

Kayah Distribution of tones in a three syllable word

The following chart shows that three syllable words and their tones are contrast in their own. There are some restrictions among them. The following chart will make clear.

No	Words	gloss	No	Words	gloss
	˥ ˥ ˩			˥ ˩ ˧	
320	dje k^ho kɛ	‘to pay’	179.	vja prɛk^hu	‘elder brother’
	˥ ˥ ˧			˥ ˧ ˩	
243.	dʒe θɛ ɲe	‘to smile’	60.	mɔ lja θɛ	‘Jackfruit’
	˥ ˦ ˧			˥ ˦ ˩	
20.	dɜ bɛ̤ nxɯ	‘north’	22.	dɜ bɛ lja	‘south’
	˥ ˧ ˥			˥ ˩ ˥	
63.	kɔ bi θu	‘pea nut’	262	θɛ pra krɔ	‘to snore’
	˥ ˧ ˧			˥ ˩ ˩	
402	bi k^hɛ te	‘when (future)’	179c	vja prɛ mɔ	‘older sister’

No	Words	gloss	No	Words	gloss
	˦ ˦ ˧			˦ ˩ ˦	
87.	pụ nɯ̤ t^hje	‘Milk’	30.	lọ̤ tɜ ma	‘sand’
	˦ ˦ ˩			˦ ˩ ˧	
16.	pạ̤ hẹ̤ nu	‘yesterday’	179ab	pxɯ prɛk^hu	‘younger brother’
	˦ ˧ ˧			˦ ˩ ˩	
13.	mọ̤ s^hɛ klɛ	‘day’	179cd	pxɯ prɛ mɔ	‘younger sister’

No	Words	gloss	No	Words	gloss
	˧ ˥ ˧			˧ ˥ ˥	
396.	ma t^hɛ dɛ	‘bald’	181.	k^ho bɔ ʂwo	‘friend’
	˧ ˥ ˦			˧ ˦ ˦	
109.	p^hɤ kja dʒɔ	‘spider web’	56.	t^hje s^hipre	‘liquor’
	˧ ˥ ˩			˧ ˩ ˩	
57.	di klwi θɛ	‘banana’	270.	lɯ tɜ prja	‘Ghost’
	˧ ˧ ˩				
124.	ma kɤ s^hxɯ	‘eyebrow’			

No	Words	gloss	No	Words	gloss
	˩ ˩ ˩			˩ ˦ ˥	
314	lɯ tɛ mi	‘to hunt’	188	ka da pʰu	‘window’
	˩ ˩ ˦			˩ ˥ ˩	
148.	tɜ kʰu ku	‘palm’	59.	tɜ kʰja θɛ	‘Mango’
	˩ ˩ ˧			˩ ˧ ˦	
367b	ʔa ri dʒa	‘to be dirty’	422.	hi dɔ ku	‘sleeping area’
	˩ ˩ ˥			˩ ˧ ˧	
340.	ʔa pi ti	‘to be small’	367a	ʔa mụ mja	‘to be dirty’
	˩ ˦ ˩			˩ ˥ ˦	
223.	nɯ ʂja bɛ	‘to smell’	294.	ʔilxɯ tʰje	‘to bathe’
	˩ ˦ ˧			˩ ˦ ˦	
263.	ʔo mji mjạ̈	‘to dream’	284.	ʔi zɤ tʰje	‘to swim’

Table 36. The Distribution of Three Tones Chart

Kayah has four contrastive tones. With three syllable words this means that there are sixty-four possible patterns. Out of these sixty-four patterns, only thirty-five have been seen in three syllable words in Kayah. There are twenty-nine omissions. Generally, the high tone does not occur before any combination of high and high-mid. An initial high-mid tone does not occur before a high tone (i.e. the sequence HM-H-X is not possible). Nor is it observed with the mid tone (i.e. HM-M-X), except in the sequence HM-M-M.

An intial mid tone does not occur with a HM followed by either M or L. High tone general does not occur before another mid tone (except in the sequence M-M-L). And it does not occur with a sequence of L with a H or HM.

Low tone has been observed with all possible sequences except the L-M-H.

3.1.5.2 Kayah Initial consonant tone Correlation

The initial consonants and tones correlation can be shown in the following charts.

Consonants	Tones			
	˥	˧˥	˧	˩
pʰ	174	-	39	213
p	296	86	52	179
b	388	433	215	150
tʰ	123	34	216	93
t	340	151	400	383
d	191	425	385	339
kʰ	59	262	185	135
k	213	7	194	433
ʔ	27	6	232	167
m	61	2	154	217
n	128	88	149	417
r	51	75	33	211

Consonants	Tones			
	˥	˧˥	˧	˩
ŋ	-	226	244	275
θ	162	243	420	38
sʰ	300	56	374	136
z	228	105	76	413
ʃ	128	-	99	279
dʒ	355	433	399	195
ʂ	323	393	368	79
ç	67	-	276	195
h	139	16	249	186
j	258	263	269	161
l	192	29	3	364
w	84	203	111	107

Table 37. Tones and Consonants Co-relationship in Kayah

According to this data, the high-mid tone does not occur with the voiceless bilabial aspirated /pʰ/. The high tone does not occur with the velar nasal /ŋ/.

3.1.5.3 Kayah Tone pattern based on the Luce/Haudricourt analysis

The following chart shows Luce's tone patterns aligned in Haudricourt's 3x3 chart.

	*A	*B	*D
*Aspirated	III	VI	VIII
*Voiceless	II	V	
*Voiced	I	IV	VII

According to the chart that Solnit and Bennett used the aspirated and voiceless rows are merged. The following chart shows Bennett (1992) and Solnit (1991) analyzed Kayah by using the wordlist for initial tone category analysis which are classified in eight groups, see appendix B.

Western Kayah (Bennett 1992, Solnit 1991)

	A	B	D
*Non-voiced	33	11	55
*Voiced	11	45	33

The writer of this thesis analysed the tone patterns using the 3x2 grid as Bennett and Solnit did. This present work suggests the following tone patterns:

Kayah

	A	B	D
*Non-voiced	33	11	55
*Voiced	11	44	33

A comparison between the two results shows that the voiced row is different from what they did. Only the voiced row and column (B) have a breathy tone but the result is (44) that is different from what Bennett and Solnit got the result (45). The column A and D are the same result but the breathy vowel with tone is lost in this data. The difference between Bennett and this work implies a lost of breathy phonation. This would be an area for further research.

3.2 Kayaw

3.2.1 Kayaw Syllable Structure Types

There are two syllable types in Kayaw. They are CVT and CCVT. There are many words with glottal stop in the initial position.

Kayaw CVT Syllable Structure

The syllable structure type of CV^{T} includes a single consonant represented by C, a vowel represented by V and a tone represented by T.

225.	[tʰɛ˥]	‘to wink’
215.	[tɛ˧]	‘candle’
402b	[tɛ˦]	‘when’
337.	[tɛ˩]	‘to be few’

Kayaw CCVT Syllable Structure

The syllable structure type of CCV^T consists of a two consonant clusters, a vowel and a tone.

295.	[pʰle˥]	'to hit'
234.	[pro˥]	'to vomit'
346.	[prɯˤ]	'to be thin'
193.	[kru˩]	'pillow'

3.2.2 Kayaw Consonants

Synchronically, the phonological inventory has 22 consonants. The chart below shows this.

Manners of Articulation	Points of Articulation	Bilabial	Interdental	Alveolar	Post-Alveolar	Palatal	Velar	Glottal
Plosives	vl. Unasp	p		t			k	ʔ
	vl. Asp	pʰ		tʰ			kʰ	
	vd.	b		d			g	
Fricatives	vl		θ		ʃ			h
	vl Asp			sʰ				
	vd					ɟ		
Affricate	vd					dʒ		
Nasals	vd	m		n				
Trill				r				
approx.		w				j		
Lat. Appr				l				

Table 38. Kayaw Consonant Chart

3.2.2.1 Kayaw Plosives

The voiceless unaspirated bilabial plosive /pʰ/ occurs with all vowels except /ɜ/ and [ɤ]. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/pʰ/	[pʰa˩]	(213)	‘ashes’
	[pʰɯ˥]	(139)	‘belly’
	[pʰe˦]	(163)	‘skin’
	[pʰɔ˥]	(306)	‘to cook’
	[pʰo˥]	(44)	‘flower’
	[pʰu˦]	(174)	‘child’
	[pʰɤ˩]	(342)	‘short’
	[pʰi˦]	(423)	‘to take’

There is no distribution restriction for the initial consonant of the voiceless bilabial plosive /p/, other than the central open-mid vowel /ɜ/. It only occurs syllable initial and never occurs as the second element in consonant clusters.

/p/	[pu˩]	(86)	‘cow’
	[pɤ˦]	(205)	‘pot’
	[pa˦]	(281)	‘kick’
	[pi˩]	(268)	‘to shiver’
	[pɯ˦]	(257)	‘to wait’
	[po˦]	(156)	‘shin’
	[pɔ˥]	(8)	‘rainbow’
	[pe˦]	(296)	‘to split’
	[pɛ˦]	(27)	‘mud’

There is no distribution restriction for the initial consonant of the voiced bilabial plosive /b/, other than the central open-mid vowel /ɜ/. It only occurs syllable initial and never occurs as the second element in consonant clusters.

/b/	[bɔ˩]	49.	‘bamboo shoot’
	[bɯ˥]	68.	‘paddy rice’
	[ba˥]	210.	‘plate’
	[bɛ˥]	230.	‘to be full’
	[bu˦]	359.	‘to be near’
	[bɤ˥]	196.	‘to weave’
	[bi˩]	225.	‘to wink’
	[be˥]	406.	‘how many’
	[bo˩]	367.	‘to be dirty’

The voiceless velar plosive /k/ occurs with all vowels except /e/, /ɜ/ and /ɯ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/k/	[ku˩]	382.	‘hot’
	[kɛ˥]	256.	‘to hate’
	[kɔ˥]	90.	‘tail’
	[ki˦]	350.	‘to be narrow’
	[ka˥]	37.	‘forest’
	[kɤ˥]	119.	‘head’
	[ko˥]	59.	‘mango’

The voiceless aspirated velar plosive /kʰ/ occurs with all vowels except /e/ and /ɜ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/kʰ/	[kʰa˦]	313.	‘to shoot’
	[kʰɯ˩]	301.	‘to dig’
	[kʰi˥]	73.	‘tiger’
	[kʰɛ˩]	277.	‘enter’
	[kʰo˥]	181.	‘friend’
	[kʰu˩]	151.	‘buttocks’
	[kʰɔ˩]	155.	‘calf’
	[kʰɤ˩]	75.	‘deer’

The voiced velar plosive /g/ occurs only with the vowels /ɔ/ and /i/. This consonant only occurs syllable initial.

/g/	[gɔ˦]	108.	‘spider’
	[gi˦]	77.	‘Gibbon’

The voiceless aspirated alveolar plosive /tʰ/ occurs with all vowels except /ɜ/ and /e/. It only occurs syllable initial.

/tʰ/	[tʰa˥]	74.	‘bear’
	[tʰu˩]	94.	‘bird’
	[tʰɔ˥]	123.	‘forehead’
	[tʰi˥]	23.	‘water’
	[tʰɤ˩]	386.	‘to be heavy’
	[tʰɛ˦]	355.	‘right side’
	[tʰo˦]	85.	‘pig’
	[tʰɯ˦]	290	‘to wipe’

The voiceless unaspirated alveolar plosive /t/ occurs with all vowels, except /u/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/t/	[tọ˩]	305.	‘to pound’
	[tọ˦]	101.	‘fish’
	[tɛ˥]	215.	‘candle’
	[ta˥]	265.	‘medicine’
	[ti˦]	350.	‘to be narrow’
	[tɤ˦]	52.	‘kapok’
	[tẹ˦]	118.	‘scorpion’
	[tɜ˩]	322.	‘one’
	[tɯ˦]	425.	‘split w/knife’

The voiced alveolar plosive /d/ occurs with all vowels, except the central open-mid vowel /ɜ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/d/	[de˩]	18.	‘year’
	[dɤ˥]	183	‘village’
	[di˩]	98.	‘egg’
	[dɔ˩]	352.	‘to be shallow’
	[du˩]	339.	‘to be big’
	[dɯ˥]	345.	‘to be thick’
	[da˥]	393	‘to be tired’
	[dɛ˥]	78.	‘rabbit’
	[do˥]	307.	‘to boil’

The voiced glottal plosive /ʔ/ occurs with all vowels except /ɜ/ and /ɔ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/ʔ/	[ʔi˦]	167.	‘excrement’
	[ʔɤ˩]	82.	‘to bark’
	[ʔɛ˩]	418.	‘he/she 3S’
	[ʔo˥]	232.	‘to drink’
	[ʔa˩]	227.	‘to eat’
	[ʔe˥]	64.	‘ginger’
	[ʔɯ˩]	11.	‘shadow’
	[ʔu˩]	228.	‘to swallow’

3.2.2.2 Kayaw Nasals

The voiced bilabial nasal /m/ occurs with all vowels except /ɜ/ and /u/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/m/	[mi˥]	166.	‘pus’
	[mo˩]	217.	‘gong’
	[mɤ˩]	173.	‘mother’
	[ma˩]	428.	‘to do/make’
	[mɯ˩]	233.	‘to be drunk’
	[mɔ˦]	175.	‘son-in-law’
	[mɐ̈˦]	123.	‘forehead’
	[mɛ˩]	92.	‘elephant tusk’

The voiced alveolar nasal /n/ is not distributed with the vowels of /ɛ/, /ɜ/ and /o/. All of the rest of the vowels occur with it. It only occurs initially, it never occurs as the second element in consonant clusters.

/n/	[nɤ˦]	88.	‘buffalo horn’
	[na˩]	89.	‘buffalo’
	[ni˦]	361.	‘that’
	[nɔ˦]	271.	‘to sit’
	[nɯ˦]	223.	‘to smell’
	[nu˩]	87.	‘milk’
	[ne˩]	158.	‘heel’

3.2.2.3 Kayaw Fricatives and affricates

The voiceless dental fricative /θ/ occurs with all vowels except the central vowel /ɜ/. It occurs in the syllable initial position only.

/θ/	[θi˥]	56.	‘liquor’
	[θeꜜ]	30.	‘sand’
	[θɛꜜ]	67.	‘red pepper’
	[θa˩]	57.	‘banana’
	[θɯ˩]	79.	‘porcupine’
	[θu˥]	162.	‘fat’
	[θɤ˥]	378.	‘rotten’
	[θo˥]	112.	‘cockroach’
	[θɔꜜ]	143.	‘liver’

The voiceless post-alveolar fricative /ʃ/ has an allophone [ʂ]. It occurs before the vowels /i/, /e/, /ɛ/, /u/, but it does not occur before the vowels of /a/, /ɔ/, and /ɤ/. It only occurs in the syllable initial position.

Rule 7: Palatalization: /ʃ/ ⟶ [ʂ] / _____ /a/, /ɔ/, /ɤ/

/ʃ/ ⟶ [ʃ] _____ /i/, /e/, /ɛ/, /u/

/ʃ/	[ʃi˥]	99.	‘chicken’
	[ʃu˥]	159.	‘bone’
	[ʃɛꜜ]	7.	‘rain’
	[ʃe˩]	305.	‘to pound’

The retroflex fricative [ʂ] occurs with the three vowels of /ɜ/, /ɔ/ and /ɤ/ and never occurs with the rest of the vowels. It only occurs in the syllable initial position.

/ʃ/	[ʂa˩]	4.	‘star’
	[ʂɤ˥]	300.	‘to plant’
	[ʂɔꜜ]	200.	‘to sew’

The alveolar aspirated /sʰ/ occurs with /i/, /a/, /ɯ/, /ɔ/, /u/ and /o/. It only occurs in the syllable initial position.

/sʰ/	[sʰiꜜ]	392.	‘to be weak’
	[sʰa˥]	259.	‘to be afraid’
	[sʰɯ˥]	246.	‘to tell’
	[sʰɔ˩]	197.	‘to dye’
	[sʰu˩]	96.	‘feather’
	[sʰo˥]	41.	‘thorn’

The glottal fricative /h/ occurs with the vowels of /e/, /a/, /ɛ/, /o/, and /ɔ/. It only occurs in the initial position. The phoneme glottal fricative /h/ has an allophone of the voiceless velar fricative [x]. The phoneme /h/ occurs elsewhere, but [x] never does. The voiceless velar fricative [x] only occurs with /u/ and /ɯ/. It never occurs where the phoneme /h/ does. Therefore it is an allophone of the phoneme /h/. It only occurs in the initial position.

Rule 8. Velarization: /h/ ⟶ [x] / _____ /e/, /a/, /ɛ/, /o/, and /ɔ/

/h/ ⟶ [h] /else where

/h/	[ha˥]	26.	'earth/soil'
	[ho˩]	48.	'bamboo'
	[hɛ˥]	377.	'to be spicy'
	[hɔ˩]	19.	'east'
	[heˀ]	416.	'I. 1S'
	[xɯˀ]	70.	'pounded rice'
	[xu˩]	248.	'to answer'

The palatal fricative /ʝ/ is distributed with the vowels of /i/, /a/, /u/, /o/, /ɔ/ and /ɤ/. It only occurs in the initial position. Sometimes it is heard as /ʑ/, then the palatal fricative /ʝ/ and /ʑ/ are free variation. Each village has a slightly different pronunciation though they are very near and the same dialect. Therefore each individual utterance may be a little bit different. Sometimes though they are from the same village, what one person pronounces does not agree with what another pronounces.

/ʝ/	[ʝɔ˥]	57.	'banana'
	[ʝa˧]	244.	'to laugh'
	[ʝɤ˧]	76.	'monkey'
	[ʝi˧]	358.	'to be far'
	[ʝoˀ]	431.	'disgusting'
	[ʝu˧]	80.	'rat'

The alveolar affricate /dʒ/ occurs in the syllable initial position. It occurs with all vowels except the central vowel of /ɜ/.

/dʒ/	[dʒi˩]	356.	‘left side’
	[dʒe˩]	311.	‘to play’
	[dʒɛ˦]	348.	‘to be skinny’
	[dʒa˩]	392.	‘to be weak’
	[dʒɯ˦]	50.	‘mushroom’
	[dʒu˩]	211.	‘firewood’
	[dʒɤ˩]	351.	‘to be deep’
	[dʒo˩]	381.	‘to be wet’
	[dʒ˦]	289.	‘to tie’

3.2.2.4 Kayaw Approximants

The phoneme palatal approximate /j/ occurs with the vowels of /e/, /a/, /u/, /ɛ/, /o/, /ɔ/ and /ɤ/. It occurs in the initial and second position in consonant clusters. Sometimes it is heard as /ʒ/. But mostly the pronunciation /j/ is always given when he/she was asked for sure.

/j/	[je˦]	415.	earthworm’
	[ja˩]	161.	‘flesh’
	[jɔ˩]	293.	‘to launder’
	[ju˦]	111.	‘termite’
	[jɤ˥]	390.	‘to be slow’
	[jɛ˦]	326.	‘five’
	[jo˥]	379.	‘to be swell’

The phoneme voiced labial-velar approximate /w/ occurs with vowels /u/, /i/, /ɛ/, /a/, and /e/. The phoneme occurs both syllable initial and the second position in clusters.

/w/	[wu˥]	176.	‘husband’
	[wi˦]	97.	‘to fly’
	[we˦]	353.	‘to be round’
	[wɛ˩]	179.	‘eld. brother/sister
	[wa˩]	303.	‘to winnow’

The alveolar lateral approximate /l/ occurs with all vowels except the /ɜ/. It occurs in the initial and the second position.

/l/	[lɤ˦]	335.	‘all’
	[la˦]	3.	‘moon’
	[lɛ˩]	349.	‘to be wide’
	[lɯ˦]	302.	‘to bury’
	[li˩]	242.	‘to lick’
	[le˦]	154.	‘knee’
	[lo˦]	407.	‘stream’
	[lɔ˦]	344.	‘to be short’
	[lu˩]	294.	‘to bathe’

The alveolar trill /r/ occurs with all of the vowels except /ɜ/. It not only occurs in the syllable initial position but it also occurs as the second element in consonant clusters.

/r/	[ri˩]	51.	‘cane/rattan’
	[re˦]	353.	‘to be round’
	[rɛ˥]	351.	‘to think’
	[ra˦]	323.	‘two persons’
	[rɯ˩]	42.	‘root’
	[ru˦]	299.	‘to grind’
	[rɤ˦]	160.	‘rib’
	[ro˩]	383.	‘to be cold’
	[rɔ˦]	91.	‘elephant’

3.2.3 Kayaw Consonant Clusters

All consonants occur in the initial position but only four consonants occur as the second element. Unlike Kayah, there is only one type of clusters such as, CCV.

Second consonants	l, r, w, j

Table 39. Initial and Second Consonant Chart

3.2.3.1 Kayaw Observed consonant clusters

The CCV Consonant Clusters With /w/ in Kayaw

There are four kinds of clusters with /w/ in Kayaw. They are /hw/, /k^hw/, /kw/ and /lw/.

Cons Clusters	No	Words	gloss
hw	115.	hwɛ˩	‘Bee’
kʰw	330.	kʰwi˥	‘nine’
kw	137.	kwɛ˦	‘to shave’
lw	325.	lwi˦	‘four’

The CCV Consonants Clusters With /r/ in Kayaw

There are six CCV consonants clusters with [r] in Kayaw. They are /pr/, /pʰr/, /kr/, /kʰr/, /tr/ and /θr/.

Cons Clusters	No	Words	gloss
pr	144.	pre˦	‘intestines’
pʰr	339.	pʰru˥	‘to be big’
kr	273.	kre˦	‘to kneel’
kʰr	267.	kʰre˩	‘to scratch’
tr	15.	tri˩	‘noon’
θr	355.	θrɛ˦	‘right side’

The CCV Consonants Clusters With /l/ in Kayaw

There are four consonant clusters with /l/ in Kayaw. They are /pl/, /pʰl/, /kl/ and /kʰl/.

Cons Clusters	No	Words	gloss
pl	219.	pl̤a˦	‘arrow’
pʰl	295.	pʰle˥	‘to hit’
kl	208.	kle˩	‘pestle’
kʰl	185	kʰli˦	‘boat’

The CCV Consonants Clusters With /j/ in Kayaw

There are two consonant clusters with /j/ in Kayaw. They are /θj/and /tʰj/.

Cons Clusters	No	Words	gloss
θj	164.	θju˩	‘blood’
tʰj	281.	tʰju˥	‘to kick’

3.2.3.2 Kayaw Description and distribution

The second element /l/ only co-occurs with the consonants of the /p/, /pʰ/, /k/ and /kʰ/. The second element /r/ only co-occurs with the consonants /p/, /pʰ/, /k/, /θ/ and /kʰ/. The second element /j/ only co-occurs with the consonants /θ/ and /tʰ/, but the second element /w/ co-occurs with the consonants /h/, /l/, /k/ and /kʰ/.

Initial consonants													
Second consonants		p	pʰ	b	t	tʰ	d	k	kʰ	g	ʔ	m	n
	l	219	125	-	-	-	-	151	185	-	-	-	-
	r	327	28	-		-	-	291	267	-	-	-	-
	w	-	-	-	-	-	-	137	330	-	-	-	-
	j	-	-	-	-	281	-	-	-	-	-	-	-

Initial Consonants												
Second Consonants		θ	ʃ	dʒ	ʂ	ʝ	x	h	j	l	w	r
	l	-	-	-	-	-	-	-	-	-	-	-
	r	355	-	-	-	-	-	-	-	-	-	-
	w	-	-	-	-	-	-	115	-	325	-	-
	j	164	-	-	-	-	-	-	-	-	-	-

Kayaw Consonant distributions

All consonants occur in the initial position and between vowels but there is no data to support any consonant occurring in the syllable final.

First Consonants												
	p	pʰ	b	t	tʰ	d	k	kʰ	g	ʔ	m	n
# ---------	86	213	367	101	32	106	11	185	109	232	217	417
$ ----- V	27	44	230	350	207	145	119	202	77	296	140	88
-------- V	-	-	-	-	-	-	-	-	-	-	-	-

First Consonants												
	θ	sʰ	ʃ	dʒ	ʂ	ʝ	x	h	j	l	w	r
# --------	162	197	186	289	300	76	70	26	161	3	97	51
$ ----- V	57	41	136	320	387	199	222	65	252	1	84	181
-------- #	-	-	-	-	-	-	-	-	-	-	-	-

Kayaw Consonant contrasts

The following chart shows the contrast of minimal pairs in Kayaw.

Minimal Pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/p//pʰ/	281.	paꜜ	‘to kick’	213.	pʰaꜛ	‘ashes’
/p//b/	281.	paꜜ	‘to kick’	210.	baꜛ	‘plate’
/b//m/	210.	baꜛ	‘plate’	428.	maꜛ	‘to do’
/b//w/	363.	buꜜ	‘white’	176.	wuꜛ	‘husband’
/m//w/	182	miꜛ	‘name’	97.	wiꜜ	‘to fly’
/t//tʰ/	305.	to̤ꜛ	‘to pound’	85.	tʰoꜜ	‘pig’
/t//d/	305.	to̤ꜛ	‘to pound’	307.	doꜛ	‘to boil’
/d//n/	417.	naꜜ	‘thou (2S)’	296.	daꜜ	‘to split’
/d//θ/	106.	diꜛ	‘frog’	420.	θiꜛ	‘you (pl)’
/d//dʒ/	289.	dʒɔꜜ	‘to tie’	221.	dɔꜛ	‘knife’
/k//kʰ/	90.	kɔꜛ	‘tail’	153.	kʰɔꜛ	‘thigh’
/m//n/	428.	maꜛ	‘to do’	417.	naꜜ	‘thou (2S)’
/h//k/	226	haꜛ	‘to weep’	383.	kaꜛ	‘to be cold’
/j//w/	161.	jaꜛ	‘flesh’	303.	waꜛ	‘to winnow’
/r//l/	251.	rɛꜘ	‘to think’	349.	lɛꜛ	‘to be wide’
/l//n/	3.	laꜛ	‘moon’	417	naꜜ	‘you (pl)’
/n//r/	223.	nɯꜜ	‘to smell’	42.	rɯꜛ	‘root’
/dʒ//ɟ/	241.	dʒuꜜ	‘to suck’	80.	ɟuꜜ	‘rat’
/ʔ//h/	227.	ʔaꜛ	‘to eat’	26.	haꜛ	‘earth/soil’
/ʔ//kʰ/	227.	ʔaꜛ	‘to eat’	376.	kʰaꜛ	‘to be bitter’
/ʔ//j/	227.	ʔaꜛ	‘to eat’	161.	jaꜛ	‘flesh’

Table 40. The Contrasts of Minimal Pairs

3.2.4 Kayaw Vowels

There are nine pure vowels. No diphthongs were observed in Kayaw.

3.2.4.1 Kayaw Observed Vowel Chart

The following chart shows the vowels that occur accompanied with phonemic consonants. The vowel [ɜ] only occurs with the consonant /t/ and never occurs elsewhere. It makes the writer suspicious but a lot of words associating with the consonant /t/. The vowel /u/ never occurs with the consonant /t/. Thus the vowel /u/ has an allophone with the vowel [ɜ].

Rule 9. Weakening: /u/ ⟶ [ɜ] / t_____

⟶ [u] /elsewhere

	Front un-rounded	Back un-rounded	Back rounded
Close	i	ɯ	u
Close-mid	e	ɤ	o
Open-mid	ɛ		ɔ
Open-mid			
Open	a		

Table 41. Vowel phonemic chart

3.2.4.2 Kayaw Phonemic Description

The following chart shows the vowels that occur accompanied with phonemic consonants.

Consonants	Vowels									
	i	e	ɛ	a	ɜ	ɯ	u	ʏ	o	ɔ
pʰ	423	132	-	213	-	139	174	342	44	306
p	268	296	27	281	-	257	86	205	156	8
b	225	406	230	210	-	68	359	196	367	48
tʰ	23	-	355	74	-	290	94	386	85	123
t	350	118	215	265	322	425	-	52	305	101
d	98	18	78	393	-	345	339	183	307	352
kʰ	73	-	277	313	-	301	151	75	181	155
k	350	-	256	37	-	-	382	119	59	90
g	77	-	-	-	-	-	-	-	-	108
ʔ	167	64	418	227	-	11	352	82	232	-
m	166	123	92	428	-	233	-	173	217	175
n	361	158	-	89	-	223	87	88	-	271
r	51	353	251	323	-	42	299	160	383	91
ʃ	99	305	7	-	-	-	159	-	-	-
θ	56	30	67	57	-	79	162	378	112	143
sʰ	392	-	-	259	-	246	96	-	41	197
dʒ	356	311	348	392	-	50	211	351	381	289
ʂ	-	-	-	4	-	-	-	300	-	200
ɟ	358	-	-	244	-	-	80	76	431	57
x	-	-	-	-	-	70	248	-	-	-
h	-	416	377	26	-	-	-	-	49	19
j	-	415	326	161	-	-	111	390	379	293
l	242	154	349	3	-	302	294	335	407	344
w	97	353	179a	303	-	-	176	-	-	-

Table 42. Vowel Distributions Chart

Kayaw Vocalic Contrasts

Minimal Pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/i/ /e/	312.	/miꜜ/	‘to dance’	154.	/meꜛ/	‘knee’
/i/ /ɛ/	288.	/ʔiꜜ/	‘to give’	418.	/ʔɛꜛ/	‘he/she/it’
/e/ /ɛ/	83.	/ʔeꜛ/	‘to bite’	418.	/ʔɛꜛ/	‘he/she/it’
/a/ /ɛ/	428.	/maꜛ/	‘to do’	92.	/mɛꜛ/	‘Elephant tusk’
/a/ /ɜ/	334.	/taꜜ/	‘to be many’	353.	/tɜꜛ/	‘to be round’
/ɛ/ /ɜ/	337.	/tɛꜛ/	‘to be few’	322.	/tɜꜛ/	‘one’
/e/ /ɜ/	283.	/teꜛ/	‘to fall’	322.	/tɜꜛ/	‘one’
/i/ /ɯ/	212.	/miꜛ/	‘fire’	233.	/mɯꜛ/	‘be drunk’
/ɯ/ /u/	42.	/rɯꜛ/	‘root’	102.	/ruꜛ/	‘snake’
/ɤ/ /u/	160.	/rɤꜜ/	‘rib’	102.	/ruꜛ/	‘snake’
/ɤ/ /o/	160.	/rɤꜜ/	‘rib’	398.	/roꜜ/	‘be good’
/o/ /ɔ/	255.	/moꜜ/	‘to love’	175.	/mɔꜜ/	‘son in law’
/u/ /o/	294.	/luꜛ/	‘to bathe’	287.	/loꜛ/	‘to flow’
/ɤ/ /ɔ/	29.	/lɤꜛ/	‘stone’	285.	/lɔꜜ/	‘to float’
/ɤ/ /ɜ/	52.	/tɤꜜ/	‘kapok’	322.	/tɜꜛ/	‘one’
/ɜ/ /ɯ/	322.	/tɜꜛ/	‘one’	188.	/tɯꜛ/	‘window’
/ɤ/ /e/	52.	/tɤꜜ/	‘kapok’	283.	/teꜛ/	‘to fall’
/a/ /ɔ/	428.	/maꜛ/	‘to do’	175.	/mɔꜜ/	‘son in law’

Table 43. Kayaw Vocalic Contrasts Chart

3.2.5 Kayaw Tones

3.2.5.1 Kayaw Observed tones

According to this data, there are four contrastive tones in Kayaw. Each tone is referred to by demonstrating diacritics. They are high /˥/, high-mid /˦/, mid /˧/ and low /˩/. The shape of the tone diacritics will be seen in the following chart.

	High	High-mid	Mid		Low	
Shape	˥	˦	˧	˧̈	˩	˩̈
	θɔ˥ 396	θɔ˦ 256	θɔ˧ 323	tɔ˧̈ 101	θɔ˩ 266	tɔ˩̈ 305

Table 44. Demonstrating Diacritic Tones in Kayaw

3.2.5.2 Kayaw Description (including allophones)

Kayaw Tone Contrasts

Minimal Pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/˥/ /˦/	396.	θɔ˥	'bald'	256.	θɔ˦	'to hate'
/˦/ /˧/	256.	θɔ˦	'to hate'	323.	θɔ˧	'two persons'
/˧/ /˩/	323.	θɔ˧	'two persons'	266.	θɔ˩	'to itch'
/˦/ /˩/	256.	θɔ˦	'to hate'	266.	θɔ˩	'to itch'
/˥/ /˩/	396.	θɔ˥	'bald'	266.	θɔ˩	'to itch'

Table 45. Tone Contrasts in Kayaw

Distribution of Tones in a Three Syllable Words

There are some three syllables of tones that are distributed in Kayaw. The three syllable words of tones that are contrast in each other can be seen in the following chart.

No	Words	gloss	No	Words	gloss
	˥ ˧ ˩			˥ ˩ ˦	
229.	pʰu θɔ wi	'to be hungry'	10.	klɔ mɯ pri	'thunder'
	˥ ˧ ˧			˥ ˩ ˧	
402a	ba kʰɔ tɛ	'when (past)'	6.	mɯ ʃi lɔ	'mist'
	˥ ˦ ˩			˥ ˩ ˩	
147.	ple di la	'armpit'	125.	mɯ ki plɤ	'eye'
	˥ ˩ ˥				
126.	mɯ ki pʰe	'eyelid'			

No	Words	gloss	No	Words	gloss
	˧ ˥ ˧			˧ ˧ ˧	
216.	tʰɤ mo kɔ	‘drum’	24.	tʰi ple lo̤	‘river’
	˧ ˧ ˧			˧ ˧ ˩	
53.	dɔ kʰlɛ bo	‘sugarcane’	20.	kʰo tɔ tʰɔ	‘west’
	˧ ˧ ˧			˧ ˩ ˧	
296.	dɯ tʰa tɯ	‘to split’	188.	tɯ pɯ ku	‘window’
	˧ ˧ ˥			˧ ˩ ˧	
253	θe pʰe na	‘to forget’	17.	dɯ mɯ ro	‘tomorrow’
	˧ ˧ ˩			˧ ˩ ˩	
59.	θo ko θa	‘mango’	186.	da li wu	‘House lizard’

No	Words	gloss	No	Words	gloss
	˧ ˥ ˧			˧ ˧ ˧	
315.	ma θi ta	‘to kill’	235.	tʰɯ pri tʰi	‘to spit’
	˧ ˧ ˧			˧ ˧ ˥	
286.	lɔ tʰi kɔ	‘to sink’	329.	pra θɔ ʂɔ	eight persons
	˧ ˧ ˧			˧ ˩ ˩	
270.	da ta na	‘ghost’	150.	dʒɯ θi mi	‘fingernail’
	˧ ˧ ˧			˧ ˩ ˥	
274.	ʂa prɛ lɛ	‘to walk’	135.	kʰa ʃi kɔ	‘chin’
	˧ ˧ ˩				
333.	pra to tʰo	‘thousand’			

No	Words	gloss	No	Words	gloss
	˩ ˥ ˥			˩ ˧ ˧	
395.	na ku ʔɤ	‘to be deaf’	374.	ʔɛ ro ba	‘to be sweet’
	˩ ˥ ˩			˩ ˧ ˧	
363.	ʔɛ bu ʂɔ	‘white’	426.	ʔɛ re we	‘to bend’
	˩ ˧ ˧			˩ ˧ ˩	
180.	pɯ ma kʰo	‘young brother’	151.	kʰu klekʰu	‘buttocks’
	˩ ˧ ˩			˩ ˩ ˥	
154.	kʰɔ le me	‘knee’	65.	pra ho bu	garlic
	˩ ˧ ˥			˩ ˩ ˧	
347.	ʔo klo li	‘naked’	158.	kʰɔ ne kɔ	‘heel’
	˩ ˧ ˧			˩ ˩ ˩	
372.	ʔɛ lɔ lu	‘to be the same’	66.	θu bu θa	‘corn’

Table 46. The Distribution of Three Tones Chart in Kayaw

There are four contranstive tones in Kayaw. With three syllable words this means that there are sixty-four possible patterns. Out of these sixty-four possible patterns, there are only thirty-eight observed patterns on three syllable words in Kayah. There are twenty-six restrictions in this data. The high tone never occurs before another high tone or HM of the second syllable. The high-mid /˦/ does not occur with a sequence of High and High or High-mid. The mid tone does not occur before a sequence of H and H or HM. There is a tendency for high tone to not occur as the middle tone in a three tone word.

3.2.5.3 Kayaw Initial Consonant tone Correlations

Consonants	Tones			
	˥	˦	˧	˩
pʰ	126	39	72	213
p	27	8	27	86
b	406	20	215	150
tʰ	225	32	207	386
t	337	215	101	337
d	273	296	145	106
kʰ	73	181	313	155
k	395	37	216	225
g	-	-	108	-
ʔ	395	232	296	350
m	140	261	175	217
n	328	270	417	88

Consonants	Tones			
	˥	˦	˧	˩
θ	420	162	143	57
sʰ	41	259	392	96
ʃ	272	304	327	135
dʒ	241	204	150	211
s̪	318	300	387	279
ɟ	431	57	76	247
x	70	222	-	248
h	416	67	27	48
r	33	326	329	51
j	435	379	326	434
l	343	372	276	242
w	330	176	426	186

Table 47. Kayaw Initial Consonant Tone Correlations Chart

This table shows that there is not restrictions of the relationship between initial consonant and tone, except for the voiced velar stop /g/ which only occurs with the mid tone and the voiceless velar fricative /x/, which does not occur with the mid tone.

3.2.5.4 Kayaw Tone pattern analysis

The following chart shows Luce's tone patterns aligned in Haudricourt's 3 x 3 chart and it also shows how Bennett (1992) tone pattern.

Kayaw (Bennett 1992)

	A	B	D
*Non-voiced	55	11	33
*Voiced	55	11	33

The data used in this thesis produced a different tone chart of Bennett and Solnit. The most significant differences are in the protovoiced –A cell where the tone is not rather than high and the protovoiced –D cell which has no breathy phonation. The difference between two analysis would be an area for further research.

Kayaw (Myar 2003)

	A	B	D
*non-voiced	44	11	33
*Voiced	33	11	33

3.3 Monumanaw

3.3.1 Monumanaw Syllable Structure

There are two syllable types in Monumanaw. They are CVT and CCVT. However the CCVT occurs rather infrequently in Monumanaw.

Monumanaw CVT Syllable Structure

The syllable structure type of CV^T includes a single consonant represented by C, a vowel represented by V and a tone represented by T.

209.	'spoon'	lo˥
372.	'be the same'	lo˦
210.	'plate'	lo˧
413.	'water leech'	lo˩

Monumanaw CCVT Syllable Structure

The syllable structure type of CCV^T consists of a two consonant cluster, a vowel and a tone. There are 14 types of consonant clusters. They can be seen in the following table.

218.	/kʰli˥/	'bow/crossbow'
159.	/kʰwi/	'Bone'
73.	/kʰje/	'tiger'
184.	/klɛ/	'road'
267.	/kro˥/	'to scratch'
165.	/kwi˥/	'Sweat'
397.	/lje/	'naked'
329.	/lwi˥	'eight'
55.	/pʰje˩/	'opium'
295.	/pʰle˥/	'to hit'
389.	/pʰwɛ˩/	'to be fast'
219.	/pla˩/	'arrow'
144.	/pwe˩/	'intestines/buy'
81.	/tʰwi˥/	'dog'

3.3.2 Monumanaw Consonants

The phoneme chart can be seen as follows.

Monumanaw Phonemic Consonants

Manners of articulation	Points of articulation	Bilabial	Alveolar	Post-[illegible]	Retroflex	Palataltal	Velar	Glottal
Plosives	vl. Unasp	p	t				k	ʔ
	vl. Asp	pʰ	tʰ				kʰ	
	vd.	b	d				g	
Fricatives	vl			ʃ	ʂ	ɟ		h
Affricate	vl		tsʰ					
	vd					dʒ		
Nasals	vd	m	n					
Trill			r					
approx.		w				j		
Lat. Appro			l					

Table 48. Monumanaw Consonants

The consonant inventory of Monumanaw includes 22 consonants. In this data, [sʰ] only occurs before vowels /a/, and /ɔ/. In contrast, /ʃ/ occurs before vowels /i/, /e/ and /u/. Thus, [sʰ] is an allophone of the phoneme /ʃ/. The consonant [x] only occurs before back close rounded vowel /u/ while /h/ never does. Thus, [x] is an allophone of the phoneme /h/. In most cases [v] only occurs before vowel /o/. /w/ occurs elsewhere, but there is an exception to this rule. In number (281) ‘to throw’ /veɻkɛɻ/ is the only example that is found in this data having restriction of this rule. Thus, [v] is an allophone of the phoneme /w/.

3.3.2.1 Monumanaw Plosives

The voiceless unaspirated bilabial plosive /pʰ/ occurs with the vowels /u/, /ɔ/, /a/, /o/ and /e/. It only occurs syllable initial and never as the second element in consonant clusters.

/pʰ/	[pʰu˩]	139.	'belly'
	[pʰa˩]	172.	'father'
	[pʰo˩]	44.	'flower'
	[pʰɔ˩]	39.	'branch'
	[pʰe˥]	40.	'bark'

There are only two vowel restrictions /ɯ/ and /ɤ/ that occur with the voiceless bilabial plosive /p/. This consonant only occurs syllable initial and never as the second element in consonant clusters.

/p/	[po˩]	86.	'cow'
	[pe˩]	147.	'armpit'
	[pi˥]	134.	'gums'
	[pɔ˩]	434.	'difficult'
	[pɜ˩]	142.	'lungs'
	[pu˩]	180.	'younger brother'
	[pɛ˩]	27.	'mud'
	[pa˩]	419	'we'

The voiced bilabial plosive /b/ occurs with the vowels of /ɯ/, /ɛ/, /ɜ/ and /i/. It only occurs syllable initial and never occurs as the second element in consonant clusters.

/b/	[bɔ˩]	49.	'bamboo shoot'
	[bɤ˩]	196.	'to weave'
	[ba˩]	207.	'mortar'
	[be˩]	354.	'to be full'
	[bo˥]	347.	'to be fat'
	[bu˥]	68.	'paddy rice'

The voiceless aspirated alveolar plosive /tʰ/ with distributed in the vowels of /ɯ/, /i/, /e/ and /ɜ/. The consonant only occurs syllable initial, it never occurs as the second element in consonant clusters.

/tʰ/	[tʰɤ˩]	216.	‘drum’
	[tʰa˩]	32.	‘gold’
	[tʰɔ˥]	123.	‘forehead’
	[tʰu˥]	31.	‘lime’
	[tʰo˩]	341.	‘to be long’
	[tʰɛ˥]	225.	‘to wink’

The voiceless unaspirated alveolar plosive /t/ is generally distributed with all vowels except the close unrounded back vowel /ɯ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/t/	[tɤ˩]	305.	‘to pound’
	[tɛ˩]	405.	‘what’
	[ti˩]	405.	‘what’
	[tu˥]	342.	‘to be short’
	[to˩]	208.	‘pestle’
	[te˩]	337.	‘to be few’
	[tɔ˩]	312.	‘to dance’
	[ta˩]	107.	‘insect’
	[tɜ˩]	146.	‘Elbow’

The voiced alveolar plosive /d/ is generally distributed with all vowels except the close unrounded back vowel /ɯ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/d/	[di˥]	98.	‘egg’
	[de˩]	69.	‘cooked rice’
	[do˥]	339.	‘to be big’
	[dɔ˥]	352.	‘to be shallow’
	[du˩]	345.	‘to be thick’
	[dɛ˩]	281.	‘to kick’
	[da˥]	296.	‘to split’
	[dɜ˥]	257.	‘to wait’
	[dɤ˩]	195.	‘clothing’

There are three restriction vowels with the voiceless aspirated velar plosive /kʰ/. They are /e/, /ɜ/ and /ɯ/. The consonant only occurs syllable initial, it never occurs as the second element in consonant clusters.

/kʰ/	[kʰa˥]	135.	‘chin’
	[kʰo˥]	26.	‘earth/soil’
	[kʰɤ]	36.	‘cave’
	[kʰɔ˩]	181.	‘friend’
	[kʰi˩]	134.	‘gums’
	[kʰu˥]	265.	‘medicine’
	[kʰɛ˥]	319.	‘to exchange’

Like voiceless aspirated velar plosive /kʰ/, there are three vowels which do not occur with the voiceless velar plosive /k/. They are /e/, /ɜ/ and /ɯ/. The consonant only occurs syllable initial, it never occurs as the second element in consonant clusters.

/k/	[ka˩]	422.	‘sleeping area’
	[ko˩]	382.	‘to be hot’
	[kɤ˩]	74.	‘bear’
	[kɔ˥]	117.	‘butterfly’
	[ke˩]	112.	‘cockroach’
	[ku˩]	221.	‘firewood’
	[kɛ˥]	308.	‘to burn’

The voiced velar plosive /g/ occurs only with the two vowels of /ɔ/ and /u/. The consonant only occurs syllable initial.

/g/	[gɔ˩]	90.	‘tail’
	[gu̟˩]	50.	‘mushroom’

The glottal plosive /ʔ/ occurs with all vowels except /ɜ/ and /ɯ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/ʔ/	[ʔe˥]	167.	‘excrement’
	[ʔa˩]	418.	‘he/she/it’
	[ʔɛ˥]	27.	‘mud’
	[ʔu˥]	11.	‘shadow’
	[ʔɤ˥]	82.	‘to bark’
	[ʔo˩]	232.	‘to drink’
	[ʔɔ˥]	100.	‘duck’
	[ʔi˥]	288.	‘to give’

3.3.2.2 Monumanaw Fricatives and Affricates

[sʰ] only occurs before /a/, and /ɔ/. In contrast, [ʃ] occurs before vowels /i/, /e/ and /u/. Thus, [ʃ] is interpreted as an allophone of /sʰ/. [sʰ] occurs only syllable initial.

Rule 10. Palatalization /sʰ/ ⟶ [ʃ] / ____ V [-open]

/sʰ/ ⟶ [sʰ] /elsewhere

/ʃ/	[ʃe˩]	99.	'chicken'
	[ʃi˩]	23.	'water'
	[ʃu˩]	298.	'to stab'
	[sʰɔ˥]	303.	'to winnow'
	[sʰa˩]	259.	'to be afraid'

The retroflex fricative /ʂ/ occurs with all vowels except /ɜ/. It occurs only syllable initial.

/ʂ/	[ʂɯ˩]	257.	'to wait'
	[ʂe˩]	420.	'you (2P)'
	[ʂi˩]	269.	'to die'
	[ʂɛ˥]	67.	'red pepper'
	[ʂu˥]	79.	'porcupine'
	[ʂa˥]	4.	'star'
	[ʂɤ˥]	38.	'tree'
	[ʂɔ˥]	143.	'liver'
	[ʂo˥]	96.	'feather'

The glottal fricative /h/ and the velar fricative [x] are allophones. [x] only occurs before /u/ while [x] occurs elsewhere. Thus, /h/ has an allophone [x]. /h/ occurs only in syllable initial.

Rule 11. Velarization: /h/ ⟶ [x] /____u

/h/ ⟶ [h] /elsewhere

/h/	[hi˥]	186.	‘house’
	[he˩˧]	416.	‘I (1S)’
	[hɛ˥]	377.	‘to be spicy’
	[ha˥]	26.	‘earth/soil’
	[ho˥]	65.	‘garlic’
	[xu˩˧]	70.	‘pounded rice’

The voiced palatal fricative /ʝ/ occurs with /i/, /a/, /o/, /e/ and /ɤ/. Sometimes it is heard as /ʒ/ or /ʑ/. But the pronunciation of /ʝ/ is always given wherever the data was checked. It only occurs in the syllable initial.

/ʝ/	[ʝɤ˩˧]	76.	‘monkey’
	[ʝo˩˧]	411.	‘pangolin’
	[ʝe˩˧]	358.	‘to be far’
	[ʝa˩˧]	244.	‘to laugh’
	[ʝi˩˧]	247.	‘to shout’

The voiced alveolar affricate /dʒ/occurs with vowels /i/, /a/, /o/, /u/, /ɛ/, /e/ and /ɤ/. It occurs in the syllable initial position only.

/dʒ/	[dʒe˥]	356.	‘left side’
	[dʒa˩˧]	293.	‘to launder’
	[dʒɤ˩˧]	399.	‘to be bad’
	[dʒu˩˧]	384.	‘to be sharp’
	[dʒo˥]	381.	‘to be wet’
	[dʒi˦]	280.	‘to pull’
	[dʒɛ˩˧]	204.	‘paper’

The voiceless aspirated alveolar affricate /tsʰ/occurs with /i/, /a/, /o/, /u/, /ɛ/, /ɔ/ and /ɤ/. It occurs in the syllable initial position only.

/tsʰ/	[tsʰo˥]	391.	‘to be strong’
	[tsʰu]	374.	‘to be sweet’
	[tsʰɤ˥]	300.	‘to plant’
	[tsʰɔ˥]	279.	‘to push’
	[tsʰa˩˧]	318.	‘to sell’
	[tsʰɛ˥]	237.	‘to sneeze’
	[tsʰi˥]	81.	‘dog’

3.3.2.3 Monumanaw Nasals

Two nasals occur in Monumanaw, namely /m/ and /n/. The voiced bilabial nasal /m/ does not occur with the three vowels /ɯ/, /ɤ/ and /ɜ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters or syllable final.

/m/	[mi˩]	47.	'grass'
	[mo˩]	173.	'mother'
	[mɔ˩]	175.	'son in law'
	[ma˩]	177.	'wife'
	[mu˥]	170.	'woman'
	[me˩]	90.	'tail'
	[mɛ˩]	400.	'to be correct'

The voiced alveolar nasal /n/ dose not occur /ɜ/ and /ɯ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/n/	[ne˩]	89.	'buffalo horn'
	[nɤ˩]	121.	'brain'
	[nɔ˩]	357.	'to be straight'
	[no˥]	112.	'cockroach'
	[nɛ˩]	118.	'scorpion'
	[na˩]	417.	'thou (2S)'
	[ni˩]	277.	'to enter'
	[nu˩]	277.	'to enter'

3.3.2.4 Monumanaw Approximants

The alveolar trill /r/ occurs only with the vowels /a/, /o/, /e/ and /ɔ/. It occurs both syllable initial and the second position of consonant clusters.

/r/	[ra˩]	371.	'to be bright'
	[re˥]	333.	'thousand'
	[kro˥]	267.	'to scratch'
	[kʰrɔ˥]	262.	'to snore'

The phoneme palatal approximate /j/ occurs with /e/, /a/, /n/, /ɛ/, /o/, /ɔ/ and /i/. /j/ does not only occur in the initial position but also in the second position of consonant clusters.

/j/	[jo˩]	435.	‘easy’
	[ju˩]	109.	‘spider web’
	[jɛ˩]	109.	‘spider web’
	[ji˥]	161.	‘flesh’
	[ja˩]	373.	‘to be different’
	[jɔ˩]	199.	‘trousers’
	[pʰje]	423.	‘to take’

The alveolar lateral approximate /l/ occurs with all vowels except /ɜ/ and /ɯ/. It occurs in the syllable initial position and the second position of consonant clusters.

/l/	[le˩]	364.	‘red’
	[lɤ˩]	29.	‘stone’
	[lu˥]	302.	‘to bury’
	[lɔ˩]	283.	‘to fall’
	[li˩]	242.	‘to lick’
	[lo˩]	413.	‘water leech’
	[lɛ˩]	408.	‘field’
	[la˩]	3.	‘moon’

In almost all cases [v] only occurs before the vowel /o/. While the voiced labial-velar approximate /w/ occurs elsewhere, it only occurs in the second element of a consonant cluster. On the other hand, there is one exception to this rule. Number (282) ‘to throw’ /ve˩kɛ˩/ is the only example found in this data countering this rule. The consonant /w/ never occurs syllable initial and final. Thus, [v] is interpreted as an allophone of the phoneme /w/.

Rule 12. Spirantization: /w/ ⟶ [v] _____V [+ back, rounded]

/w/ ⟶ [w] /elsewhere (in the second element)

/w/	[kwi˥]	165.	‘sweat’
	[kʰwe˩]	416.	‘to dry’
	[kʰwɛ˥]	7.	‘rain’
	[pwa˩]	322.	‘one’
	[vo˥]	48.	‘bamboo’

3.3.3 Monumanaw Consonant Clusters

For consonants occur as the second consonant in Monumanaw consonant clusters /r/, /j/, /w/ and /l/.

CCV consonant clusters with /w/ in Monumanaw

There are six types of clusters with /w/ in Monumanaw. They are /kw/, /kʰw/, /tʰw/, /pw/, /pʰw/ and /lw/.

Clusters	No	words	gloss
kw	165.	[kwi˥]	'sweat'
kʰw	159.	[kʰwi˥]	'bone'
tʰw	81.	[tʰwi˥]	'dog'
pʰw	389.	[pʰwɛ˩]	'to be fast'
pw	144.	[pwe]	'intestines'
lw	329.	[lwi˥]	'eight person'

The CCV consonant clusters with [r] in Monumanaw

There are only two types of CCV consonants cluster with [r] in Monumanaw. They are /kr/ and /kʰr/.

Clusters	No	words	gloss
kr	267.	[kro˥]	'to scratch'
kʰr	262.	[kʰrɔ˥]	'to snore'

CCV consonant clusters with /l/ in Monumanaw

There are four consonant clusters with /l/ in Monumanaw. They are /pl/, /pʰl/, /kl/ and /kʰl/.

Clusters	No	words	gloss
kl	184.	[klɛ˥]	'road/path'
kʰl	218.	[kʰli˥]	'bow/crossbow'
pʰl	295.	[pʰle˥]	'to hit'
pl	219.	[pla˩]	'arrow'

CCV consonants clusters with /j/ in Monumanaw

There are three consonant clusters with /j/ in Monumanaw. They are /lj/, /pʰj/ and /kʰj/. Those clusters follow the voiceless bilabial and velar aspirated /pʰ/, /kʰ/ and lateral approximate /l/.

Clusters	No	words	Gloss
lj	122.	[ljeɻ]	'hair'
pʰj	423.	[pʰje˥]	'to take'
kʰj	73.	[kʰjeɻ]	'tiger'

Monumanaw Summary of co-occurrences

There are 15 types of consonants clusters observed in Monumanaw. These are shown in the following table.

		Initial Consonants					
		p	pʰ	tʰ	k	kʰ	l
Second Consonants	l	219	295	-	184	104	-
	r	-	-	-	267	262	-
	j	423	423	-	-	73	122
	w	144	389	81	165	159	-

Table 49. The restriction of the Co-occurrences in Second Consonants

Monumanaw Consonant Distributions

Monumanaw is an open syllable language, no consonant can be found at the end of words or syllables. The following chart shows the consonants that occur in the initial position, between two vowels and codas. But coda cannot be found in this language. The voiced labial-approximate /w/ does not occur in the initial position, nor does it occur between vowels and coda. It occurs in the second syllable only. The voiceless alveolar aspirated /sʰ/ and alveolar trill /r/ only occur between two vowels, they are never found in other positions. The voiceless velar fricative /x/ only occurs as the initial consonant. It does not occur in the coda and between two vowels.

Consonants													
	p	pʰ	b	t	tʰ	d	k	kʰ	g	ʔ	m	n	v
# ---------	88	213	207	337	216	103	91	135	50	418	217	89	48
$ ------ V	151	101	15	138	396	221	112	26	108	11	115	121	17
-------- $	-	-	-	-	-	-	-	-	-	-	-	-	-

First Consonants												
	tsʰ	sʰ	ʃ	dʒ	ʂ	ʝ	x	h	j	l	w	r
# ----------	237	-	99	204	110	76	70	226	57	3	-	-
$ -------- V	391	303	168	356	120	392	-	16	373	103	-	215
---------- $	-	-	-	-	-	-	-	-	-	-	-	-

Table 50. Consonant Distribution Chart in Monumanaw

Monumanaw Consonant Contrasts

Phonetically, Monumanaw has 25 phonetic consonants. However according to this data, as describing above, [ʃ] is an allophone of the phoneme /sʰ/. [x] has an allophone of the phoneme /h/, and [v] is an allophone of the phoneme /w/. Therefore there are 22 phoneme consonants in Monumanaw. The phoneme contrasts can be seen in the following chart.

Minimal pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/p//pʰ/	419.	paꜘ	‘we’	213.	pʰaꜙ	‘ashes’
/p//b/	419.	paꜘ	‘we’	245.	baꜙ	‘to speak’
/b//m/	319.	boꜙ	‘to exchange’	217.	mo̤ꜘ	‘gong’
/p/ /m/	86.	poꜘ	‘cow’	217.	mo̤ꜘ	‘gong’
/b//w/	406.	beꜘ	‘how many’	144.	pweꜘ	‘intestines’
/m//w/	90.	meꜘ	‘tail’	144.	pweꜘ	‘intestines’
/t//tʰ/	305.	tɤꜘ	‘to pound’	216.	tʰɤꜘ	‘drum’
/t//d/	208.	to̤ꜘ	‘pestle’	183.	doꜘ	‘village’
/d//n/	69.	deꜘ	‘cooked rice’	89.	neꜘ	‘Buffalo horn’
/d/ /r/	69.	deꜘ	‘cooked rice’	333.	reꜙ	‘thousand’
/d/ /l/	297.	diꜙ	‘to cut’	242.	liꜙ	‘to lick’
/d//dʒ/	297.	diꜙ	‘to cut’	241.	dʒiꜙ	‘to suck’
/r/ /l/	215.	raꜙ	‘candle’	394.	laꜘ	‘to be blind’
/r/ /n/	333.	reꜙ	‘thousand’	89.	neꜘ	‘Buffalo horn’
/n/ /l/	112.	noꜙ	‘cockroach’	413.	loꜘ	‘water leech’
/t/ /tsʰ/	305.	tɤꜘ	‘to pound’	300.	tʰsɤꜙ	‘to plant’
/tʰ//tsʰ/	216.	tʰɤꜘ	‘drum’	300.	tʰsɤꜙ	‘to plant’
/k//kʰ/	354.	kɤꜙ	‘to be full’	75.	kʰɤꜙ	‘deer’
/k/ /g/	171.	kɔꜘ	‘person’	194.	gɔꜘ	‘blanket’
/k/ /ʔ/	354.	kɤꜙ	‘to be full’	82.	ʔɤꜙ	‘to bark’
/g/ /ʔ/	50.	gṳꜘ	‘mushroom’	11.	ʔuꜙ	‘shadow’
/g/ /h/	50.	gṳꜘ	‘mushroom’	70.	xu	‘pounded rice’
/ɟ/ /j/	411.	ɟoꜘ	‘pangolin’	435.	joꜘ	‘easy’
/tsʰ//dʒ/	391.	tsʰoꜙ	‘to be strong’	381.	dʒoꜙ	‘to be wet’
/tsʰ//ʃ/	374.	tsʰuꜘ	‘to be sweet’	293.	ʃuꜙ	‘to launder’
/tsʰ//ʂ/	374.	tsʰuꜘ	‘to be sweet’	79.	ʂuꜙ	‘porcupine’
/tsʰ/ /ɟ/	391.	tsʰoꜙ	‘to be strong’	411.	ɟoꜘ	‘pangolin’
/dʒ/ /ʃ/	241.	dʒiꜙ	‘to suck’	23.	ʃiꜘ	‘water’
/m//n/	90.	meꜘ	‘tail’	89.	neꜘ	‘Buffalo horn’
/h//k/	416.	heꜘ	‘I (1S)’	278.	keꜘ	‘to return’
/j//w/	295.	pʰjeꜘ	‘to hit’	317.	pweꜘ	‘to buy’
/dʒ//j/	381.	dʒoꜙ	‘to be wet’	435.	joꜘ	‘easy’
/dʒ//ʂ/	241.	dʒiꜙ	‘to suck’	269.	ʂiꜘ	‘to die’
/dʒ//ɟ/	241.	dʒiꜙ	‘to suck’	247.	ɟiꜘ	‘to shout’
/g/ /x/	50.	gṳꜘ	‘mushroom’	70.	xuꜘ	‘pounded rice’
/x//ʔ/	70.	xuꜘ	‘pounded rice’	11.	ʔuꜙ	‘shadow’

/ʔ//h/	288.	ʔiˀ	‘to give’	186.	hiˀ	‘house’
/ʔ//kʰ/	11.	ʔuˀ	‘shadow’	236.	kʰuˀ	‘to cough’
/ʔ//j/	232.	ʔoˌ	‘to drink’	435.	joˌ	‘easy’

Table 51. Consonant Contrast Chart

3.3.4 Monumanaw Vowels

There are ten plain vowels. No diphthongs were observed in Monumanaw.

3.3.4.1 Monumanaw Observed Vowel Chart

There are five unrounded front vowels, one open-mid unrounded central vowel, one close unrounded back vowel and a close-mid unrounded back vowel and three rounded back vowels. The open-mid unrounded central vowel occurs rarely and has been observed only with bilabial, alveolar and velar plosives /p/, /t/, /k/ and /d/.

	Front un-rounded	Central un-rounded	Back un-rounded	Back rounded
Close	i		ɯ	u
Close-mid	e		ɤ	o
Open-mid	ɛ			ɔ
Open-mid		ɜ		
Open	a			

Table 52. Phonemic Vowels

3.3.4.2 Monumanaw Phonemic Distribution

The central open-mid vowel /ɜ/ is too rare to accompany all consonants. The following chart shows the vowels association consonants.

Consonants	Vowels								
	i	e	ɛ	a	ɜ	u	ʏ	o	ɔ
pʰ	-	40	-	172	-	139	-	44	39
p	134	147	27	419	142	180	-	86	434
b	-	354	-	207	-	68	196	347	49
tʰ	-	-	225	32	-	31	216	341	123
t	405	337	405	107	146	342	305	208	312
d	96	69	281	296	253	345	195	339	352
kʰ	134	-	319	135	-	265	36	26	181
k	-	112	308	422	-	221	74	382	117
g	-	-	-	-	-	50	-	-	90
ʔ	288	167	27	418	-	11	82	232	100
m	47	90	400	177	-	170	-	173	175
n	277	89	118	417	-	277	121	112	357
r	-	33	-	371	-	-	-	267	262
tsʰ	81	-	237	318	-	374	300	391	279
sʰ	23	99	-	259	-	298	-	-	303
dʒ	280	356	204	293	-	384	399	381	-
ʂ	269	420	67	4	-	79	38	96	143
ɟ	247	358	-	244	-	-	76	411	-
h	186	416	377	26	-	70	-	65	-
j	161	423	109	373	-	109	-	435	199
l	242	364	408	3	-	302	29	413	283
w	165	304	7	322	-	-	-	48	-

Table 53. Vowel Distribution Chart in Monumanaw

3.3.4.3 Monumanaw Revised Inventory

Monumanaw Vocalic Contrasts

Minimal Pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/i/ /e/	186.	hi˥	‘house’	416.	he˩	‘I (1S)’
/i/ /ɛ/	242.	li˥	‘to lick’	408.	lɛ˩	‘rice field’
/e/ /ɛ/	364.	le˩	‘red’	408.	lɛ˩	‘rice field’
/i/ /ɛ/	242.	li˥	‘to lick’	408.	lɛ˩	‘rice field’
/a/ /ɛ/	3.	la˩	‘moon’	408.	lɛ˩	‘rice field’
/a/ /ɜ/	296.	da˥	‘to split’	257.	dɜ˥	‘to wait’
/ɛ/ /ɜ/	95.	kɜ˩ʔɤ˥	‘to be deaf’	224.	kɛ˥ʃi˥	‘to see’
/e/ /ɜ/	278.	ke˩	‘to return’	95.	kɜ˩ʔɤ˥	‘to be deaf’
/ɤ/ /u/	29.	lɤ˩	‘stone’	302.	lu˥	‘to bury’
/ɤ/ /o/	413.	lo˩	‘water leech’	29.	lɤ˩	‘stone’
/o/ /ɔ/	413.	lo˩	‘water leech’	283.	lɔ˩	‘to fall’
/u/ /o/	302.	lu˥	‘to bury’	413.	lo˩	‘water leech’
/ɤ/ /ɔ/	29.	lɤ˩	‘stone’	283.	lɔ˩	‘to fall’
/ɤ/ /ɜ/	354.	kɤ˥	‘to be full’	95.	kɜ˩ʔɤ˥	‘to be deaf’
/ɤ/ /e/	29.	lɤ˩	‘stone’	364.	le˩	‘red’
/a/ /ɔ/	3.	la˩	‘moon’	283.	lɔ˩	‘to fall’

Table 54. Vowel Contrast Chart

3.3.5 Monumanaw Tones

3.3.5.1 Monumanaw Observed tones

According to this data, there are four contrastive tones in Monumanaw. Each tone is referred to by demonstrating diacritics. They are high /˥/, high-mid /˦/, mid /˧/ and low /˩/. The shape of the tone diacritics will be seen in the following chart.

	High	High-mid	Mid	Low	
Shape	˥	˦	˧	˩	˩̤
	lo˥	lɔ˦	lo˧	lo˩	tɔ̤˩
	209.	372.	210.	413.	101.
	‘spoon’	‘be the same’	‘plate’	‘water leech’	‘fish’

Table 55. Demonstrating Diacritic Tones in Monumanaw

3.3.5.2 Monumanaw Description (including allophones)

Monumanaw Tone Contrasts

Minimal Pair	Number (word list)	Suspect Pair	Gloss	Number (word list)	Suspect Pair	Gloss
/˥/ /˦/	98.	di˥	‘egg’	106.	di˦	‘frog’
/˦/ /˧/	5.	lu˦	‘cloud’	210.	lo˧	‘plate’
/˧/ /˩/	34.	tə̤˧	‘iron’	138.	te˩	‘back’
/˥/ /˧/	227.	ʔa˥	‘to eat’	418.	ʔa˩	‘he/she/it’
/˦/ /˩/	106.	di˦	‘frog’	53.	di˩	‘sugarcane’
/˥/ /˩/	82.	ʔɤ˥	‘to bark’	360.	ʔɤ˩	‘this’

Table 56. Tone Contrast Chart in Monumanaw

According to this data, all pairs are in contrasts. There are very rare to find out the contrast of the high-mid tone and mid tone. Only one pair of CAE with the consonant /l/ is found.

3.3.5.3 Monumanaw Initial consonant tone correlations

The initial consonants and tones correlation can be shown in the following charts.

Conso-nants	Tones			
	˥	˦	˧	˩
pʰ	141	213	-	139
p	234	-	152	205
b	49	-	-	220
tʰ	81	-	-	216
t	360	-	34	138
d	98	106		69
kʰ	75	-	35	169
k	354	-	-	278
g	90	-	-	50
ʔ	288	-	-	418
m	1	-	-	217

Conson-ants	Tones			
	˥	˦	˧	˩
n	18	-	-	89
r	262	-	-	371
tsʰ	237	-	-	318
ʃ	168	263	-	99
dʒ	241	280	-	399
ʂ	110	63	-	421
ʝ	392	-	-	76
h	186	-	-	416
j	161	-	-	373
l	209	372	210	413
w	165	-	-	149

Table 57. Tones and Consonants Co-relationship

The high and low tones occur with all of the consonants, but the high-mid tone only occurs with the consonants /pʰ/, /d/, /ʃ/, /dʒ/, /ʂ/ and /l/. The mid tone only occurs with /p/, /t/, /kʰ/ and /l/. These two sets of consonants do not form natural classes, and so further data may fill in these gaps.

3.3.5.4 Monumanaw Vowels and tones correlations

Vowels	Tones			
	˥	˦	˧	˩
i	81	280	330	47
e	167	-	34	99
ɛ	184	-	-	281
a	135	213	-	219
ɜ	257	-	-	395

Vowels	Tones			
	˥	˦	˧	˩
ɯ	-	-	-	14
u	79	63	-	70
ɤ	38	-	35	305
o	48		152	176
ɔ	49	372	-	175

Table 58. Vowels and Tones Co-relationship

Monumanaw Distribution of Tones in a Three Syllable Words

There are some three syllables of tones that are distributed in Monumanaw. The three syllable words of tones that are contrast in each other can be seen in the following chart. There is no mid-high and mid tones occur in the three syllable initial.

No	Words	gloss	No	Words	gloss
	˥ ˥ ˥			˥ ˩ ˦	
155.	kʰɔ dɯ ʂa	‘calf’	152.	kʰɔ lɔ po	‘leg’
	˥ ˥ ˩			˥ ˩ ˩	
16.	ma ha nu	‘yesterday’	28.	ha ko mo	‘dust’
	˥ ˩ ˥				
27.	ha pɛ ʔɛ	‘mud’			

No	Words	gloss	No	Words	gloss
	˩ ˥ ˥			˩ ˩ ˦	
9.	la wo ʃe	‘lightning’	372.	ʔa lɔ lɔ	‘to be the same’
	˩ ˥ ˩			˩ ˩ ˩	
5.	po ʔo lu	‘cloud’	13.	lu mu ʂa	‘day’
	˩ ˩ ˥				
12.	lu mu ha	‘night’			

Table 59. The Distribution of Three Tones Chart

There are four contranstive tones in Monumanaw. With three syllable words this means that there are sixty-four possible patterns. Out of these sixty-four possible patterns, only ten patterns are seen in three syllable words in Kayah. Fifty-four kinds of the three syllable word types do not appear in Monumanaw. There are no examples of M or HM occurring on the first or second syllable of three syllable words. And there is a strong tendency for them to also not occur on the final syllable.

3.3.5.5 Monumanaw Tone pattern analysis

The following chart shows Luce's tone patterns and Haudricourt's 3x3 chart.

	*A	*B	*D
*Aspirated	III	VI	VIII
*Voiceless	II	V	
*Voiced	I	IV	VII

According to the chart that Solnit and Bennett used the aspirated and voiceless rows were merged. And it is not 3x3 grid but 3x2 grid. The following chart shows how Bennett (1992) analyzed Monumanaw by using 3x2 grid.

Manumanaw (Bennett 1992)

	A	B	D
*Non-voiced	11	33	55
*Voiced	11	45	33

The data used in this thesis produced a different tone chart of Bennett. The most significant differences are in the column –B, the proto non-voiced cell where the tone is higher and the protovoiced –B the protovoiced cell is lower than what Bennett did. And the column D, the protovoiced cell is lower than Bennett did and it has no breathy phonation. The reason why they are different from each other is that the different dialects were elicitated.

Monumanaw (Myar 2003)

	A	B	D
*non-voiced	11	55	55
*Voiced	11	11	11

3.4 Yintale

3.4.1 Yintale Syllable Structure

There are eight syllable types observed in Yintale. They are CVT, CVVT, CVC, CVVCT, CCVT, CCVCT, CCVVT and CCCVVT. The syllable types of CV, CVV and CVC occur with all of the five tones. CVVC does not occur with falling tone /˥˩/. The CCVV tone does not associate with the rising tone /˧˥/. CCVVC occurs with only

low tone /˩/. CCCVV only associates with the low tone and the rising tone. CCVC does not go with mid-tone and rising tone.

The syllable structure type of CV^T includes a single consonant represented by C, a vowel represented by V and a tone represented by T. All of the tones and syllable structures will be seen in the following table.

Syllable types	Tones				
	˥	˧	˩	˦˥	˧˥
CV	/la˥/ 303. ‘to winnow’	/la˧/ 43. ‘leaf’	/la˩/ 432 ‘warm’	/la˦˥/ 3. ‘moon’	/bu˧˥/ 263. ‘white’
CVV	/mei˥/ 260. ‘be angry’	/lai˧/ 283. ‘fall’	/lai˩/ 408. ‘rice field’	/lai˧˥/ 415. ‘earthworm’	/tʰɤ˦˥/ 216. ‘drum’
CVC	/kʰuŋ˥/ 80. ‘Rat’	/kan˧/ 7. ‘Rain’	/riŋ˩/ 51. ‘cane/rattan’	/dʒuŋ˦˥/ 286. ‘to sink’	/duŋ˧˥/ 345. ‘be thick’
CVVC	/ʃein˥/ 103. ‘house lizard’	/doŋ˧/ 221. ‘knife’	-	-	/sein˧˥/ 38. ‘tree’
CCV	/kʰlɛ˥/ 185. ‘boat’	/kʰlɛ˧/ 219. ‘arrow’	/pla˩/ 219. ‘arrow’	/tʰwɛ˦˥/ 356. ‘left side’	/pwi˧˥/ 367. ‘be dirty’
CCVV	/kʰwei˥/ 159. ‘bone’	/dʒwei˧/ 280. ‘to pull’	/klɤ˩/ 388. ‘be smooth’	/lwei˦˥/ 325. ‘four’	-
CCCVV	-	-	/kʰlwei˩/ 57. ‘banana’	-	/kʰlwei˧˥/ 410. ‘rice seedling’
CCVC	/pliŋ˥/ 203. ‘ring (finger)	/kʰweŋ˧/ 240. ‘to whistle’	/pjaŋ˩/ 171. ‘person’	pluŋ˦˥ 302. ‘to bury’	-

Table 60. Syllable Types Occurring with Tones

3.4.2 Yintale Consonants

The consonant inventory of Yintale includes 24 consonants. In this data, [ɕ] only occurs where the consonant [ʃ] never occurs; [ʃ] occurs before vowels /i/, /ɯ/ and /ei/. Thus, [ʃ] is an allophone of the phoneme /ɕ/. The consonants [ɲ] and /ŋ/ never occur in the same environment. Therefore, the consonant [ɲ] is an allophone of /ŋ/.

The consonant [s] never occurs in the same environment as [tʃ]. Thus, [tʃ] is an allophone of /s/. These variations will be explained in the following sections. The summary phoneme chart can be seen in below.

Yintale Phonemic Consonants

Manners of Articulation	Points of Articulation	Bilabial	Labiodental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Glottal
Plosives	**vl. Unasp**	p		t				k	ʔ
	vl. Asp	pʰ		tʰ				kʰ	
	vd.	b		d				g	
Fricatives	**vl**					ʂ	ʝ	x	h
	vl Asp			sʰ					
	voiced		v	s					
Affricate	**vd**				dʒ				
Nasals	**vd**	m		n				ŋ	
approx.		w					j		
Lat. Appro				l					

Table 61. Yintale Phonemic Consonants

3.4.2.1 Yintale Plosives

The voiceless unaspirated bilabial plosive /pʰ/ occurs with the six pure vowels of /u/, /o/, /ɔ/, /a/, /i/ and /ɯ/, and the diphthongs /au/ and /ai/. It cannot be found occurring with the rest of the vowels. It only occurs syllable initial, but never occurs as the second element in consonant clusters.

/pʰ/	[pʰu˩]	101.	‘fish’
	[pʰaŋ˨˩]	39.	‘branch’
	[pʰɔ˧]	58.	‘papaya’
	[pʰi˩]	253.	‘to forget’
	[pʰɯ˧]	342.	‘to be short’
	[pʰo˩]	293.	‘to launder’
	[pʰau˩]	144.	‘intestines’
	[pʰai˩]	52.	‘kapok’

The voiceless bilabial plosive /p/ occurs with the eight plain vowels /i/, /ɤ/, /e/, /ɛ/, /a̟/, /ɜ/, /o/ and /u/, and two diphthongs /au/ and /ei/. It only occurs syllable initial and never occurs as the second element in consonant clusters.

/p/	[pi˥]	121.	‘brain’
	[peŋ˧]	350.	‘to be narrow’
	[pɛ˩]	281.	‘to kick’
	[pa̟˩]	256.	‘to hate’
	[pɜ˩]	88.	‘Buffalo’
	[pu˩]	86.	‘cow’
	[pon˥]	28.	‘dust’
	[pɤ˧]	205.	‘pot’
	[pau˨]	306.	‘to cook’
	[pei˧]	117.	‘butterfly’

The three plain vowels /ɤ/, /ɛ/, and /ɜ/ and are restrictive with the initial consonant of the voiced bilabial plosive /b/. It only occurs syllable initial and never occurs as the second element in consonant clusters.

/b/	[bi˥]	340.	‘to be small’
	[beŋ˧]	192.	‘mat’
	[baŋ˧]	49.	‘bamboo shoot’
	[bɜ˩]	68.	‘paddy rice’
	[bɯ˨]	196.	‘to weave’
	[bu˥]	128.	‘cheek’
	[bo˧]	347.	‘to be fat’
	[bei˧]	163.	‘skin’
	[bai˥]	162.	‘fat’
	[bau˩]	53.	‘sugarcane’

The voiceless aspirated alveolar plosive /tʰ/ occurs with the plain vowels /i/, /ɛ/, /a/, /u/, /ɯ/, /ɤ/, /o/ and /ɔ/ and the diphthong /au/. It only occurs syllable initial, and never occurs as the second element in consonant clusters.

/tʰ/	[tʰaˊ]	32.	‘gold’
	[tʰoŋ˧]	15.	‘noon’
	[tʰɔ˥]	247	‘to shout’
	[tʰuŋˋ]	31.	‘lime’
	[tʰɯˋ]	290.	‘to wipe’
	[tʰɛ˥]	352.	‘to be shallow’
	[tʰi˥]	53.	‘sugarcane’
	[tʰɤˋ]	216.	‘drum’
	[tʰauˋ]	116.	‘fly’

The voiceless unaspirated alveolar plosive /t/ occurs with the pure vowels /a/, /ɛ/, /o/, /u/, /ɔ/, /ɜ/ and /ɤ/. It occurs with the diphthongs /ei/ and /ai/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/t/	[ta˩]	101.	‘fish’
	[tɛ˩]	151.	‘buttocks’
	[tɜ˩]	322.	‘one’
	[ton˩]	10.	‘thunder’
	[tɯ˧]	352.	‘to be shallow’
	[tu˥]	191.	‘wall of house’
	[tɔ˥]	419.	‘we (I pl)’
	[tɤn˧]	342.	‘to be short’
	[tai˩]	283.	‘to fall’
	[tei˧]	215.	‘candle’

The voiced alveolar plosive /d/ occurs with the plain vowels /i/, /ɛ/, /u/, /ɯ/, /o/, /ɔ/ and /ɤ/, and the diphthongs /au/ and /ei/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/d/	[di˥]	95.	‘wing’
	[dɤ˥]	361.	‘that’
	[dɔ˥]	393.	‘to be tired’
	[du˥]	257.	‘to wait’
	[dɛˋ]	288.	‘to give’
	[dɯ˥]	322.	‘one person’
	[doˋ]	183.	‘village’
	[dau˥]	157.	‘foot’
	[dei˥]	187.	‘door’

There are the five plain vowels /a/, /ɔ/, /i/ /u/ and /ɛ/ occurring with the voiceless velar plosive /kʰ/. The vowels /e/, /ɜ/, /ɯ/ and /ɤ/ dose not occur with /kʰ/. No diphthongs occur with the voiceless aspirated velar plosive /kʰ/. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/kʰ/	[kʰa˦]	135.	‘chin’
	[kʰi˥]	12.	‘night’
	[kʰu˨]	179.	‘brother elder’
	[kʰɛ˥]	66.	‘corn’
	[kʰɔ˦]	56.	‘liquor’

There are five plain vowels /a/, /ɔ/, /ɤ/, /u/ and /o/ occurring with the voiceless velar plosive /k/. There are three diphthongs in Yintale, and all of them occur with the consonant /k/. The consonant only occurs syllable initial, it never occurs as the second element in consonant clusters.

/k/	[ka˦]	320.	‘to pay’
	[koŋ˩]	193.	‘pillow’
	[ku˦]	211.	‘firewood’
	[kɔ˦]	44.	‘flower’
	[kɤ˦]	89.	‘horn’
	[kau˦]	214.	‘smoke’
	[kei˩]	426.	‘to bend’
	[kai˨]	308.	‘to burn’

The voiced velar plosive /g/ occurs with the plain vowels /a̤/, /ɛ/, /o/, and /ɤ/. It also occurs with the diphthongs /au/ and /ai/ and. It only occurs syllable initial.

/g/	[ga̤˦]	406.	‘how many person’
	[gɛ˦]	153.	‘Thigh’
	[go˥]	159.	‘clothing’
	[gɤ˦]	198.	‘sarong’
	[gau˨]	295.	‘to hit’
	[gai˦]	282.	‘to throw’

The eight plain vowels /i/, /o/, /ɛ/, /a/, /e/, /ɤ/, /u/ and /ɔ/ occur with the voiced glottal plosive /ʔ/. Only the diphthong /ei/ occurs with the consonant. It only occurs syllable initial, it never occurs as the second element in consonant clusters.

/ʔ/	[ʔi˥]	71.	‘salt’
	[ʔo˩]	397.	‘naked’
	[ʔɛ˥]	360.	‘this’
	[ʔaŋ˦]	227.	‘to eat’
	[ʔɔ˥]	232.	‘to drink’
	[ʔuŋ˦]	334.	‘to be many’
	[ʔeŋ˦]	137.	‘what’
	[ʔɤ˥]	395.	‘to be deaf’
	[ʔei˦]	83.	‘to bite’

3.4.2.2 Yintale Nasals

The seven plain vowels /i/, /ɛ/, /a/, /ɔ/, /ɤ/, /o/, and /ɯ/ occur with the bilabial nasal /m/. All diphthongs occur with the bilabial nasal. It not only occurs syllable initial but also occurs as the second element in consonant clusters.

/m/	[mi̤˦]	212.	‘fire’
	[ma˩]	175.	‘son in law’
	[mɯ˦]	299.	‘to grind’
	[mɔ˥]	1.	‘sky’
	[mɛ˩]	396.	‘bald’
	[mɤ˩]	2.	‘sun’
	[mo˦]	179c	‘sister’
	[mau˥˩]	217.	‘gong’
	[mai˩]	123.	‘forehead’
	[mei˥]	113.	‘snail’

The voiced alveolar nasal /n/ occurs with the plain vowels /i/, /ɛ/, /a/, /ɤ/, /u/, /ɯ/ and /ɔ/, it occurs with the diphthongs /ai/ and /ou/. It occurs syllable initial and final, it never occurs as the second element in consonant clusters.

/n/	[ni˥]	412.	‘created’
	[neiˊ]	18.	‘year’
	[nɛˊ]	251.	‘to think’
	[naˎ]	88.	‘buffalo’
	[naiˊ]	273.	‘to kneel’
	[nɯˎ]	361.	‘that’
	[nuˎ]	277.	‘to enter’
	[nɤˎ]	87.	‘milk’
	[nɔˎ]	268.	‘to shiver’

The velar nasal /ŋ/ occurs with a plain vowel /a/, and two diphthongs /ei/ and /ai/. The consonant occurs syllable initial and final, but it never occurs as the second element in a consonant cluster.

/ŋ/	[ŋei˥]	316.	‘to fight’
	[ŋaˊ]	138.	‘back’
	[ŋaiˎ]	326.	‘five’

The palatal nasal /ɲ/ occurs with two plain vowels /e/ and /ɯ/, and the diphthong /au/. This consonant only occurs in the initial position.

	[ɲeˊ]	323.	‘two’
	[ɲauˊ]	337.	‘be few’
	[ɲɯˎ]	77.	‘gibbon’

3.4.2.3 Yintale Fricatives and Affricates

The voiced labiodentals fricative /v/ occurs before the vowels /i/, /e/, /ɛ/, /a/ and /ɯ/. The consonant only occurs in the initial position, it never occurs in the other environment.

/v/	[viˎ]	231.	‘be thirsty’
	[veˊ]	282.	‘to throw’
	[vɛˎ]	179.	‘elder brother’
	[vaˊ]	176.	‘husband’
	[vɯ˥]	414.	‘water leech’

In this data, the consonant /s/ is an allophone with the alveolar affricate [tʃ]. The consonant [tʃ] occurs before vowels /ɯ/ and /u/. On the contrary, /s/ occurs before /ei/, /ɔ/ and /a/. Thus, [tʃ] is an allophone of the phoneme /s/. It only occurs in the initial position, it does not occur in the second and final position. The alveolar affricate [tʃ] occurs with the two vowels /ɯ/ and /u/. It only occurs in the initial position.

Rule 13. Affrication /s/ ⟶ [tʃ] _____ [+ high back]

/s/ ⟶ [s] /elsewhere

/s/	[sa˦]	4.	‘star’
	[sɔ˥]	253.	‘to forget’
	[seinˊ]	38.	‘tree’
	[tʃɯ˥]	20.	‘west’
	[tʃu˥]	75.	‘deer’

The alveolar fricative /sʰ/ occurs with six plain vowels /ɛ/, /a/, /ɯ/, /ɤ/, /u/ and /o/, and the diphthong /au/. It occurs syllable initial but never occurs as the second and final syllable.

/sʰ/	[sʰɛ˥]	331.	‘ten’
	[sʰa˥]	264.	‘to hurt’
	[sʰau˥]	305.	‘to pound’
	[sʰɯ˥]	158.	‘heel’
	[sʰu˦]	24.	‘river’
	[sʰɤ˦]	96.	‘feather’
	[sʰoŋ˦]	143.	‘liver’

The consonant /ʂ/ is an allophone with the alveolar fricative [ʃ]. The consonant [ʃ] occurs before vowels /i/, /ɯ/ and /ei/. On the contrary, /ʂ/ occurs before /ɛ/, /a/, /u/ /ɔ/ and /o/. Thus, [ʃ] is an allophone of the phoneme /ʂ/.

Rule 14. Palatalization: /ʂ/ ⟶ [ʃ] _____ /i/, /ɯ/, /ei/

/ʂ/ ⟶ [ʂ] _____ /ɛ/, /a/, /u/, /o/ and /ɔ/

/ʂ/	[ʂɛ˨]	269.	‘to die’
	[ʂa˨]	239.	‘to breathe’
	[ʂuŋ˩]	362.	‘black’
	[ʂoŋ˧]	79.	‘porcupine’
	[ʂo˥]	249.	‘to smile’
	[ʃi˥]	56.	‘liquor’
	[ʃein˧]	186.	‘house’
	[ʃɯ˥]	107.	‘insect’

The voiced palatal fricative /ʝ/ occurs with the vowels, /a/, /ɯ/, /ɤ/, /u/ and /ɔ/. There is one diphthong /au/ occurring with the voiced palatal fricative /ʝ/. This consonant only occurs in the initial position.

/ʝ/	[ʝa˧]	161.	‘flesh’
	[ʝɯ˧]	358.	‘be far’
	[ʝu˥]	76.	‘monkey’
	[ʝɔ˩]	351.	‘be deep’
	[ʝɤ˩]	390.	‘be slow’
	[ʝau˩]	80.	‘rat’

The velar fricative /x/ occurs before the six plain vowels /i/, /e/, /ɤ/, /ɯ/, /ɔ/ and /u/, and it also occurs with three diphthongs /ei/, /ai/ and /au/. It only occurs in the initial position.

/x/	[xiŋ˩]	51.	‘cane’
	[xe˥]	333.	‘thousand’
	[xei˨]	380.	‘be dry’
	[xai˧]	310.	‘to work’
	[xau˨]	250.	‘to sing’
	[xɯ˧]	160.	‘rib’
	[xuŋ˥]	222.	‘to hear’
	[xɤ˧]	254.	‘to choose’
	[xɔ˩]	17.	‘tomorrow’

The glottal fricative /h/ occurs with the plain vowels /e/, /ɛ/, /a/, /ɯ/, /u/ and /ɔ/, and it also occurs with two diphthong vowels /ai/ and /au/. It occurs only in the initial position.

/h/	[heŋ˦]	399.	'be bad'
	[hɛ˩]	419.	'we'
	[ha˩]	276.	'to come'
	[hɯ˩]	278.	'to return'
	[hu˩]	139.	'belly'
	[hɔ˩]	249.	'to lie'
	[hai˥˩]	377.	'be spicy'
	[hau˩˨]	70.	'pounded rice'

The post-alveolar affricate /dʒ/ occurs before the plain vowels of /i/, /ɛ/, /a/, /ɯ/, /ɤ/, /u/ and /ɔ/. It also occurs before the three diphthongs /ei/, /ai/ and /au/. It only occurs in the initial position.

/dʒ/	[dʒi˦]	21.	'north'
	[dʒei˥˩]	241.	'to suck'
	[dʒɛ˦]	383.	'to be cold'
	[dʒa˩]	292.	'to be weak'
	[dʒai˩˨]	413.	'water leech'
	[dʒau˩]	203.	'ring'
	[dʒɯ˩]	204.	'paper'
	[dʒuŋ˥˩]	286.	'to sink'
	[dʒɤ˥˩]	289.	'to tie'
	[dʒɔ˩]	357.	'to be straight'

3.4.2.4 Yintale Approximants

The alveolar trill /r/ is an allophone with palatal approximate /j/. The trill only occurs after the voiced velar plosive /g/. It never occurs in the initial and final position. The palatal approximate /j/ occurs with the vowels of /e/, /a/, /u/, /ɤ/, /ɛ/, and /ɔ/. But the vowel /e/ only occurs in cluster consonants, it never goes with the initial consonant /j/. This consonant not only occurs in the initial position but it also occurs in the second position.

/j/	[pʰjeŋ˦]	55.	‘opium’
	[jɛ˦]	199.	‘trousers’
	[ja˩]	284.	‘to swim’
	[jau˩]	197.	‘to dye’
	[ju˥]	435.	‘easy’
	[jɤ˩]	431.	‘disgusting’
	[jɔ˥]	379.	‘be swell’
	[grai˦]	348.	‘be skinny’
	[grɯ˧˩]	297.	‘to cut’

The voiced labal-velar approximate /w/ occurs with the plain vowels /i/, /e/, /a/, /ɛ/, /ɔ/, and the diphthong /ei/. It rarely occurs in the initial position, only one word is found in this data occurring in the initial position. Most of them occur in the second position.

/w/	[pwi˩]	144.	‘intestines’
	[tʰweŋ˦]	235.	‘to spit’
	[pwɛ˥]	354.	‘be full’
	[pwa˦]	248.	‘to answer’
	[wo˦]	102.	‘snake’
	[pwei˩]	245.	‘to speak’

The alveolar lateral approximate /l/ occurs with all vowels except. It occurs in the initial and second position.

/l/	[kli˦]	396.	‘bald’
	[leŋ˦]	364.	‘red’
	[plei˥]	147.	‘armpit’
	[lɛ̝˦]	369.	‘to be old’
	[la˩]	1.	‘sky’
	[lai˧˩]	415.	‘earthworm’
	[lau˩]	270.	‘Ghost’
	[lɜ˩]	294.	‘to bathe’
	[plɯ˥]	134.	‘gums’
	[lu˩]	335.	‘all’
	[lɤ˩]	29.	‘stone’
	[klo˩]	65.	‘garlic’
	[lɔ˦]	249.	‘to lie’

3.4.2.5 Yintale Revised Inventory

Yintale Syllabic Nuclei and Final Consonants

There are only two consonants which occur in final as well as initial position, /n/ and ŋ/. The two consonants /n/ and /ŋ/ are unreleased in final. Sometimes it is hard to distinguish between them. The consonant /n/ is slightly shorter than /ŋ/ in final position. The final consonant /n/ occur after five simple vowels /i/, /ɛ/, /a/, /o/ and /ɤ/. Only one diphthong vowels /ei/ occurs before final /n/. These five plain vowels /i/, /e/, /a/, /o/, /u/ and two diphthong vowels /ei/ and /ou/ occur before final /ŋ/.

Vowels	Final Consonants	
	n	ŋ
i	167	51
e	-	192
ɛ	6	-
a	5	49
ɜ	-	-
ɯ	-	-
u	-	362

Vowels	Final Consonants	
	n	ŋ
ɤ	342	-
o	28	143
ɔ	-	-
ei	39	103
ai	-	-
au	-	-

Table 62. Vowel and Final Consonant Correlations

3.4.3 Yintale Consonant Clusters

Four consonants may occur as medial in consonant cluster. They /r/, /j/, /w/ and /l/.

3.4.3.1 Yintale Observed consonant clusters

Yintale CCV Consonant Clusters With /w/

There are eleven[4] kinds of CC clusters with /w/ in Yintale. They are /gw/, /kw/, /kʰw/, /tʰw/, /pw/, /pʰw/, /bw/, /mw/, /dʒw/, /ʂw/ and /lw/. Even though Yintale is very small

[4] Wa Aung dialect used in this thesis

group, there are two main dialects, they are: Wa Aung dialect[5] and Bawlakhe dialect[6]. This thesis focuses on Wa Aung dialect. To the best of my knowledge is mostly whenever Wa Aung dialect says /g/, for Bawlakhe dialect is /k^h/, and while Wa Aung say /w/, for Bawlakhe dialect is /r/ in clusters. But for initial word, while Wa Aung says /x/, Bawlakhe is /r/, and for vowels, while Wa Aung says /ɛ/, Bawlakhe is /ai/. It is a snapshot of the author comes across in my different informants.

Clusters	No	Words	gloss
gw	295.	[gwau˥]	'to hit'
kw	15.	[kwe˧]	'noon'
k^hw	159.	[k^hwɛ˥]	'I (1S)'
t^hw	94.	[t^hwei˧]	'bird's nest'
p^hw	389.	[p^hwai˥]	'be fast'
pw	144.	[pwi˩]	'intestines'
bw	406.	[bwɛ˥]	'How many'
mw	400.	[mwei˥]	'be correct'
dʒw	280.	[dʒwei˧]	'to pull'
ʂw	164.	[ʂwei˧]	'blood'
lw	349.	[lwai˥]	'be wide'

Yintale CCV consonant clusters with [r]

There is only one kind of CCV consonant clusters with [r] in Yintale. It is /gr/.

Clusters	No	Words	English
gr	297.	[grɯ˥]	'to cut'

[5] A dialect spoken in Wa Aung village located in the Phasaung Township, Kayah State, Burma.

[6] A dialect spoken in Bawlakhe town, Kayah State, Burma.

Yintale CCV Consonants Clusters With /l/

There are four consonant clusters with /l/ in Yintale. They are /pl/, /p^hl/, /kl/ and /k^hl/.

Clusters	No	Words	Gloss
kl	208.	[klɛ˥]	'pestle'
k^hl	185.	[k^hlɛ˥]	'boat'
p^hl	46.	[p^hlo˧]	'seed'
pl	131.	[pli˩]	'tongue'

Yintale CCV Consonants Clusters With /j/

There are two consonant clusters with /j/ in Yintale. They are /p^hj/ and /pj/. These clusters follow after the voiceless bilabial plosives /p^h/ and /p/.

Clusters	No	Words	Gloss
pj	171.	/pjaŋ˩/	'person'
p^hj	55.	/p^hjeŋ˧/	'opium'

Yintale CCCV Consonants Clusters With /w/

There is only one type of three consonant clusters with /w/ in Yintale. It is /k^hlw/.

Clusters	No	Words	gloss
k^hlw	57.	[k^hlwei˩]	'banana'

3.4.3.2 Yintale Description and Distribution

Initial consonants												
Second consonants		p	pʰ	b	tʰ	k	kʰ	g	m	dʒ	ʂ	l
	l	131	46	-	-	208	185	-	-	-	-	-
	r	-	-	-	-	-	-	297	-	-	-	-
	j	171	55	-	-	-	-	-	-	-	-	-
	w	144	389	406	94	15	159	-	400	280	164	349

Table 63. Example of Yintale Consonant Cluster

Yintale Consonant distributions

Some closed syllables are found in Yintale. Out of four languages, only Yintale has final syllables. Mostly the nasal consonants of /n/ and /ŋ/ are found in the final position. The velar nasal /ŋ/ mostly occurs in the final position, and a few of words are found in the initial position. The alveolar trill /r/ only occurs after the voiced velar plosive /g/. The following chart shows the consonants occurring in the initial position, between two vowels and codas.

Consonants														
	p	pʰ	b	t	tʰ	d	k	kʰ	g	ʔ	m	n	ɲ	ŋ
$ ---------	86	174	128	64	32	106	211	135	297	167	69	47	84	138
V ----- V	117	101	340	215	396	221	37	179	282	395	113	88	37	19
-------- $	-	-	-	-	-	-	-	-	-	-	-	28	-	3

First Consonants														
	r	v	s	sʰ	ʃ	dʒ	tʃ	ʂ	ʝ	x	h	j	l	w
$ --------	-	48	39	99	56	398	75	79	97	51	26	418	335	102
V ----- V	-	9	4	91	103	292	-	45	358	14	249	284	364	-
-------- $	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 64. Yintale Consonant Distributions

Yintale Phonetically similar consonants

Minimal pair	Numbers	Suspect Pair	Gloss	Numbers	Suspect Pair	Gloss
/p//pʰ/	86	/puꓶ/	‘cow’	101.	/pʰuꓷ/	‘fish’
/p//b/	86	/puꓶ/	‘cow’	128.	/buꓷ/	‘cheek’
/b//m/	223.	/baꓷ/	‘to smell’	117.	/maꓷ/	‘wife’
/p/ /m/	306.	/pauꓥ/	‘to cook’	217.	/mauꓥ/	‘gong’
/b//w/	347.	/bo꞉/	‘be fat’	102.	/wo꞉/	‘snake’
/m//w/	179.	/mo꞉/	‘sister’	102.	/wo꞉/	‘snake’
/t//tʰ/	284.	/taꓶ/	‘to swim’	32.	/tʰaꓵ/	‘gold’
/t//d/	403.	/toꓷ/	‘where’	393.	/doꓷ/	‘be tired’
/d//n/	393.	/doꓷ/	‘be tired’	336.	/noꓶ/	‘some’
/d/ /r/	404.	/dɯꓷ/	‘who’	297.	/grɯꓥ/	‘to cut’
/d/ /l/	249.	/lo꞉/	‘to lie’	393.	/doꓷ/	‘be tired’
/d//dʒ/	393.	/doꓷ/	‘be tired’	357.	/dʒoꓷ/	‘be straight’
/r/ /l/	348.	/grai꞉/	‘be skinny’	408.	/laiꓶ/	‘rice field’
/r/ /n/	348.	/grai꞉/	‘be skinny’	273.	/nai꞉/	‘to kneel’
/n/ /l/	273.	/nai꞉/	‘to kneel’	408.	/laiꓶ/	‘rice field’
/t/ /tʃ/	352.	/tɯ꞉/	‘be shallow’	20.	/tʃɯꓷ/	‘west’
/tʰ//tʃ/	386.	/tʰɯ꞉/	‘be heavy’	20.	/tʃɯꓷ/	‘west’
/k//kʰ/	320.	/ka꞉/	‘to pay’	313.	/kʰaꓷ/	‘to shoot’
/k/ /g/	205.	/kau꞉/	‘pot’	295.	/gauꓥ/	‘to hit’
/k/ /ʔ/	44.	/ko꞉/	‘flower’	232.	/ʔoꓷ/	‘to drink’
/g/ /ʔ/	153.	/gɛ꞉/	‘Thigh’	27.	/ʔɛꓷ/	‘mud’
/g/ /x/	282.	/gai꞉/	‘to throw’	178.	/xai꞉/	‘to work’
/ɟ/ /j/	161.	/ɟa꞉/	‘flesh’	284.	/jaꓶ/	‘to swim’
/tʃ//dʒ/	20.	/tʃɯꓷ/	‘west’	204.	/dʒɯꓷ/	‘paper’
/tʃ//ʃ/	20.	/tʃɯꓷ/	‘west’	107.	/ʃɯꓷ/	‘insect’
/tʃ//ʂ/	75.	/tʃuꓷ/	‘deer’	362	/ʂuŋꓵ/	‘black’
/dʒ/ /ɟ/	292.	/dʒaꓷ/	‘to wash’	161.	/ɟa꞉/	‘flesh’
/dʒ/ /ʃ/	21.	/dʒi꞉/	‘North’	337.	/ʃiꓷ/	‘be few’
/m//n/	117.	/maꓷ/	‘wife’	417.	/nạ꞉/	‘thou (2S)’
/h//k/	139.	/huꓷ/	‘Belly’	211.	/ku꞉/	‘firewood’
/j//w/	379.	/joꓷ/	‘be swell’	234.	/pwoꓷ/	‘to vomit’
/dʒ//j/	357.	/dʒoꓷ/	‘be straight’	379.	/joꓷ/	‘be swell’
/dʒ//ʂ/	433.	/dʒɛ꞉/	‘cool’	269.	/ʂɛꓥ/	‘to die’
/s/ /ʂ/	259.	/saꓷ/	‘to be afraid’	239.	/ʂaꓥ/	‘to breathe’

/sʰ/ /ʂ/	264.	/sʰaɭ/	‘to hurt’	239.	/ʂaɻ/	‘to breathe’
/s/ /ʃ/	38.	/seinʌ/	‘tree’	186.	/ʃeinɬ/	‘house’
/sʰ/ /ʃ/	158.	/sʰɯɭ/	‘heel’	107.	/ʃɯɭ/	‘insect’
/ʃ/ /ʝ/	107.	/ʃɯɭ/	‘insect’	358.	/ʝɯɬ/	‘be far’
/dʒ//ʝ/	204.	/dʒɯɭ/	‘paper’	358.	/ʝɯɬ/	‘be far’
/x//ʔ/	17.	/xɔɻ/	‘tomorrow’	232.	/ʔɔɭ/	‘to drink’
/ʔ//h/	232.	/ʔɔɭ/	‘to drink’	249.	/hɔɭ/	‘to lie’
/ʔ//kʰ/	133.	/kʰɛɭ/	‘tooth’	27.	/ʔɛɭ/	‘mud’
/ʔ//j/	27.	/ʔɛɭ/	‘mud’	199.	/jɛɬ/	‘trousers’

Table 65. Phonetically Similar Consonants

3.4.4 Yintale Rhymes

3.4.4.1 Yintale Observed rhymes

Phonemically, there are ten plain vowels and three diphthong vowels. The vowel /ɜ/ only occurs with the voiced and voiceless bilabial, the voiceless alveolar plosives and the palatal approximate /p/, /b/, /d/ and /l/, but very few words are found in this data.

	Front un-rounded	**Central un-rounded**	**Back un-rounded**	**Back rounded**
Close	i		ɯ	u
Close-mid	e		ɤ	o
Open-mid	ɛ			ɔ
Open-mid		ɜ		
Open	a			

Table 66. Yintale Plain Phoneme Vowels

There are three diphthongs. They are /ei/, /ai/and /au/.

Yintale Diphthong phoneme vowels

	Front un-rounded	Back rounded
Close		
Close-mid	ei	
Open	ai	au

Table 67. Yintale Diphthong Phoneme Vowels

There are ten nasalized vowel types in this language. They are /iŋ/, /in/, /eŋ/, /ɛn/, /aŋ/, /an/, /ɤn/, /oŋ/, /uŋ/ and /on/.

Yintale Nasalized phoneme vowels

	Front un-rounded	Back un-rounded	Back rounded
Close	iŋ in		uŋ
Close-mid	eŋ	ɤn	oŋ on
Open-mid	ɛn		
Open	aŋ an		

Table 68. Yintale Nasalized Phoneme Vowels

3.4.4.2 Yintale Description (including allophones)

Distribution of Phonemes in Relation to Surrounding Segments in Yintale

The vowel /ɜ/ is too rare to occur with all consonants. Only the consonants /p/, /b/, /t/ and /l/ occur with this vowel. The vowel /o/ is an allophone with the diphthongs /ou/. The diphthongs /ou/ occurs with the consonants /pʰ/, /b/, /d/, /m/, /g/ and /ʔ/ while the plain vowel /o/ occurs elsewhere. And the plain vowel /ɤ/ is too rare to occur with the consonants. It only occurs with /t/, and /d/. But the diphthongs /ɤu/ occurs elsewhere. Those two vowels are in contrast, and therefore considered as only one vowel /ɤ/. The following chart shows the vowels that occur with consonants.

Rule 15. Diphthongization /o/ ⟶ [ou] # ——— /m/, /g/, /b/, /pʰ/ and /d/

/o/ ⟶ [o] /elsewhere

Consonants	Vowels												
	i	e	ei	ɛ	a	ai	au	ɜ	ɯ	u	ɤ	o	ɔ
pʰ	253	-	-	-	213	52	144	-	342	101	-	293	58
p	351	350	117	27	256	-	179	88	-	86	205	28	-
b	340	192	40	-	223	-	152	303	196	363	-	183	-
tʰ	53	-	-	23	32	-	116	-	386	343	216	15	72
t	-	-	215	151	101	283	-	77	352	191	34	10	403
d	106	-	188	98	-	-	155	-	322	257	19	221	393
kʰ	12	-	-	127	135	-	-	-	-	265	-	-	402
k	-	-	426	-	187	308	129	-	-	211	206	193	157
g	-	-		153	406	282	295	-	-	-	198	195	-
ʔ	167	405	64	360	227	16	309	-	-	334	82	397	232
m	90	-	150	396	429	92	217	-	15	-	142	179	1
n	412	-	18	251	88	273	-	-	361	277	87	-	268
ŋ	-	323	316	-	138	326	337	-	77	-	-	-	-
r	-	-		-	-	348		-	297	-		-	-
v	231	282	-	179	176	-	-	-	414	-	-	-	-
s	-	-	39	-	4	-	-	-	20	75	-	-	253
sʰ	-	-	-	331	264	-	305	-	158	24	96	143	-
dʒ	21	-	241	383	292	413	203	-	204	286	289	-	357
ʂ	56	-	186	269	239	-	-	-	107	362	-	79	243
ʝ	-	-	-	-	161	-	80	-	358	76	390	-	351
x	51	333	380	-	-	310	250	-	160	222	254	-	17
h	-	399	-	419	276	377	70	-	278	139	-	-	249
j	-	55	-	199	284	-	197	-	-	435	431	-	379
l	396	364	147	369	1	415	270	294	134	335	29	65	249
w	144	235	245	354	248	349	-	-	-	-	-	-	102

Table 69. Vowel Distributions Chart in Yintale

Yintale Phonetically similar plain vowels

Minimal pair	No	Suspect Pair	Gloss	No	Suspect Pair	Gloss
/i/ /e/	167.	[ʔin˦]	‘excrement’	405.	[ʔeŋ˦]	‘what’
/i/ /ɛ/	173.	[ʔi˥]	‘mother’	360.	[ʔɛ˥]	‘this’
/e/ /ɛ/	405.	[ʔeŋ˦]	‘what’	360.	[ʔɛ˥]	‘this’
/a/ /ɛ/	227.	[ʔaŋ˦]	‘to eat’	360.	[ʔɛ˥]	‘this’
/a/ /ɜ/	101.	[ta˩]	‘fish’	112	[tɜ˩]	‘cockroach’
/ɛ/ /ɜ/	151.	[tɛ˩]	‘buttocks’	112	[tɜ˩]	‘cockroach’
/e/ /ɜ/	341.	[beŋ˦]	‘to be long’	303.	[bɜ˩]	‘to winnow’
/ɤ/ /u/	20.	[dɤ˦]	‘west’	257.	[du˥]	‘to wait’
/ɤ/ /o/	344.	[tɤn˦]	‘to be short’	10.	[ton˩]	‘thunder’
/o/ /ɔ/	397.	[ʔo˩]	‘naked’	403.	[ʔɔ˩]	‘where’
/u/ /o/	407.	[ʔu˥]	‘stream’	397.	[ʔo˩]	‘naked’
/ɤ/ /ɔ/	20.	[dɤ˦]	‘west’	393.	[dɔ˥]	‘to be tired’
/ɤ/ /ɜ/	344.	[tɤn˦]	‘to be short’	322.	[tɜ˩]	‘one’
/a/ /ɔ/	227.	[ʔaŋ˦]	‘to eat’	403.	[ʔɔ˩]	‘where’
/i/ /ai/	253.	[pʰi˥]	‘to forget’	52.	[pʰai˥]	‘kapok’
/i/ /ei/	351.	[piŋ˦]	‘to be deep’	117.	[pei˦]	‘butterfly’
/a/ /ai/	213.	[pʰa˦]	‘ashes’	52.	[pʰai˥]	‘kapok’
/a/ /au/	213.	[pʰa˦]	‘ashes’	144.	[pʰau˥]	‘intestines’
/ai/ /ei/	52.	[pʰai˥]	‘kapok’	117.	[pei˦]	‘butterfly’
/ai/ /au/	52.	[pʰai˥]	‘kapok’	144.	[pʰau˥]	‘intestines’
/o/ /ɤ/	28.	[pon˥]	‘dust’	205.	[pɤ˦]	‘pot’
/ei/ /ɤ/	117.	[pei˦]	‘butterfly’	205.	[pɤ˦]	‘pot’
/au/ /ɤ/	73.	[pau˩]	‘tiger’	205.	[pɤ˦]	‘pot’
/u/ /ɤ/	353.	[lu˥]	‘to be round’	210.	[lɤ˩]	‘plate’
/o/ /ɤ/	397.	[ʔo˩]	‘naked’	82.	[ʔɤ]	‘to bark’

Table 70. Yintale Phonetically Similar Vowels

3.4.5 Yintale Tones

This section discuses about observed tones, initial consonant tone correlations, correlation between vowels and tones and tone pattern.

3.4.5.1 Yintale Observed Tones

According to this data, all tones are in contrast. There are five contrastive tones in Yintale. Each tone is referred to by demonstrating diacritics. They are high /˥/, mid /˧/, low /˩/, falling /˥˩/ and rising /˧˥/. The shape of the tones will be seen in the following chart.

	High	Mid	Low	Falling	Rising
Shape	˥	˧	˩	˥˩	˧˥
	/baŋ˥/	/baŋ˧/	/bɜ˩/	/baŋ˥˩/	/baŋ˧˥/
	293. to launder	49. bamboo shoot	68. paddy rice	291. scrub	366. yellow

Table 71. Demonstrating Diacritic Tones in Yintale

3.4.5.2 Yintale Description (including allophones)

All tones are in contrast.

Minimal pair	Number (word list)	Suspect Pair	Meaning in English	Number (word list)	Suspect Pair	Meaning in English
/˧/ /˩/	283.	/lai˧/	‘to fall’	408.	/lai˩/	‘rice field’
/˥/ /˧/	118.	/lɔ˥/	‘Scorpion’	249.	/lɔ˧/	‘to lie’
/˥/ /˩/	353.	/lu˥/	‘to be round’	372.	/lu˩/	‘be the same’
/˥/ /˧˥/	293.	/baŋ˥/	‘to launder’	366.	/baŋ˧˥/	‘yellow’
/˥˩/ /˩/	349.	/lwai˥˩/	‘be wide’	25.	/lwai˩/	‘sea’
/˥˩/ /˧/	179.	/kʰu˥˩/	‘eld-brother’	174.	/kʰu˧/	‘Child’
/˥˩/ /˧˥/	291.	/baŋ˥˩/	‘to rub’	366.	/baŋ˧˥/	‘yellow’

Table 72. Yintale Tone Contrasts

3.4.5.3 Yintale Initial consonant tone correlations

According to this data, there are five phonemic tones in Yintale: high, falling, mid, low and rising. The high tone occurs with all consonants except only the alveolar trill. The falling tone does not occur with /ɲ/, /ŋ/, /v/, /s/, /ʃ/, /ʝ/ and /j/. The mid tone

occurs with all consonants. The low tone does not only occur with the consonants /s/ or /sʰ/. The rising tone only occur with /p/, /b/, /t/, /kʰ/, /n/, /s/, /ʂ/, /l/ and /w/.

Consonants	Tones				
	˥	˦	˩	˥˩	˧˥
pʰ	93	213	000	398	-
p	121	248	88	307	367
b	128	49	68	291	346
tʰ	72	81	343	216	-
t	151	215	112	91	415
d	140	106	152	288	-
kʰ	180	135	376	179	410
k	397	211	187	308	-
g	195	153	62	259	-
ʔ	36	167	362	378	-
m	177	212	69	217	-
n	412	47	88	209	271
ɲ	299	84	77	-	-
ŋ	19	365	326	-	-

Consonants	Tones				
	˥	˦	˩	˥˩	˧˥
r	-	348	-	297	-
v	414	48	179	-	-
s	259	4	-	-	39
sʰ	99	96	-	91	
ʃ	190	186	422	-	-
dʒ	398	280	195	241	-
ʂ	57	54	181	239	362
ʝ	76	161	77	-	-
x	333	421	51	380	-
h	139	226	70	377	-
j	379	418	411	-	-
l	112	157	335	3	415
w	160	15	25	325	410

Table 73. Yintale Initial Consonant Tone Correlations

3.4.5.4 Yintale Correlation between Vowels and Tones

Yintale has ten pure vowels, three with breathy vowels, /i̤/, /ɛ̤/ and /a̤/, and three diphthong vowels. All tones are in contrast. All of the pure vowels and diphthong vowels occur with the high tone but never does with the breathy vowels. The mid tone occurs with all pure, breathy and diphthong vowels except for the breathy vowel /i̤/. The low tone does not occur with the vowels of /e/, /ɛ̤/ and /ɤ/, but it does with all diphthong vowels and all of the rest of the pure and breathy vowels. The falling tone occurs with /i/, /ɛ/ /a/, /ɯ/, /u/ and all of the diphthong vowels, it never does with the rest of the vowels. The rising tone only occurs with the vowels /a/ and /ei/, but it never does with the rest of the vowels.

Vowels	Tones				
	˥	˦	˩	˨	˧
i	73	397	51	188	-
e	333	15	-	-	-
ɛ	8	218	281	355	-
a	292	255	314	3	32
ɜ	410	251	88	-	-
ɯ	99	375	16	196	-
u	101	421	86	286	-

Vowels	Tones				
	˥	˦	˩	˨	˧
ɤ	206	272	108	216	
o	28	143	193	183	-
ɔ	181	44	78	-	-
ei	163	427	278	380	410
ai	162	154	25	246	-
au	157	84	152	250	-

Table 74. Yintale Correlation between Vowels and Tones

Yintale Distribution of Tones in a Three Syllable Words

There are some three syllables of tones that are distributed in Yintale. The three syllable words of tones that are contrast in each other can be seen in the following chart.

No	Words	gloss	No	Words	gloss
	˥ ˥ ˥			˥ ˦ ˦	
419.	hɛ tʰɔ pʰo	‘we’	58.	ma ʂa pʰɔ	‘papaya’
	˥ ˥ ˦			˥ ˦ ˩	
406.	bwɛ dɯ gạ	‘How many’	108.	pʰau kaŋ dʒɤ	‘spider’
	˥ ˩ ˨			˥ ˩ ˥	
246.	du tɜ nai	‘to tell’	373.	ʂu lu wa	‘to be different’
	˥ ˥ ˩			˥ ˩ ˦	
151.	ʔiŋ ʔu tɛ	‘buttocks’	341.	tʰu tɜ beŋ	‘to be long’
	˥ ˦ ˥			˥ ˩ ˩	
206.	ma pau kɤ	‘coconut ladle’	388.	bi tɜ klɤ	‘to be smooth’

No	Words	gloss	No	Words	gloss
	˦ ˥ ˦			˦ ˩ ˦	
404.	ba dɯ ga	‘who’	189.	ʃein kɔ kʰu	‘roof’
	˦ ˦ ˦			˦ ˩ ˩	
63.	bi ju haŋ	‘peanut’	6.	kan ta dʒɛn	‘mist’
	˦ ˩ ˥				
27.	haŋ pɛ ʔɛ	‘mud’			

No	Words	gloss	No	Words	gloss
	˩ ˧ ˧			˩ ˩ ˧	
16.	mɯ ha ʔai	‘yesterday’	436.	ʔa tɜ kʰlaŋ	‘loose’
	˩ ˧ ˦			˩ ˩ ˦	
187.	ka dei du	‘door’	351.	jɔ tɜ piŋ	‘to be deep’
	˩ ˧ ˩			˩ ˩ ˩	
303.	tɜ la bɜ	‘to winnow’	77.	ju tɜ ɲɯ	‘gibbon’

No	Words	gloss	No	Words	gloss
	˥ ˩ ˧			˩ ˧ ˥	
345.	duŋ tɜ beŋ	‘to be thick’	262.	ʔɔ mei ʂaŋ	‘to snore
	˥ ˧ ˩			˩ ˩ ˥	
330.	lwei ʂu tɜ	‘nine’	250.	ʔa tɜ xau	‘to sing’
	˥ ˩ ˥				
92.	sʰaŋ tɜ mai	‘Elephant tusk’			

Table 75. The Distribution of Three Tones Chart

There are five contranstive tones in Yintale. With five tones and three syllable words, the number of possible patterns is 125, but only twenty-six patterns are seen in this data. Rising and falling tones tend to occur only on the third syllable, sequences of HH-X and HM-X are common as are LH-X and LL-X. The restriction on rising and falling tones may imply prosodic features like phrasal/word boundaries.

3.4.5.5 Yintale Tone pattern based on the Luce/Haudricourt analysis

The following chart shows Luce’s tone patterns aligned in Haudricourt’s 3x3 chart.

	*A		
*Aspirated	III	VI V	VIII
*Voiceless	II		
*Voiced	I	IV	VII

According to the chart that Bennett used the aspirated and voiceless rows are merged The following chart shows how Bennett (1992) analyzed Yintale.

Yintale (Bennett 1992)

	*A	*B	*D
*non-voiced	33	33	55
*Vocied	11	11	33

The data used in this thesis produced a different tone chart of Bennett. The most significant differences are in the proto non-voiced –A cell where the tone is high rising and the protovoiced –D cell is rather than low. The protovoiced has no breathy phonation in this thesis. The tone pattern analysis is needed to research for further study.

Yintale (Myar 2004)

	*A	*B	*D
*non-voiced	15	33	55
*Vocied	11	11	11

CHAPTER 4

COMPARISON AND CORRESPONDENCES

4.0 Introduction

In the first part of this chapter, the syllable structure, consonants, consonant clusters vowels, and tone inventories are contrasted synchronically. The second part of this chapter contrasts consonants, consonant clusters, rhymes and tones diachronically.

4.1 Synchronic Comparison

4.1.1 Syllable structures in Comparison

There are four syllable types in Kayah. They are generalized as C^1 (C^2)(C^3) V(V) T.

Kayah has only open syllables. The onset is composed of C^1 (C^2)(C^3) in which C^1 is an obligatory initial consonant and (C^2) is an optional of the second consonant in a consonant cluster and (C^3) is optional the third consonant in a consonant cluster. The nucleus is composed of V(V) in which V is an obligatory nucleus and (V) is optional in a diphthong.

Ref. No	gloss	Words (Kayah)	Syllable type
18.	'year'	[na˩]	CVT
75.	'deer'	[kro̤˥]	CCVT
173.	'mother'	[mɯə˥]	CVVT
184.	'road'	[klja˥]	CCCVT

Table 76. Examples of Syllable Shapes in Kayah

There are two syllable types in Kayaw. They are generalized as C^1 (C^2) V T. Kayaw only has open syllables as in Kayah. The onset is composed of C^1 (C^2) in which C^1 is

an obligatory initial consonant and (C^2) is an optional second consonant. Like Kayah the nucleus is an obligatory monophthong V. /T/ represents tone.

Ref. No	gloss	Kayaw words	Syllable types
3.	'moon'	[la˧]	CVT
184.	'road'	[k^hlɛ˦]	CCVT

Table 77. Examples of Syllable Shapes in Kayaw

Like Kayaw, Monumanaw has two syllable types. They are generalized as C^1 (C^2) V T. Monumanaw only has open syllables. The onset is composed of C^1 (C^2) in which C^1 is an obligatory initial consonant and (C^2) is an optional second consonant. The nucleus is an obligatory monophthong V, there is no diphthong composed in this language. T represents tone.

Ref. No	gloss	Monumanaw	Syllable types
18.	'year'	[ne˩]	CVT
184.	'road'	[klɛ˧]	CCVT

Table 78. Examples of Syllable Shapes in Monumanaw

There are eight syllable types in Yintale. They are generalized as C^1 (C^2) (C^3) V^1 (V^2) ($C_{\text{◌}}$) T. Yintale also has open syllables. The onset is composed of C^1 (C^2) (C^3) in which C^1 is an obligatory initial consonant and (C^2) and is the second consonant and (C^3) is the third consonant. The nucleus is composed of either an obligatory monophthong V^1 or a diphthong V^1V^2. The coda is composed of syllable final nasal (C), and /T/ represents tone.

Ref. No	**English gloss**	**Yintale IPA**	**Syllable type**
313.	'to shoot'	[k^ha˧]	CVT
408.	'rice field'	[lai˩]	CVVT
80.	'Rat'	[k^huŋ˧]	CVCT
219.	'knife'	[k^hlɛ˦]	CCVT
38.	'tree'	[sein˥]	CVVCT
302.	'to bury'	[pluŋ˨]	CCVCT

325.	‘four’	[lwei˥˧]	CCVVT
57.	‘banana’	[k^hlwei˩]	CCCVVT

Table 79. Examples of Syllable Shapes in Yintale

4.1.2 Consonant Phonemes in Comparison

The following chart shows the comparison of the phonemes of four languages, Kayah Kayaw, Yintale and Monumanaw.

The phonemes of the four languages in comparison

Kayah

p^h			t^h					k^h	
p			t					k	ʔ
b			d						
m			n					ŋ	
			r						
			s^h						
		θ		ʃ	ʂ		ç		h
	v		z						
						dʒ			
						j			
			l						

Monumanaw

p^h	t^h				k^h	
p	t				k	ʔ
b	d				g	
m	n					
	r					
		ʃ	ʂ			h
				ɟ		
	ts^h			dʒ		
w				j		
	l					

Yintale

p^h		t^h			k^h	
p		t			k	ʔ
b		d			g	
m		n			ŋ	
		s^h				
		s	ʂ		x	h
	v			ɟ		
				dʒ		
w				j		
		l				

Kayaw

p^h		t^h			k^h	
p		t			k	ʔ
b		d			g	
m		n				
		r				
		s^h				
	θ		ʃ			h
				ɟ		
				dʒ		
w				j		
		l				

Table 80. Phonemes in Comparison

The voiceless aspirated plosives and the voiceless unaspirated plosives occur in all four languages. In the voiced plosives, only the voiced velar plosive /g/ does not occur in Kayah. The voiceless aspirated fricative /s^h/ does not only occur in

Monumanaw. The voiceless unaspirated fricative /s/ only occurs in Yintale. The voiceless palatal fricative /ç/ only occurs in Kayah, but does not only occur in the rest of the languages. The voiceless velar fricative occurs in Kayaw and Monumanaw but does not occur in Kayah and Yintale. The voiceless post-alveolar fricative /ʃ/ and the voiceless dental fricative /θ/ does not only occur in Yintale. The voiceless dental fricative /θ/ does not occur in Monumanaw either. But it occurs in the two languages of Kayah and Kayaw. The voiceless retroflex fricative /ʂ/ occurs in all languages except Kayaw. No voiced fricative occurs in Kayaw. Yintale and Monumanaw have the same voiced fricatives of /v/, /z/ and /ʝ/ but Kayah does not have the voiced palatal fricative /ʝ/. The voiceless aspirated alveolar fricative /tsʰ/ occurs only in Monumanaw. All four languages have the same voiced post-alveolar affricate /dʒ/. For the trill, Monumanaw and Kayaw have the same bilabial nasal /m/ and alveolar nasal /n/ but they do not have the velar nasal /ŋ/. Kayah and Yintale have the same nasals /m/, /n/ and /ŋ/. The trill occurs in all of the languages except Yintale. The bilabial approximant /w/ occurs in all languages except Kayah. The palatal occurs in all of the languages.

4.1.3 Initial Consonants in Comparison

The four following charts compare the initial consonants of the four languages.

Kayah	
Plosive	pʰ p b tʰ t d kʰ k ʔ
Nasal	m n ɲ ŋ
Trill	r
Fricative	v θ sʰ z ʃ ʂ ç ʝ x h
Affricate	dʒ
Approxi	w l j

Monumanaw	
Plosive	pʰ p b tʰ t d kʰ k g ʔ
Nasal	m n
Trill	r
Fricative	v sʰ ʃ ʂ ʝ x h
Affricate	tsʰ dʒ
Approxi	w l j

Yintale	
Plosive	pʰ p b tʰ t d kʰ k g ʔ
Nasal	m n ɲ ŋ
Trill	-
Fricative	v sʰ s ʂ ʝ x h
Affricate	tʃ dʒ

Kayaw	
Plosive	pʰ p b tʰ t d kʰ k g ʔ
Nasal	m n
Trill	r
Fricative	θ sʰ ʃ ʝ x h
Affricate	dʒ

Approxi	w l j

Approxi	w l j

Table 81. Initial Consonants in Comparison Charts

Looking at the details of this data, only Kayah does not have the voiced velar stop /ɡ/. Both Kayah and Yintale have the nasals /ŋ/ an /ɲ/, but Kayaw and Monumanaw do not. Only Yintale does not have the trill /r/. Only Yintale has the affricate /tʃ/, and Monumanaw the affricate /tsʰ/. No Kayaw, Yintale and Monumanaw has the voiceless palatal fricative /ç/, but Kayah has it. Kayah, Monumanaw and Yintale have the voiced labiodental /v/, but Kayaw does not have it. Yintale and Monumanaw do not have the voiceless dental fricative /θ/, but Kayah and Kayaw have it. Only Kayah has the voiced alveolar fricative /z/, but the rest of Monumanaw, Kayaw and Yintale don't have it.

These differences between the consonant inventories is minor considering the frequency of occurrence of these sounds as well as the number of consonants (22) all four languages have in common: /pʰ/, /p/, /b/, /tʰ/, /t/, /d/, /kʰ/, /k/, /ʔ/, /m/, /n/, /θ/, /sʰ/, /ʃ/, /ʂ/, /ʝ/, /x/, /h/, /dʒ/, /w/, /l/ and /j/.

4.1.4 Consonant Clusters Comparison

4.1.4.1 Clusters with /w/

The following table shows the clusters in those four languages that occur with /w/.

Common clusters	Kayah	Kayaw	Monu Manaw	Yintale
pw	94	-	144	144
p^hw	-	-	389	389
bw	291	-	-	406
t^hw	81	-	81	94/81
k^hw	-	330	159	159
kw	-	137	165	15
gw	-	-	-	295
dʒw	280	-	-	280
θw	164	-	-	-
ʂw	240	-	-	240
hw	-	240	-	-
mw	182	-	-	400
rw	42	-	-	-
lw	325	325	329	349

Table 82. Clusters with /w/ Charts

The cluster /pw/ does not only occur in Kayaw, it accompanies the rest of the three languages. The cluster /p^hw/ occur in Monumanaw and Yintale, and the cluster /bw/ occur with Kayah and Yintale. Only Kayaw does not associate the cluster /k^hw/, and only Kayaw does not go with /k^hw/ and /kw/. The cluster /dʒw/ occurs in Kayah and Yintale, but not in the rest of the two languages. Only Kayah associate the cluster /θw/. The cluster /ʂw/ occurs in all languages. The cluster /hw/ only occurs in Kayaw. The cluster /mw/ occurs in Kayah and Yintale. The cluster /rw/ only occurs in Kayah. The cluster /lw/ occurs in all languages. The first column of this chart shows the clusters with /w/ which are found in all four languages.

4.1.4.2 Clusters with /j/

The following chart shows clusters with /j/.

Common clusters	Kayah	Kayaw	Monu Manaw	Yintale
pj	117	-	-	171
p^hj	-	-	423	55
bj	366	-	-	-
t^hj	23	281	-	-
θj	315	164	-	-
dj	98	-	-	-
k^hj	133	-	73	-
kj	108	-	-	-
ʔj	360	-	-	-
mj	263	-	-	-
rj	310	-	-	-
ʂj	223	-	-	-
vj	179	-	-	-
lj	24	-	122	-

Table 83. Clusters with /j/ Charts

According to this data, the cluster /pj/ occurs in Kayah and Yintale, it does not occur in Kayaw and Monumanaw. Kayah and Kayaw have the clusters /t^hj/ and /θj/. The cluster /p^hj/ associates with Monumanaw and Yintale. Only Kayah has the clusters /bj/, /kj/, /dj/, /rj/, /mj/, /vj/, /ʂj/, /t^hj/ and /ʔj/, no the rest of the languages have with them. The clusters /k^hj/ and /lj/ only occur in Kayah and Monumanaw.

4.1.4.3 Clusters with /r/

The following chart shows clusters with /r/.

Common clusters	Kayah	Kayaw	Monu Manaw	Yintale
pr	393	144	-	-
p^hr	-	339	-	-
k^hr	-	267	262	-
kr	415	273	267	-
tr	-	15	-	-
gr	-	-	-	297
gw	-	-	-	295
θr	-	355	-	-

Table 84. Clusters with /r/ Charts

Only the clusters /pr/ and /kr/ occur in Kayah. The cluster /gr/ is only found in Yintale and it does not find in the rest of the three languages. In Monumanaw, only the two consonant clusters /kr/ and /k^hr/ are found. For Kayaw, the consonants /p/, /p^h/, /k/, /k^h/, /t/ and /θ/ occur with /r/ in a cluster consonant.

4.1.4.4 Clusters with /l/

The following chart shows clusters with /l/.

Common clusters	Kayah	Kayaw	Monumanaw	Yintale
pl	219	219	219	131
p^hl	-	295	295	46
k^hl	-	185	218	185
kl	192	208	184	208

Table 85. Clusters with /l/ Charts

Four consonants occurring with /l/ are found in those four languages, but only the clusters of /pl/ and /kl/ occur in Kayah. The consonant clusters /pl/, /pʰl/, /kl/ and /kʰl/ are found in Kayaw, Monumanaw and Yintale.

4.1.4.5 CCC clusters with /lw/

The following chart shows the cluster with /lw /.

	Kayah	Kayaw	Monumanaw	Yintale
plw	203	-	-	-
klw	410	-	-	-
kʰlw	-	-	-	57

Table 86. Clusters with /lw/ Charts

The cluster with /lw/ is found in Kayah and Yintale but it never occurs in the rest of the two languages, Kayaw and Monumanaw. Yintale associates with /kʰlw/ but Kayah associates with /klw/ and /plw/.

4.1.4.6 CCC clusters with /rw/

The following chart shows cluster with /rw/.

	Kayah	Kayaw	Monumanaw	Yintale
krw	159			

Table 87. Clusters with /rw/ Charts

The cluster with /rw/ is only found in Kayah but it never occurs in the rest of the three languages, Kayaw and Monumanaw and Yintale.

4.1.4.7 CCC clusters with /lj/

The following chart shows the cluster with /lj /.

	Kayah	Kayaw	Monumanaw	Yintale
plj	134	-	-	-
klj	218	-	-	-

Table 88. Clusters with /lj/ Charts

The cluster with /lj/ is only found in Kayah, but it never does with the rest of the three languages, Kayaw, Yintale and Monumanaw.

4.1.4.8 CCC clusters with /rj/

The following chart shows the cluster with /rj /.

	Kayah	Kayaw	Monumanaw	Yintale
prj	389	-	-	-
krj	348	-	-	-

Table 89. Clusters with /rj/ Charts

The cluster with /rj/ is only found in Kayah, but it never does with the rest of the three languages, Kayaw, Yintale and Monumanaw.

4.1.5 Vowels

4.1.5.1 Plain Vowels

The following chart compares all of the plain vowels occurring in the four.

Kayah		
i	ɯ	u
e	ɤ	o
ɛ	ɜ	ɔ
	a	

Monumanaw		
i	ɯ	u
e	ɤ	o
ɛ	ɜ	ɔ
	a	

Yintale		
i	ɯ	u
e	ɤ	o
ɛ	ɜ	ɔ
	a	

Kayaw		
i	ɯ	u
e	ɤ	o
ɛ		ɔ
	a	

Table 90. Plain Vowel Charts

Kayah, Yintale and Monumanaw have the same 10 plain vowels: /i/, /e/, /ɛ/, /a/, /ɜ/, /ɯ/, /u/, /ɤ/, /o/ and /ɔ/, but Kayaw has nine plain vowels: /i/, /e/, /ɛ/, /a/, /ɯ/, /u/, /ɤ/, /o/ and /ɔ/.

4.1.5.2 Diphthong Vowels

Kayah and Yintale diphthong chart will be presented as follows.

Kayah		
Front	**Central**	**Back**
		ɯə

Table 91. Diphthong Vowel Chart of Kayah

Yintale		
Front	**Central**	**Back**
ei ai		au

Table 92. Diphthong Vowel Chart of Yintale

The diphthong vowels of /ei/, /ai/ and /au/ only occur in Yintale. And only the diphthongs /ɯə/ is found in Kayah. But Kayaw and Monumanaw do not maintain the diphthongs, they are rich of plain vowels.

4.1.5.3 Vowel Plus Nasal

The following chart shows the vowel plus nasal occurring in the Yintale language.

Yintale		
Front	**Central**	**Back**
in en ɛn an		ʏn un on

Table 93. Vowel Plus Nasal Chart of Yintale

The vowel plus /n/ is only found in Yintale, but it never occurs in the rest of the three languages. Kayah, Kayaw and Monumanaw entirely lose the nasal vowel /n/ occurring in Yintale.

4.1.6 Tone Phonemes in Comparison

The following chart shows the tone phonemes occurring in those four languages.

Kayah			
High	High-mid	Mid	Low
˥	˦	˧	˩

Monumanaw			
High	High-mid	Mid	Low
˥	˦	˧	˩

Kayaw			
High	High- Mid	Mid	Low
˥	˦	˧	˩

Yintale				
High	Mid	Low	Falling	Rising
˥	˧	˩	˥˩	˩˥

Table 94. Tone Phonemes Comparison Charts

Six phonetic tones are found in this data. There are five phoneme tones occur in Yintale, four phoneme tones occur in Kayah, Kayaw and Monumanaw. No falling and rising tones occur in Kayah, Kayaw and Monumanaw. Only Yintale is found the tones occurred.

4.2 Diachronic Comparison

In this section, correspondences of initial consonants, correspondences of consonant clusters, correspondences of vowels and correspondences of tones will be compared. Kayah was chosen as the base-line.

4.2.1 Correspondences of initial consonants

The following chart shows the correspondences of all initial consonants.

Kayah	Monu-manaw	Kayaw	Yintale	Wordlist Numbers
pʰ	pʰ	pʰ	pʰ	114,172,174,213,296,342
p	p	p	p	27, 86, 88,131,147, 219,334
b	b	b	b	363, 65, 49, 63, 196, 210,
tʰ	tʰ	tʰ	tʰ	31, 32, 74, 81, 85, 93, 123,
t	t	t	t	44, 101, 265, 270, 322, 336
d	d	d	d	221, 345, 98, 106, 339, 183
kʰ	kʰ	kʰ	kʰ	106, 1, 73, 189, 236, 238,
k	k	k	k	37, 10, 119, 165, 308, 382
k	k	kʰ	k	430, 338, 320, 278, 267, 184
ʔ	ʔ	ʔ	ʔ	5, 11, 27, 65, 82, 83, 167,
m	m	m	m	1, 12, 15, 54, 60, 90, 113,
n	n	n	n	222, 228, 277, 417
θ	ʂ	θ	ʂ	45, 54, 62, 141, 164, 239
v	v/w	hw/w	v	48, 115, 179, 177, 353, 282
sʰ	ʂ	sʰ	sʰ	96, 136, 124, 137
ʂ	ʂ	θ	ʂ	71, 79, 110, 202, 269, 324,
z	ʝ/j	ʝ/j	ʝ/j	77, 76, 80, 332, 435
ʃ	ʃ	ʃ	sʰ	99, 331, 375
ç	h	h	h	377, 67, 276
ʝ	ʝ/dʒ	ʝ	ʝ/j	390, 411, 431
x	x/h	x/w	x/h	70, 222, 321
h	h	h/ʃ	h/ʃ	26, 26, 28, 186, 189, 190, 245
dʒ	dʒ	dʒ	dʒ	7, 203, 204, 280, 275, 289
l	l	l	l	3, 29, 147, 283, 314, 329
r	v/w	r	x/w	102, 33, 42, 176, 250, 310, 51, 398

Table 95. Initial Consonant Correspondences

According to this data, the correspondence in /p = p = p = p/ is the most frequent of voiceless bilabial stops. For consonant /pʰ/, all four languages are correspondent in the same phoneme is the most frequent. The correspondence in /θ = s̪ = θ = s̪ / occurs sporadically. All of the plosives, the same occurrences are the highest percentage, the other correspondences are very rare. The nasals /m/ and /n/ are also highly regular. The correspondence of the palatal nasal /ɲ/ and all fricatives are not consistent, but affricate /dʒ/ is consistent. The voiced labial velar approximant /w/ is not consistent as well but the lateral approximant /l/ is consistent.

4.2.2 Correspondences of consonant clusters

The following chart shows the correspondences of consonant cluster.

Kayah	Yintale	Kayaw	Monu	Wordlist Numbers
pw	pw	p	p	94
tʰw	tʰw/tʰ	tʰj/tʰ	tʰw/tʰ	31, 81
dʒw	dʒw/dʒ	dʒ	dʒ	241, 280
θw	ʂ	θ/ʂ	ʂ	329, 414, 181
mw	m	m	m	182
rw	w	r/ʃ	w	42, 159, 160
lw	lw	lw/l	lw/l	329, 325, 330, 58, 410
pr	pj/pw	pr/r	pw/p	169, 170, 171, 234, 262, 317,322,406
kr	kʰw	ʃ	kʰw	159, 160
pl	pl/pʰl	pl	pl/pʰl	46, 141, 155, 291, 131, 388, 292
kl	kʰl/k	kʰl/k	kl/kʰl	37, 104, 192, 383, 225
pʰj	pʰ	pʰ	pʰj/pʰ	39, 423
pj	p	p	p	117, 151, 434
bj	b	b	b	49, 220, 366
kj	k/g	k/g	k/g	62, 158, 108, 308, 282
kʰj	kʰ/g	kʰ/k	kʰ	134, 59, 153
tʰj	tʰ	tʰ	tʰ/ʃ	23, 85, 206, 343, 427
dj	d	ʔ/θ	ʔ/d	320, 288, 157, 98, 258
ʔj	ʔ	j	ʔ	360
ʂj	ʂ	θ	ʂ	202, 298, 372
rj	dʒ/x	r	v	398, 310
lj	l	l	l	408, 242, 369, 24, 72, 174
mj	m	m	m	92, 113, 261
vj	v	v/hw	v/w	115, 179
klj	kʰl/kl	kʰl	kʰl/kl	185, 436, 218, 274
plj	pl	-	pl	134
prj	pʰw	pr	pʰw/p	389, 234
krj	gr/x	ʃ/dʒ	kʰw/kw	178, 384
klw	kʰlw	kl	kʰlw/kl	57, 58, 410
plw	pl	pl	pl	203
krw	kʰw	ʃ	kʰw	159, 160

Table 96. The Correspondences of Consonant Clusters

Kayah has a richer variety of clusters than other three languages, therefore, is rare to find clusters that consistently correspond, except for the clusters /lw/ and /pl/. Kayah appears to retain medial consonants more consistently than the other languages. This is particularly true for medial /w/, and /j/. Clusters in the other languages are often simplified to ʃ, or θ in Kayaw, and in a few cases to /ʃ/ in Monumanaw. From this, it can be seen that Kayah is the most conservative for initial clusters, while Kayaw is the most innovative, while Monumanaw and Yintale are somewhat innovative.

4.2.3 Correspondences of Rhymes

The following chart shows the rhyme correspondences in detail.

KYH	YTL	KYW	MNMW	WORDLIST NUMBERS
i	i	i	i	106, 166, 168, 212, 340, 370
i	i	i	e	69, 371, 112, 51, 299, 388, 420, 337
i	ei	u	i	81, 159, 164, 280
e	a	a	a	28, 74, 161, 429, 428, 252, 259, 321
e	ɛ	i	i	288, 298, 315, 331, 369, 202, 224
ɛ	a	a	a	1, 3, 4, 32, 37, 43, 45, 71, 88, 135,
ɛ	a	ɔ	ɔ	34, 101, 123, 200, 266, 296, 396
ja	an	ɔ	ɔ	436, 366, 220, 109, 108, 62, 49
a	an	ɔ	ɔ	39, 62, 91,92,152, 279,
a	ei	e	e	40, 18, 64, 126, 147, 163, 380
a	ai	ɛ	ɛ	184, 237, 282, 308, 319, 389, 377, 326, 348, 349
ɜ	ɜ	ɜ/a	a	322, 338, 88, 371
ɯ	un	ɯ	u	11, 50, 233, 236, 302, 345
ɯ	ɤ	u	o	87, 124, 136, 137, 96, 347
u	u	u	u	93, 94, 211, 265, 363
u	u	u	o	65, 86, 87, 122, 174, 189, 319, 339, 341, 382, 411, 435
ɤ	au	i/ɤ	u/ɤ	108, 109, 124, 275
o	ɔ/au	o	o	17, 181, 231, 232, 44, 65, 156, 35, 217, 307, 381
ɔ	ɤ	ɤ	ɤ	29, 82, 119, 216, 390, 395, 141, 362
ɔ	ei	ɯ	ɤ	38, 40, 42, 43, 45, 257
ɯə	ɯ	ɤ	o	173, 342, 386
ɯə	u	ɯ	u	277, 302, 345

Table 97. Vowel Correspondences

There are ten plain vowels in Kayah, which are compared with the other three languages of Kayaw, Monumanaw and Yintale. The vowels /i/ and /u/ are consistently correspondent, but the rest all of the vowels are not consistently correspondent. But they are very close to each other, such as Kayah /e/ is correspondent to Yintale in /ɛ/, Kayaw in /i/, and Monumanaw in /i/. In the same way, while Kayah is /ɛ/, it is correspondent to the rest of the four languages in /a/. And while Kayah is /a/, Yintale is also /a/, and Kayaw and Monumanaw are /ɔ/. While Kayah is /o/, Yintale is /ɔ/ or /au/, and Kayaw and Monumanaw are /o/. While Kayah is /ɔ/, Yintale is also /ɔ/, and Kayaw is /ɯ/ and Monumanaw is /o/. While Kayah is the diphthongs /ɯə/, Yintale /ɯ/ or /u/, Kayaw /u/ or /ɯ/, and Monumanaw /o/ or /u/. Yintale appears to be more conservative for final codas, retaining the final alveolar nasal [n] and the final velar nasal [ŋ], and for retaining a greater number of diphthongs. The other languages are somewhat more innovative in these areas.

4.2.4 Correspondences of tones

The following chart shows the tones of three languages correspondent to Kayah.

Kayah	Yintale	Kayaw	Monu	MSEA #
˥	˥	˥	˥	27, 123, 331, 334, 401
˥	˥	˦	˥	119, 162, 261, 370, 414
˦̈	˩	˩̈	˩̈	102, 219, 2, 12-15, 29, 42, 80, 86, 88, 90, 102, 180,219, 382,408
˦	˥	˦	˩	220, 222, 232, 261, 264, 307, 78, 281
˩	˦̈	˩	˥	212, 279, 4, 18, 43, 45, 46, 48, 49,81, 82, 83, 168, 170, 186,211, 218, 221, 227, 272, 301, 320, 321, 339, 342, 347, 356, 383, 386

Table 98. Tone Correspondences

For the high tone in Kayaw, Yintale and Monumanaw, the highest percentage correspondent is the same as Kayah. But especially in Kayaw, both of the high tone and high-mid tone are correspondent to Kayah high tone. While the high-mid tone with breathiness occurs in Kayah, Yintale, Kayaw and Monumanaw show that the low tone shows correspondence to Kayah, but each of Kayaw and Monumanaw has

one occurrence breathiness that is correspondent to the high-mid tone with breathiness in Kayah. For Yintale, it shows the high tone is correspondent to the mid tone in Kayah, Kayaw is high-mid, and Monumanaw is low. The mid tone with breathiness in Yintale shows the high percentage correspondent to the low tone in Kayah, Kayaw shows the low tone but Monumanaw shows the high as higher percentage correspondent to the low tone in Kayah.

CHAPTER 5

CONCLUSION

5.1 Summary

This section contains the conclusion. Each chapter is briefly summarized at the conclusions of this thesis.

The chapter one of this thesis presents about four languages namely; Kayah, Monumanaw, Kayaw and Yintale. They are found primarily in Kayah State, Burma (Burma). Kayah State is located in the eastern part of Burma. It borders Shan State to the northwest, Karen State to the southeast and Thailand's Mae Hong Son province to the east. It is one of the smallest states in Burma with a total population of 207,357 and a total surface area of 11,731.5 sq. km.

Only Kayah has been analyzed by some scholars but the other three languages discussed in this thesis-Kayaw, Monumanaw, and Yintale have never been analyzed.

The methodology for collecting data used is based on the word lists from the Southeast Asia 436 Words for Each Language. When collecting word lists, a tape recorder, notebook, and the International Phonetic Alphabet for transcribing were used.

Many languages are spoken in Kayah State. Others living outside of Kayah State refer to them as 'Kayah'. "Kayah" is often used as a general name for all the Karenic groups residing in Kayah State. When other people living outside of Kayah State say, "Kayah" it includes all Karenic languages spoken in Kayah State. But people living in Kayah State have to identify themselves specifically. When they identify themselves as Kayah they include all Red Karen. They do not include other Karenic languages. Some subgroups names include terms location like Upstream, Downstream, Western People, Eastern People, Upcountry (Gekho), Downcountry (Geba), Up-People (Latha), and so on.

Since each group is called different names by different groups. The Kayah people are spread all over Kayah State but Monumanaw and Kayaw people can be found in Phruso township. There is only one Yintale village in Phasaung township and Bawlake township.

Chapter two compared the four languages using the lexicostatistic method. The lexicostatistic similarity between them is: Kayah and Kayaw 74%, Kayah and Monumanaw 78%, Kayah and Yintale 81%, Yintale and Monumanaw 82%, Yintale and Kayah 74%, and Monumanaw and Kayaw 78%. Based on the lexical percentages of these languages, a tree was drawn depicting the lexical relationships between these languages.

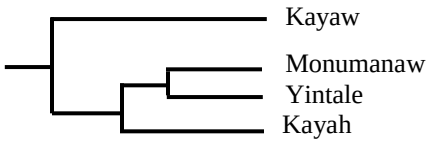

Figure 15. Family-tree Depicting Lexical Relationships

Chapter three provided the synchronic phonologies of Kayah, Kayaw, Monumanaw and Yintale. Kayah has 24 consonants, ten vowels and one diphthong, and four tones. Kayaw has 22 consonants, nine vowels, and four tones. Monumanaw has 22 consonants, ten vowels and four tones. Yintale has 24 consonants, ten vowels and three diphthongs and five tones.

Chapter four gave the phoneme comparisons and correspondences of the four languages. The voiceless aspirated plosives and the voiceless unaspirated plosives all occur in the four languages. But the velar stop /ɡ/ is not found in Kayah. The nasal [ɲ] and /ŋ/ do not occur in Kayaw and Monumanaw, and the fricative /v/ does not occur in Kayaw. The cluster /pw/ does not occur only in Kayaw. The cluster /pʰw/ occurs in Monumanaw and Yintale, and the cluster /bw/ occurs in Kayah and Yintale. Only Kayaw does not have the cluster /kʰw/ and /kw/. The cluster /dʒw/ occurs in Kayah and Yintale, but only Kayah associate the cluster /θw/ in a cluster. The cluster /ʂw/ occurs

in all languages. The cluster /hw/ only occurs in Kayaw. The cluster /mw/ occurs in Kayah and Yintale. Only Kayah has the cluster /rw/. The cluster /lw/ occurs in all languages. The cluster /pj/ occurs in Kayah and Yintale, it does not occur in Kayaw and Monumanaw. The cluster /pʰj/ occurs with Monumanaw and Yintale. Only Kayah has the clusters /bj/, /kj/, /dj/, /rj/, /mj/, /vj/, /ʂj/, /tʰj/ and /ʔj/, none of the rest of the languages have with them. The clusters /kʰj/ and /lj/ only occur in Kayah and Monumanaw. The clusters /pr/ and /kr/ only occur in Kayah. The cluster /gr/ is only found in Yintale and no other consonants occur in a cluster with /g/. Only the consonants /k/ occurring with /r/ in Monumanaw and Kayah. But the consonant /kʰ/ occurs with /r/ is only found in Monumanaw. For Kayaw, the consonants /p/, /pʰ/, /k/, /kʰ/, /t/ and /θ/ occur with /r/ in a cluster consonant. All of the consonants occurring with /l/ in those four languages, such as /pl/, /pʰl/, /kl/ and /kʰl/ can be found in Kayaw, Monumanaw and Yintale. The cluster with /lw/ is found in Kayah and Yintale but it never occurs in the other two languages, Kayaw and Monumanaw. The cluster with /lj/ is only found in Kayah, but it is never found in the other three languages. The diphthong vowels of /ei/, /ai/ and /au/ only occur in Yintale. But one diphthong /ɯə/ is found only in Kayah not in other three languages. All of the plosives, occurring in the same way, have the same occurrences of the highest percentage, but other correspondences of plosives are very rare. The nasals /m/ and /n/ also have the same occurrences and are of the highest percentage. The correspondence of the palatal nasal /ɲ/ and all fricatives are not consistent, but affricate /dʒ/ is consistent among the four languages.

W. Kayah is richer in clusters than the other three languages. There, therefore, it is rare to find that clusters are consistently correspondent, except for the clusters /lw/ and /pl/.

The vowels /i/ and /u/ are consistently correspondent, but the vowels /e/ and /ɛ/ in Kayah are different in only one feature to be consistent. All the rest of the vowels are not consistently correspondent, but they are very closely related to each other. For the high tone in Monumanaw, the highest percentage correspondent is the same as Kayah. For the high tone in Yintale, it shows that the high tone and falling tone are correspondent in a high percentage to Kayah and Kayaw shows that the high tone and the high-mid tone show correspondence to Kayah in a high percentage. Other such as the high tone, mid tone and low are not very consistently correspondent. Although the lexicostatistic analysis shows that they are different from each other, the consonant phonemes in comparison, initial consonant and vowel correspondences are very similar. Therefore a historical phonological reconstruction should confirm the present analysis.

5.2 Synthesis

This thesis considers three areas of comparison between Kayah, Monumanaw, Kayaw, and Yintale. These are lexical comparison, synchronic phonology, and correspondence sets. The lexical comparison shows that the varieties are fairly similar, with Monumanaw and Yintale being the most similar, followed by Yintale and Kayah. Kayaw is the most different from the other languages lexically.

In terms of phonological complexity, Yintale and Kayah have the most consonants, followed by Kayaw, and then Monumanaw. Yintale has the most tones and diphthong vowels. There are ten planin vowels and three diphthong vowels and it is more conservative for the final alveolar nasal /n/ and velar nasal /ŋ/. Kayah has only one diphthong vowel. Kayah, Kayaw and Yintale don't retain the final codas and diphthong vowels, they are somewhat innovation in those areas. There are four tones in Kayah, Kayaw and Monumanaw except Yintale. The following table summarizes the basic findings of the lexical, phonological and correspondence comparisons:

	Lexically	**Phonology**					**Correspondences**				
	similar	C	V	cda	dip	T	C	V	cda	dip	T
Kayaw	lower	22	9	-	-	4	Inv	[7]	mid	mid	
Monu	high	22	10	-	-	4	mid		mid	mid	
Yintale	high	24	10	-n,ŋ	3	5	mid		cons	cons	
Kayah	high	24	10	-	1	4	cons		mid	mid	

Table 99. The Summary of the Different Aspects Analysis

From this table, it can be seen that there is not a strong general relationship between all of the different aspects analyzed in this thesis. The exception is that the language with the most innovative consonant features, in this case, the simplification of consonant clusters are in a language that is relatively lower in lexical similarity with the other languages. This seems reasonable since the criteria used in comparing lexical similarity places more weight on consonants than it does vowels. Nevertheless, if these are consistent correspondence sets, the criteria should have filtered some of this out. Thus, many of these were not consistent (that is having 3 or less cases).

Yintale is the most conservative in terms of codas and diphthongs, which were also noted, in the synchronic description. This seems to have little bearing on the lexical similarity since it is very similar to Monumanaw, which does not share these features.

Correlations between lexical similarity and other features such as phonology and systematic correspondences are a function of the methodology used in lexical counting.

In conclusion, the four languages compared are quite similar. Monumanaw, Yintale, and Kayah are very similar lexically, while Kayaw is a little different. There are similarities in the phonological inventories, with Yintale and Kayah having the most consonants. The number of vowels in each language is similar. Yintale has nasal codas and a more diphthongs than the other languages. Kayah is more conservative

[7] No conclusions can be drawn from the tones and vowel correspondence sets. Further historical comparison is necessary.

for medial clusters, while Kayaw is the most innovative. Yintale preserves more of the final consonants and diphthongs.

5.3 Further Study

Suggested research; Since the lexical similarity percentages are very close, but reported comprehension is low, it is recommended that comprehension testing be carried out on the varieties studied.

It is necessary for future research to focus on tones analysis because there is a lack of research focusing only on the tones in each language. Sometimes when an informant gives a word that has the same meaning in different form such as a single word and phrasal words, tones can be changed without changing the meaning. Alphabet design has to be made for each Karen language. All Karen languages have no established written form except for Sgaw Karen. Kayah has been devised recently. Orthographies for some languages have been devised by Catholic missionaries in a Roman letter orthography, such as Padaung and Geba. The rest of the languages, if they are Roman Catholic believers, use the Roman alphabet for their scripts.

Dialect survey is necessary for researchers in the future. For example, though Yintale has around 500 speakers, there are at least two distinct dialects. Monumanaw has two dialects too, though the population is about 10,000. Kayaw has two main dialects as well. Other strong dialects are found in Kayin Pyu (kəɲɔwah) living in Pinlong township, Southwest Shan State, Mawchi Sgaw Karen living in South Kayah State, and others such as Latha (Gaung ton), Yinbaw (Ka Nga) and Bawlakhe Kayah, and so on.

Grammar survey such as, morphemes, lexicon and syntax, need to be studied in future research. Only one book of grammar, texts and a glossary of Eastern Kayah Li was studied by Solnit.

APPENDIX A

WORDLIST IN FULL SYLLABLE

The following table shows phonetic transcription of the wordlist of 436 vocabularies in full syllable.

MSEA	Nature	Kayah (Kebogyi)	Yintale	Kayaw (Bre)	Monu
1	Sky	mo̤˧kʰu˩ /mo̤˧lɛ˧	mɔ˧kʰu˧ /mɔ˧la˩	mɤ˧kʰo˩ /mɤ˧la˧	mɔ˧kʰɔ˧ /mɔ˧la˩
2	Sun	mo̤˧	tɜ˩mɤ˩	lɯ˧mɯ˩	lu˩mu˩
3	moon	lɛ˧	tɜ˩la˨	la˧	la˩
4	Star	sʰɛ˩	la˧sa˧	ʂa˩	ʂa˧
5	Cloud	ʔo̤˧lɯ̤˧	kan˧ʔuŋ˧	ka˧ʔɯ˩tɤ˧	po˩ʔo˧lu˩
6	Mist	ʔo̤˧lɯ̤˧la˩po˩	kan˧ta˩dʒɛn˩	mɯ˧ʃi˩lɔ˧	dʒa˩ʃi˩
7	Rain	ke̤˧dʒɯ˩	kan˧dʒu˩	ʃɛ˧dʒu˧	kʰwɛ˧dʒu˩
8	Rainbow	tʰji˧la˩bo˧ kja˧sʰa˧	tɜ˩mɤ˩la˩ʔɔ˧tʰɛ˧	tɤ˩po˧lɔ˧	kɤ˧wɤ˧ʃi˩bo˩
9	Lightning	sʰi˩li˩bɔ˧	sʰɯ˧van˩	tʰi˩li˩wa˩kɔ˧	la˩wo˧ʃe˧
10	Thunder	mo̤˧krɔ˧	kan˧tɜ˩ton˩ /mɔ˧krɔ˩	klɔ˧mɯ˩pri˧	mɔ˧kɤ˩
11	Shadow	zo˩ʔɯ˩	ʔa˩ʔuŋ˧	ka˧ʔɯ˩	ka˩ʔu˧
12	Night	mo̤˧kʰi˧	mɯ˩kʰi˧	lɯ˧mɯ˩na˧	lu˩mu˩ha˧
13	Day	mo̤˧sʰɛ˧klɛ˧	mɯ˩li˧	lɯ˧mɯ˩ʂa˧	lu˩mu˩ʂa˩
14	Morning	mo̤˧li˧	mɯ˩li˧xɔ˩sʰan˧	lɯ˧mɯ˩ro˧	lu˩mu˩vo˩
15	noon	mo̤˧tʰɯ˩	mɯ˩tʰoŋ˧ /mɯ˩kwe˧	lɯ˧mɯ˩ʂa˧ /lɯ˧mɯ˩tri˩	lu˩mu˩ba˧
16	Yesterday	pa˧he˧nu˩	mɯ˩ha˧ʔai˧	ma˩kʰa˧	ma˧ha˧nu˩
17	Tomorrow	ʃe˧pa̤˧ro˩	mɯ˩xɔ˩	dɯ˧mɯ˩ro˧	pe˩vo˩
18	Year	na˩	nei˧	de˩	ne˧
19	East	dɜ˧bɛ˧tʰe˩	dɤ˧ŋa˧ /sɯ˧tʰaŋ˧	lɯ˧mɯ˩hɔ˩	lu˩mu˩tʰɔ˧
20	West	dɜ˧bɛ̤˧nɯə˧	tɜ˩tʃɯ˧ /sɯ˧nu˩	lɯ˧mɯ˩lo̤˧	lu˩mu˩lɔ˩
21	North	dɜ˧bɛ̤˧tʰj˩	tɜ˩dʒi˧ /sɯ˧tʰa˧	kʰo˧tɔ˧tʰo̤˩	lɤ˩kʰji˩
22	South	dɜ˧bɛ̤˧lja˩	tɜ˩tʰwɛ˧ /sɯ˧laŋ˨	kʰo˧tɔ˧lo̤˩	lɤ˩tʰa˧
23	Water	tʰje˧	tʰɛ˧ /tʰai˧	tʰi˧	ʃi˩
24	River	lja˧mɯə˧	tʰɛ˧sʰu˧	tʰi˧ple˧lo̤˧	lo˩do˧
25	Sea	tʰje˧du˩tɜ˩va˩	tʰɛ˧du˧kaŋ˩lwai˩	po˧lɛ˧	ʃi˩do˧ʃi˩tɜ˩we˩
26	Earth, soil	he˩kʰu˩	haŋ˧	ha˧	ha˧kʰɔ˧
27	Mud	pa˩ʔa˧	haŋ˧pɛ˩ʔɛ˧	ha˧pɛ˧ʔɛ˧ /ha˧po˧pɛ˧	ha˧pɛ˩ʔɛ˧
28	Dust	he˩mɯ˩	haŋ˧pon˧ /haŋ˧mu˧	ha˧pʰru˩	ha˧ko˩mo˩

29	Stone	lo̱˥	lɤ˩	lɤ˩	lɤ˩
30	Sand	lo̱˥ts˩ma˥	haŋ˦sʰai˦	lɤ˩θe˦me˦	lɤ˩ʂe˩me˥
31	Lime(betel)	tʰwi˥	tʰuŋ˩˧	tʰɯ˥pʰɯ˩	tʰu˥
32	Gold	tʰɛ˦	tʰa˧˩	tʰa˥	tʰa˩
33	Silver	rɯ˦	ts˩mɤ˩ja˩	ru˥	vo˩
34	Iron	to̱˥tʰɛ˥	tɤ˩tʰa˥	tʰɔ˦lɔ˦	te̱˦tʰɔ˥
35	Mountain	sʰo˩	sʰau˦	kʰo˥lo˥	kʰɤ˦lɤ˦
36	Cave	krɔ˦ku˦	lɤ˩ʔu˥	lɤ˩ku˥	kʰɤ˩kɤ˩
	Plants, Food				
37	Forest	mi˩klɛ˦	sʰa˩kla˥	mi˦ka˥	mi˩kla˩
38	Tree	θɔ˩	sein˧˩	θɯ˩mɯ˩	ʂɤ˥
39	Branch	θɔ˩pʰja˦	sein˧˩pʰaŋ˩˧	θɯ˩pʰɔ˥	ʂɤ˥pʰɔ˩
40	Tree bark	θɔ˩pʰa˥	sein˧˩bei˦	θɯ˩pʰe˥	ʂɤ˥pʰe˥
41	Thorn	sʰu˩ʃa˥	ts˩sʰau˦	ʃi˩sʰo˥	ta˩ʃi˥ʂo˥
42	Root	θɔ˩rwi̱˥	sein˧˩wei˩	θɯ˥kʰɔ˦rɯ˩	ʂɤ˥kʰɔ˥wi˩
43	Leaf	θɔ˩lɛ˩	sein˧˩la˦	θɯ˩la˩	ʂɤ˥la˥
44	Flower	tɛ˩pʰo˦	ta˩kɔ˦	ta̱˦pʰo˥	ta˩pʰo˩
45	Fruit	θɔ˩θɛ˩	ʔa˩ʂa˦	ta̱˦θa˩	ta̱˩ʂa˥
46	Seed	ʔa˩plɔ˩	ʔa˩pʰlo˦	ta̱˦plɤ˩	ta˩pʰlo˥
47	Grass	mi˩θɛ˩	naŋ˦	mi̱˦	mi˩
48	Bamboo	vɛ˩	va˦	hwu˩	vo˥
49	Bamboo shoot	ʔi˩bja˩	baŋ˦	bɔ˩	bɔ˥
50	Mushroom	krɯ˩	kuŋ˦	dʒɯ˦	gu̱˩
51	Cane/rattan	ri˥	xiŋ˩	ri˩	we˩
52	Kapok	tɔ˩pʰo˦	ts˩pʰai˥ /ts˩	tɤ˦pʰo˥	tɤ˩pʰo˩
53	Sugarcane	di˦klja˦	tʰi˥bau˩	dɔ˥kʰlɛ˥bɔ˥	di˩kʰlɛ˩bɔ˩
54	Betel nut	mɛ˥θɛ˩	ma˥ʂa˦	ma˦θa˩	mɛ˥ʂa˥
55	Opium	pʰi˦	pʰjeŋ˦	bein˦(Bur)	pʰje˩
56	Liquor	tʰje˦sʰi˥pre̱˥	ʃi˥kʰɔ˦	θi˥	ʂe˥kʰa˥
57	Banana (fruit)	di˦klwi˥θɛ˩	ʂa˥kʰlwei˩	ɟɔ˥θa˩	jɔ˩ʂa˥
58	Papaya (fruit)	di˦klwi˥he˦θɛ˩	ma˥ʂa˦pʰɔ˦	ɟɔ˥dɤ˥ta˦pla˩ θa˩	du˩klu˥ʂa˥
59	Mango (fruit)	ts˩kʰja˥θɛ˩	ts˩kʰɔ˥ʂa˦	θo˥ko˥θa˩	ʂo˩kʰo˥ʂa˥
60	Jackfruit (fruit)	mɔ˥lja˦θɛ˩	ma˥klɤŋ˩ʂa˦	ma˦lɔ˩θa˩	mɔ˩lo̱˩ʂa˥
61	Coconut (fruit)	ma˥ʔu˦θɛ˩	ma˥pau˦ʂa˦	ʔu˥θi˥θa˩ (Bur)	mɔ˩ʔo˥ʂa˥
62	Eggplant (fruit)	kja˥θɛ˩	ts˩gaŋ˩ʂa˦	go˦θa˩	gɔ˩wo˥ʂa˥
63	Peanut	kɔ˥bi˦ʂu˥	bi˦ju˦haŋ˦	bo˥ba˩ha˩kɔ˥	ʂe˩be˩ʂu˥ʂa˥
64	Ginger	ta˩ʔa˦	ts˩ʔei˥tɛ˩	θe˥ʔe˥	ʂe˩ʔe˩
65	Garlic	pʰo˦ho˥bu˦	klo˩bu˥	pra˩ho˩bu˥	po˩ho˥bo˩
66	Corn	ku˩kʰe˥	bu˦kʰɛ˥	θu˩bu˩θa˩	kʰo˥kʰlɛ˩ʂa˥
67	Red pepper	θe˩ça˥	pi˩du˥	θɛ˦θa˩ /θa˩hɛ˥	pi˩ʂɛ˥hɛ˥
68	Paddy rice	bɯ̱˥	bɜ˩	bɯ˥	bu˥
69	Cooked rice	di˦	mi˩	di˥	de˩
70	Pounded rice	xɯ˦	hau˩	xɯ˥	xu˩
71	Salt	ʔi˩ʂɛ˩	ʔi˥ʂa˦	di˥θa˩	ʔe˩ʂa˥
	Animals				
72	Animal	tɛ˩pʰu˥tɛ˩lje˩	ta˩pʰu˥ta˩lai˩	ta̱˦pʰu˦ta̱˦li˦	ta˩pʰo˥ta˩li˩
73	Tiger	pʰɯə˦kʰi˦	pau˩kʰi˥	kʰi˥	kʰje˩/kla˥le˩ pʰo˥

74	Bear	tʰe˧	tʰaŋ˥˩	tʰa˥	tʰa˩kɤ˩bɤ˩
75	Deer	krə̤˥	tʃu˥	kʰɤ˩	kʰɤ˥
76	Monkey	zɔ˧	ɟu˥	ɟɤ˧	ɟɤ˩
77	Gibbon	zɔ˧kɯ˥	ɟu˩ts˩ɲɯ˩	ɟɤ˧gi˧	ɟɤ˩ke˩ʔe˥
78	Rabbit	da˧ʂɛ˩	tʰwei˥klɔ˩	dɛ˥θa˩	dɛ˩ʂa˥
79	Porcupine	ʂɯ˩	ʂoŋ˧	θɯ˩ /θa˧ba˧	ʂu˥
80	Rat	zɯə̤˥	ɟau˩kʰuŋ˥	ɟu˩	ɟu˩dɤ˩
81	Dog	tʰwi˩	tʰwei˧klɔ˩	tʰju˩	tsʰi˥ /tʰwi˥
82	To bark	ʔɔ˩	ʔɤ˧	ʔɤ˩	ʔɤ˥
83	To bite	ʔa˩	ʔei˧	ʔe˩	ʔe˥
84	Cat	tʰwo˥	mi˥ɲau˧ /tju˥	mi˥wu˧	mi˥kʰɔ˩ʔo˥
85	Pig	tʰja˥	tʰɔ˥	tʰo˧	tʰo˥
86	Cow	pṳ˥	pu˩	pu˩	po˩
87	Milk	pṳ˥nɯ̤˥tʰje˧	pu˩nɤ˩tʰɛ˥	pu˩nu˩tʰi˥	po˩no˩ʃi˩
88	Buffalo	pɜ˩nɛ̤˥	pɜ˩na˩	pa̤˧na˩	pa̤˩na˩
89	Buffalo horn	nɔ˩	nɤ˧	nɤ˧	ne˩
90	Tail	kʰa˧mi̤˥	kau˩mi˩	kɔ˥mi˩	gɔ˩me˩
91	Elephant	tɜ˩ʃa˧	tɜ˩sʰaŋ˥˩	rɔ˧ʂɔ˥	kɔ˩ʂɔ˩
92	Elephant tusk	tɜ˩ʃa˧tɜ˩mja˥	tɜ˩sʰaŋ˥˩tɜ˩mai˥˩	rɔ˧ʂɔ˥θɛ˩mɛ˩	kɔ˩ʂɔ˩ʂɛ˩mɛ˩
93	Bird	tʰu˩	tʰu˥pʰu˥	tʰu˩	tʰu˥te˩pe˩
94	Bird’s nest	tʰu˩pwi˩	tʰu˥pʰu˥pwei˧	tʰu˩pi̤˧	tʰu˥pi̤˩
95	Wing	ʔa˩da˥	di˥	de˧	de˥kə̤˩
96	Feather	tʰu˩sʰɯ˩	sʰɤ˧	tʰu˩sʰu˩	ʔa˩ʂɔ˥
97	To fly	zɯə˩	ɟu˧	wi˧	wi˩
98	Egg	dje˩	dɛ˧	di˩	di˥
99	Chicken	ʃe˧	sʰɯ˥	ʃi˥	ʃe˩
100	Duck	ta˩ʂa˥	ma˩ts˩li˩ /ʔa˥ma˩	ʔu˩bɛ˧ (Bur)	ʃe˩ʔɔ˥mə̤˩
101	Fish	tɛ˧	ta˩pʰu˥	tə̤˧	tə̤˩pʰu˥
102	Snake	rṳ˥	wo˩	ru˩	və̤˩
103	House lizard	zɯə̤˥hi˩ /dja˥mɛ˩	ɟu˩ʃei˥ /da˥mjɤ˩	da˥li˩wu˩	do˩le˩
104	Turtle	tɜ˩kli˥	tɜ˩kʰli˥˩	kʰli˥	ti˩kʰli˥
105	Crocodile	tɜ˩zɛ̤˥	kɤ˩ta˩ja˩	ɟa˩θa˩ma˩	ʂa˩ma˩
106	Frog	di˩	di˧	di˩	di˧pʰu˥
107	Insect	ʔa˩krɛ̤˥ʔa˩tʰwo˩	ʃɯ˥kʰwei˧ /ʔa˩kʰra˩ʔa˩tʰu˥	θi˥	ta˩lɤ˩ta̤˩kwa˩
108	Spider	pʰɤ˧kja̤˥	pʰau˥kaŋ˧dʒɤ˩	gɔ˧	pʰu˩gɔ˩
109	Spider web	pʰɤ˧kja̤˥dʒə̤˥	pʰau˥kaŋ˧dʒɤ˩ ʃei˧	gɔ˧pi˧	pʰu˩gɔ˩ju˩jɛ˩
110	Head louse	ʂɯ˩	ʂuŋ˥	θi˩	ʂu˥
111	Termite	pṳ˥wo˧	ts˩vɯ˥˩	pru˧ju˧	po˩ʔo˩
112	Cockroach	lɔ˩ki˥	ts˩lɔ˥	θo˥lo˥ki˥	no˥ke˩
113	Snail	tɜ˩mje˩	tɜ˩mei˧	θi˩mi˩	ʂi˩mi˩ʂa˥
114	Mosquito	pʰɯə˧ʃi˥	pʰu˥ts˩sʰaŋ˥ /pʰɔ˧ʃi˥	pʰɯ˩	pʰu˥ko˩dʒo˩
115	Bee	vja˥	tɜ˩ni̤˩ /vɛ˥˩	hwɛ˩	wɛ˥mo˩
116	Fly	pʰɔ˧	tɜ˩tʰau˥˩	pʰɯ˩	pʰu˥
117	Butterfly	pi˧pja̤˥	tɜ˩pei˧	pe̤˧po˩	kɔ˥pi˩le˩

118	Scorpion	da˥mɛ˩	tʰɤ˩kʰlɔ˥	te̤˧wu˩	do˩nɛ˩
	Body				
119	Head	kʰu˩klɔ˥	ʃi˧kɤ˥	ʃu˩kɤ˦	hi˥kɤ˥
120	Face	mɛ˩ʂɛ˩	mai˩na˩	mɯ˥ki˩	mi˩ʂa˥
121	Brain	kʰu˩klɔ˥nɔ˧	nu˩pi˥	nɤ˧ʔi˩	kɤ˥nɤ˩
122	Hair	kʰu˩lɯə˩	kʰu˧lau˩	kʰu˩li̤˧	kʰo˥lje˩
123	Forehead	ma˧tʰɛ˥	mai˩tʰa˥	me̤˧tʰɔ˥	me˩tʰɔ˥
124	Eyebrow	ma˧kɤ˧sʰɯə˩	mai˩kau˥sʰɤ˧	mɯ˥ki˩ʃu˩	mi˩ʂa˥ʂo˥
125	Eye	mɛ˩ʂɛ˩	mai˩mai˩pʰlɤ˧	mɯ˥ki˩pʰlɤ˩	mi˩ʂa˥pʰlo˥
126	Eyelid	mɛ˩ʂɛ˩pʰa˥	mai˩mai˩bei˧	mɯ˥ki˩pʰe˥	mi˩ʂa˥be˥ /mi˩ʂa˥pʰe˥
127	Nose	kʰa˥pʰɯə˧	naŋ˧kʰɛ˥	na˩kʰi˥	nɔ˥kʰi˩
128	Cheek	ne˥ʃe˥	bu˥	kʰa˩dʒu˥bɯ˩	nɔ˥ʃe˥
129	Ear	kʰa˧lɛ˩	na˧kau˥	na˩ku˥la˩	nɔ˥ku˩la˥
130	Mouth	kʰa˧ʔu˩	kʰa˥kʰu˧	kʰa˩lo˧mo̤˧	kʰo˥pʰe˥
131	Tongue	pli˩	pli˩	pli̤˧	ple˩
132	Saliva	pli˩tʰje˧	pli˩tʰɛ˥	pʰe˩	plo˥ʃi˩
133	Tooth	ku˩kʰje˧	tɜ˩kʰɛ˥	θu˦	kʰo˥kʰi˩
134	Gums	ku˩kʰje˧plje̤˦	tɜ˩kʰɛ˥plɯ˥	θu˦kʰa˩ti˩ /θu˦θi˩li˩	kʰo˥kʰi˩pi˥
135	Chin	kʰɛ˩	kʰa˧	kʰa˧ʃi˩kɔ˥	kʰa˥
136	Beard	kʰɛ˩sʰɯ˩	kʰa˧sʰɤ˧	kʰa˧ʃu˩	kʰa˥ʂo˥
137	To shave (beard)	klɯ˩kʰɛ˩sʰɯ˩	ʔaŋ˧klɤ˩	ri˧plɔ˥ /kwɛ˧plɔ˥	di˥
138	Back	ɲa̤˦kʰu˩	ŋa˧kʰu˧	ɟɔ˩te̤˧	wa˩te˩
139	Belly	hɔ˥	hu˥	pʰɯ˥	pʰu˩
140	Navel	di˧bo˧	tɜ˩di˥	di̤˩mo˥	de˩plo˩
141	Heart	θɛ˥plɔ˩	ʂa˥pʰlɤ˧	θɔ˧	ʂɔ˥pʰlɤ˥
142	Lungs	ʔa˩θu˩	tɜ˩mɤŋ˧ /ʔa˩ʂu˧pɔ˩ʂɔ˧	θu˩	ʂi˥pɜ˩to̤˩
143	Liver	θɯə˩	sʰoŋ˧	θu˩θɔ˧	ʂu˥ʂɔ˥
144	Intestines	pra˧du˩	pʰau˥pwi˩ /pʰau˥pʰre˩	pre˧	pwe˩
145	Hand	tɜ˩kʰu˩	dʒau˥˩	dʒu˧de˧	kʰɔ˥de˩
146	Elbow	tɜ˩ma˧kja˧	dʒau˥mai˩	dʒu˧kre˧ne˩kɔ˥	dʒu˥tɜ˩nɤ˥kɔ˩
147	Armpit	pla˧lɛ˧	plei˥la˩	ple˥di˦la˩	pe˩de˥la˩
148	Palm	tɜ˩kʰu˩ku˧	dʒau˥la˧	dʒu˧kʰu˩la˩	kʰɔ˥de˩la˥ko˩
149	Finger	kɜ˩nɔ˧	dʒau˥nɤ˩	dʒu˧mɯ˩	kʰɔ˥mu˩
150	Fingernail	kɜ˩nɔ˧ba˩	dʒau˥mein˧	dʒɯ˧θi˩mi˩	kʰɔ˥mu˩be˥
151	Buttocks	kʰa˧pje̤˦tɯe̤˦	ʔiŋ˥ʔu˥tɛ˩ /kʰaŋ˥plɯ˥tai˩	kʰu˩kle˧kʰu˩	kɔ˩pi˥
152	Leg	kʰa˧dɯə˩	kʰaŋ˧dau˩	kʰɔ˩de˦	kʰɔ˥lɔ˩po̤˧
153	Thigh	kʰja˩	tɜ˩gɛ˧	kʰɔ˩dɯ˩	kʰɔ˥ki˥
154	Knee	kɔ˩ma˧	kʰa˩klei˥mai˧	kʰɔ˩le˦me˩	kʰɔ˥le˩me˩
155	Calf	kʰa˧dɯə˩plɔ˩	kʰa˩dau˥pʰlɤ˧	kʰɔ˩pʰɯ˥θa˩	kʰɔ˥du˥ʂa˥
156	Shin	kʰa˧dɯə˩lɜ˩po˩	kʰa˩dau˥kʰwei˥	kʰɔ˩lo˧po˧	kʰɔ˥lo˩po˩kʰwi˥
157	Foot	kʰɜ˩dja˥kʰu˩	kʰa˩dau˥la˧	kʰɔ˩kʰu˩la˩	kʰa˥la˥
158	Heel	kʰa˧nɯ˩kja˧	kʰa˩sʰɯ˥dɛ˧	kʰɔ˩ne˩kɔ˦	kʰɔ˥to˩no˥kɔ˩
159	Bone	krwi̤˦	kʰwei˥	ʃu˦	kʰwi˥

160	Rib	ɤɔ˧krwi̤˥	xɯ˧kʰwei˥	rɤ˧ʃu˥	vo˩kʰwi˥
161	Flesh	ʔa˩je˩	ja̤˧	ja˩	ʔa˩ji˥
162	Fat	ʔa˩θu˥	bai˥ /ʂu˥	θu˥	ʔa˩ʂo˥ /ʔa˩bɛ˥
163	Skin	ʔa˩pʰa˥	bei˧	pʰe˧	ʔa˩be˥
164	Blood	θwi˩	ʂwei˧	θju˩	ʂi˥
165	Sweat	kṵ˥ʂa˧	ku˩ʂwei˥	θe˥ʔe˥tʰi˥ /ka˥ku˩thi˥	kwi˥
166	Pus	ʔa˩mi˧	mi˥	mi˥	mi˩
167	Excrement	ʔi˩	ʔin˧	ʔi˧	ʔe˥
168	Urine	ʔi˩ʃe˩	ʔi˥sʰɛ˧	ʃi˩sʰa˩tʰi˥	ʔi˩ʃi˥
	People				
169	Man	prɛ˩kʰu˧	pjaŋ˩kʰu˥	ma˥kʰo˥	ma˩kʰo˩
170	Woman	prɛ˩mɔ˩	pjaŋ˩mo˧	ma˥mɯ˩	ma˩mu˥
171	Person	kɜ˩za˧ /prɛ˩	pjaŋ˩	pra˧	kɔ˩jɔ˩ /pwa˩
172	Father	pʰɛ˧	pʰa˥jɤ˧	pʰa˧	pʰa˩
173	Mother	mɯ̤˥	ʔi˥jɤ˧ /mɯ˩	mɤ˩	mo˩
174	Child	pʰu˥lje˩	pʰu˥mo˧pʰu˥kʰu˧	pʰu˧li̤˧	pʰo˥li˩
175	Son in law	pʰu˥mɛ˧	ma˩	mɔ˧	mɔ˩
176	Husband	vɛ˩	va˧	wu˥	vo˩
177	Wife	me˧	ma˥	ma˧	ma˩
178	Widow	prɛ˩mɔ˩ʔo˩ krja̤˥	ʔɔ˩xai˩	ma˧mɯ˩ʃɛ˧	ma˩mu˥kʰwɛ˥
179ab	Brother (elder)	vja˥prɛ˩kʰu˧	vɛ˩kʰu˩	wɛ˩ma˧kʰo˥	wɛ˩ma˩kʰo˩
179cd	Sister (elder)	vja˥prɛ˩mɔ˩	vɛ˩mo˧	wɛ˩ ma˧mɯ˩	wɛ˩ma˩mu˥
180ab	Brother (younger)	pɯ̤˧prɛ˩kʰu˧	pau˩kʰu˥	pɯ˩ma˥kʰo˥	pu˩ma˩kʰo˩
180cd	Sister (younger)	pɯ̤˧prɛ˩mɔ˩	pau˩ mo˧	pɯ˩ma˧ mɯ˩	pu˩ma˩mu˥
181	friend	kʰo˧bɔ˥ʂwo˥	kʰɔ˥ʂu˩	kʰo˥ra˧	kʰɔ˩mɔ˩ /ʂu˥kʰo˩
182	Name	mwi˧	mi˩	mi˧	mi˩
	Home				
183	Village	dɔ˧	do˩	dɤ˧	do˩
184	Road, path	klja˥	klai˩	kʰlɛ˧	klɛ˥
185	Boat	ʂɔ˩klje˧	ʂɔ˩kʰlɛ˥	kʰli˧	ʂɤ˥kʰli˩
186	House	hi˩	ʃein˧	ʃi˩	hi˥
187	Door	ka˩da˧du˩	ka˩dei˥du˧	θa˥kʰa˧	ta˩kʰa˩
188	Window	ka˩da˧pʰu˥	ka˩dei˥kʰu˥biŋ˩	tɯ˧pɯ˩ku˧	ta˩kʰa˩pʰo˥
189	Roof	hi˩kʰu˩klwo˥ kʰu˩	ʃein˧kɔ˩kʰu˧	ʃi˩kʰu˩	hi˥kʰo˥ /ku˩kʰe˥
190	Area under house	hi˩lɛ˧	ʃein˥la˩	ʃi˩la˧	hi˥la˩
191	Wall of house	dɔ˥	tu˥plau˧	tɤ˧dɤ˧	do˥da˥
192	Mat	le˥dɛ˧/klo˩du˩	tɜ˩beŋ˧ /laŋ˩daŋ˥	la˩da˥	kʰlɤ˥
193	Pillow	mwo˥	kʰu˩koŋ˩ /kʰu˥ku˩	dʒɔ˧kru˩	kʰo˥kʰɤ˥
194	Blanket	hi˥kɛ˧	bi˥ja˩	ʃi˧jɔ˧	xu˥gɔ˩
195	Clothing	çe˩dʒa˩	go˥dʒei˩	ta˧jɔ˧	hi˥dɤ˩hi˥jɔ˩
196	To weave (cloth)	bɔ˥	ʔa˩bɯ˩	bɤ˧	bɤ˥tʰɔ˥

197	To dye (cloth)	plɯ˩li˩lɔ˩	ʔa˩wu˩ʔa˩jau˩	sʰɔ˩dʒi˥dʒi˩	dʒu˩ma˩ʔi˥
198	Sarong	ɕe˩ts˩va˩	gɤ˦maŋ˦	ʃi˩jɔ˦mo˥kɔ˦	hi˥jɔ˩mo˩kɔ˩
199	Trousers	ɕe˩kʰja˩	gɤ˦jɛ˦ /gɤ˦kʰa˦	ʃi˩jɔ˦	hi˥jɔ˩
200	To sew	ʔi˩sʰɛ˥	ʔaŋ˩sʰa˥	ʂɔ˦	ʂɔ˥
201	Needle	tʰɛ˥	tʰa˥	na˩dɛ˦	tʰɔ˥nɛ˥
202	Comb	kɔ˥ʂje˩	kʰu˥ʂɛ˥	θu˩kʰi˥	kʰo˥ʂi˥
203	Ring (finger)	dʒɔ˦˥ts˩plwo˦	dʒau˥pliŋ˥	dʒu˦plu˦	dʒu˥plo˥
204	Paper	dʒe˩ba˩	dʒɯ˥bei˦	dʒɛ˦la˩	dʒɛ˩la˥
205	Pot (cooking)	di˦pɔ˩	kau˦ /ts˩pɤ˦	pɤ˦	ko˩po˩
206	Coconut shell ladle	tʰje˦dɯə˩	ma˥pau˦kɤ˥	tʰi˥mo̤˦	ʃi˩nɔ˥du˥
207	Mortar	kɜ˩sʰɯ˩	ts˩sʰuŋ˦	ʃi˩tʰɔ˦	ba˩tu˩
208	Pestle	kɜ˩sʰɜ˦	ts˩kle˥	kle˩ʃu˦	nɔ˥to̤˩
209	Spoon	di˦dʒo˦	ʃi˥nɤ˧	dʒo˦la˩	nɔ˥lo˥ /de˩dʒo˩
210	Plate	di˦be˦	ban˦lɤ˩	ba˦	ba˩lo˦
211	Firewood	kru˩	ku˦ /kru˦	dʒu˩	ku˥
212	Fire	mi˩	mi̤˦	mi˩	mi˥
213	Ashes	kɔ˥pʰɛ˩	pʰa˦	pʰa˩	pʰa˦
214	Smoke	mi˩kʰɯ˩	mi̤˦kau˦	mi˩kʰɯ˩	mi˥kʰu˥
215	Candle	ta˩rɛ˥bo˦	pʰa˦tei˦	mi˩tɛ˦	ta˩ra˥bo˩
216	Drum	tʰɔ˦	tʰɤ˧	tʰɤ˦mo˥kɔ˦	tʰɤ˩
217	Gong	mo˩	mau˧	mo˦	mo̤˩
218	Bow, crossbow	klje˩	kʰlɛ˦	ʃi˦θɯ˩	kʰli˥
219	Arrow	plɛ̤˦	kʰlɛ˦pla˩	pla̤˩	pla˩
220	Spear	ts˩bja˦	ts˩baŋ˥	θɔ˦bɔ˦	ʂɔ˩bɔ˩
221	Knife	hi˥dɯ˩	ts˩duŋ˦	do˩	dɔ˩du˥
	Verbs				
222	To hear	ni̤˦ɯə˦	na˦xuŋ˥	na˩xɯ˦	ka˩na˩de˩
223	To smell (sth)	nɯ˩ʂja˦bɛ˩	nu˦ba˥ /nu˩maŋ˧	nɯ˦lu˩ /nɯ˦ba˩	ʔa˩lu˩
224	To see	mja˥tʰje˩	mo˥tʰɛ˦	kɛ˩tʰi˩	kɛ˥ʃi˥
225	To wink	bɔ˩klɛ˥	beŋ˦kʰlɛ˥ma˥mai˩	bi˩tʰɛ˥mi˥ki˩	tʰɛ˥pi˩mi˩ʂa˥
226	To weep	ŋɯ̤˦	ha˦	ha˩	ha˥
227	To eat	ʔe˩	ʔaŋ˦	ʔa˩	ʔa˥
228	To swallow	zɯ˥klu˦nɯ˦	ju˥nu˩	ʔu˩nɯ˦	ʔo˥nu˩
229	To be hungry	ʂɛ˥ʔe˩	ts˩vi˩ʔaŋ˦ /ʂa˥ts˩ʔaŋ˦	pʰu˥θɔ˦wi˩	ʂa˥ʔa˥
230	To be full	kɔ̤˦hɔ˥	ku˥xɔ˩ /kɯ˥	pʰɯ˦bɛ˦	kɤ˥
231	To be thirsty	ʂɛ˥ʔo˦tʰje˦	ts˩vi˩ʔɔ˥tʰɛ˥ /ʂa˥ts˩ʔaŋ˦ʔɔ˥ tʰɛ˥	θɔ˩ʔo˦tʰi˦	ʂɔ˥ʔo˩
232	To drink	ʔo˦	ʔɔ˥	ʔo˦	ʔo˩
233	To be drunk	mɯ˩	moŋ˦	mɯ˩	mu˩ba˥
234	To vomit	ʔa˩prja̤˦	pwɔ˥	pro˦	po˥
235	To spit	tʰu˩pla˥	t˩tʰweŋ˦pli˩tʰɛ˥ /tʰu˩plai˥	tʰɯ˦pri˦tʰi˦	tʰo˥ple˥
236	To cough	ts˩kʰɯ˥	ts˩kʰuŋ˥	θɯ˦kʰɯ˦	tu˩kʰu˥
237	To sneeze	kɜ˩ʃa˥	ts˩sʰai˧	kɛ˦ʃɛ˦	tsʰɛ˥
238	To yawn	ts˩kʰa˦	ts˩kʰaŋ˧	θa˦kʰa˥	ʂɔ˥ʂa˩kʰa˩

239	To breathe	θɛ˥	ʂa˩	θa˨	ʂa˥
240	To whistle	θɔ˥ʂwi˥	kʰwei̯˦ /ʂwi˦	hwi˥kʰa˨	we˥
241	To suck	dʒwi˥	dʒei˩	dʒu˥	dʒi˥
242	To lick	ʔi˨˩je˨	lɛ˦	li˨	li˥
243	To smile	dʒe˥θɛ˥ɲe˦	ʂo˥ta˨ŋa˨	tʰi˥kra˨na˨	na˥ʂa˥ja˨
244	To laugh	ɲe˥	ŋa˨	ja˦	ja˨
245	To speak	he˥bɛ˨	pa˨pwei˨	ro˥ba˨	hi˥ba˥
246	To tell	dɯ˨ɲa˦	du˥ts˨nai˩	ro˥ba˨ja˥sʰɯ˥	hi˥ba˥hi˥tsʰo˨
247	To shout	ʔɛ˥tʰo˦	ʔa˥tʰɔ˥	ji˨	ji˨
248	To answer	he˥sʰɯ˨	pwa˦ /rɜ˨sʰu˥	do˥dʒe˥xu˨	hi˥ke˨
249	To lie, fib	la˨ho˦	la˦ho˥ /ʔi˥lɔ˦	pla˨	plɔ˨
250	To sing	ʔi˨ro˦	ʔa˨ts˨xau˩	θɯ˥pɯ˦	ʂɔ˥po˨
251	To think	ts˨ne˨	ts˦nɛ˦	rɛ˥ta˦	kɛ˨nɛ˨
252	To know	θɛ˥ɲe˦	ʃi˥na˨	θi˨jạ˦	ʂe˥ja˨
253	To forget	sʰo˦ts˨pa˨	sʰɔ˥pʰi˥na˦ /sʰɔ˥ts˨pei˨	θe˥pʰe˥na˨	ʂɤ˨pẹ˦
254	To choose	mja˥rja˥	ʔa˦xɤ˦ /ʂa˥juŋ˨	ru˨ta˦	vo˥la˥
255	To love	mo˨nɨ˥	ʂa˥lɔ˨ /tʰau˨	mo˦	mo˨ji˥
256	To hate	θɛ˥ts˨kʰo˦	ʂa˥tʰa˦ /ʂa˥ts˨kʰɔ˥	kɛ˥θɔ˦/θɔ˥du˨	pɔ˨hɔ˨
257	To wait	ʔo˨pɔ̤˥	ʔɔ˥pạ˨	ʔo˨pɯ˦	dɜ˥ʂɯ˨
258	To count	dja˥mja˥	du˥mai˥ /du˥baŋ˦	θu˥	do˥ba˥
259	To be afraid	θɛ˥ʔi˨sʰe˦	ʔi˥sʰaŋ˥ /sʰɯ˥sʰaŋ˩	ʃi˦sʰa˥	ʔi˥sʰa˨
260	To be angry	θɛ˥plɔ˨du˨	ʂa˥tʰaŋ˦ /ʂa˥plɤ˦tʰaŋ˦	θɔ˦du˨ / kɛ˥θɔ˦	ʂɔ˥do˥
261	To sleep	ʔo˨mje˦	ʔɔ˨mei˥	ʃi˥mi˥	ha˥mo˨ʔo˥
262	To snore	θɛ˥pra˨kro˥	ʔɔ˨mei˥ʂaŋ˩pʰre˨ kʰwei˩	θa˦pru˥	ʂa˥kʰro˥
263	To dream	ʔo˨mji˦mja˥	ʔɔ˨mei˥ma˨	ʃi˥mi˥mɔ˨	ʂa˨
264	To hurt	ʔa˨sʰɛ˦	sʰa˥	ʂa˦	nu˨mɔ˨
265	Medicine	tɛ˨kʰu˨	ta˨kʰu˥	ta˥kʰu˨	ta˨kʰu˥
266	To itch	kɜ˨ʂɛ˥	tɜ˨ʂa˥	θo˨	kɔ˨ʂɔ˥
267	To scratch	kọ˥pra˨ /ts˨krạ˦	kʰu˥va˨kʰu˥pʰra˨	kʰre˨	dʒo˨kro˥
268	To shiver	ts˨ɲa˦	ts˨nɔ˨	pi˨	kɔ˨nɔ˨
269	To die	ʂje˦	ʂɛ˩	θi˦	ʂi˨
270	Ghost	lɯ˦ts˨prja˨	lau˨ta˨na˥	da˦ta˥na˥ /ta˦ʃi˨ta˦na˦	na˥ta˨na˨
271	To sit	ʔo˨ɲa˦	dʒi˨na˩	ʃi˨nɔ˦	ha˥nɔ˨ʔo˥
272	To stand	kɜ˨tʰɔ˨	ʔitʰɤ˦	ʃi˥tɤ˨	ʔi˨tʰɤ˥
273	To kneel	da˥ŋɯ˨	ts˨nai˦	do˥krẹ˦ne˨lɔ˦	kɜ˨ne˨lɔ˨
274	To walk	dʒɤ˥klja˦	ha˥lɛ˥ /ha˥klai˩	ʂa˦prɛ˦lɛ˦	dʒo˥klɛ˥
275	To crawl	pụ˥ŋɔ˨dʒɤ˥	bi˥ts˨gɤ˦	pọ˦dʒɤ˦kɤ˦ʂa˦	pu˥dʒɤ˨kɤ˨
276	To come	ça˦	ha˥	lɛ˦kʰɛ˨	hɛ˨ʂu˥
277	To enter	nɯə˦	nu˨	nɯ˦kʰɛ˨	ke˨ni˨ /ke˨nu˨
278	To return	ka˨ho˥	kei̯˨	dʒe˦kʰɛ˨	ke˨
279	To push	ʃa˨	sʰạŋ˦	ʂo˨	tsʰɔ˥
280	To pull	dʒwi˨	dʒwei˦	dʒu˨	dʒi˥

281	To kick	tʰɯə˧ /tɜ˩pɛ˧	ta˩pɛ˩ /tɜ˩pa˩	pa˧ /tʰju˥	dɛ˩ /tʰu˩
282	To throw	vi˧kja˧	ve˧gai˧	hwe˧kɛ˩	ve˩kɛ˩
283	To fall	la˩ta˧	lai˧tai˩	lɔ˧te˧	lɔ˩te˩
284	To swim	ʔi˩zɤ˧tʰje˧	ta˩ja˩	wu˧tʰi˧	kɔ˩jɔ˩ʃi˩
285	To float	ʔa˩lo˩	lai˧ju˧ /lu˧tʰɛ˥	lɔ˧wu˧	ʔa˩lɔ˩po˥lo˥
286	To sink	ta˧dʒɯ˧	lai˧dʒuŋ˩˨	lɔ˧tʰi˧kɔ˧	lɔ˩dʒu˥ʃi˩
287	To flow	tʰje˧tʰwi˥ça˧	tʰɛ˥du˧ /tʰɛ˥tʰwei˩˨	tʰi˧θo˩lo˩	ʃi˩do˥lɔ˩
288	To give	dje˥	dɛ˩˨	ʔi˧	ʔi˥
289	To tie	dʒɔ˧	dʒɤ˩˨	dʒɔ˧	dʒo˩me˥
290	To wipe	tʰɯ˥	tʰɯ˩˨	tʰɯ˧plɔ˧	tʰu˥bɔ˩
291	To rub, scrub	bwo˥pli˧	tʰɯ˥baŋ˩˨ /bo˥kai˩˨	di˧kru˧ba˩	tʰu˥plje˩
292	To wash	sʰɯ˥pli˧	ʃi˥dʒa˥ /sʰu˧plai˥	dʒɔ˥plɔ˧	ʃu˥bɔ˩
293	To launder	ʔi˩sʰɯe˩	pʰo˥baŋ˥	ʃu˩ta˩jɔ˩	ʃu˥dʒa˩
294	To bathe	ʔi˩lɯ̟˧tʰje˧	lɜ˩tʰɛ˥	lu˩tʰi˧	ʔu˩tsʰɔ˥ʃi˩
295	To hit	mɯ˧	gwau˩˨	pʰle˥ /di˩	plɛ˩/pʰle˥
296	To split	pa˧pʰɛ˥ /pʰɯe˧pʰɛ˥	ʃi˩pʰa˥ /pai˩pʰa˥	da˧pʰɔ˧ /pe˧ pʰɔ˧ /ʔo˧pʰɔ˧	ʃe˥pʰɔ˥ /da˥pʰɔ˥
297	To cut (hair)	dʒi˧	grɯ˩˨	ri˧	di˥
298	To stab	sʰɯ˧ʂje˧	sʰau˥ʂɛ˥	plɤ˧θi˧	ʃu˩ʂi˩
299	To grind	ʔi˩vi˧mɯ˩	ɲɯ˥mɯ˧	ru˧ /wi˩	we˩
300	To plant	ʔi˩sʰɔ˥	ʔa˩lɜ˩ /sʰau˥	ʂɤ˧	tsʰɤ˥
301	To dig	ʔi˩kʰɯ˩	kʰuŋ˧	kʰɯ˩	kʰu˥
302	To bury(corpse)	ʔi˩lɯ̟˧	pluŋ˩˨ /lu˥	lɯ˧	lu˥
303	To winnow (rice)	tɜ˩lɛ˥bɯ̟˧	tɜ˩la˥bɜ˩	wa˩bɯ˧	ʂɔ˥lɔ˥ /ma˩sʰɔ˥
304	To dry (sth)	ʔi˩lu˧kra˧	lu˥xei˩	lu˥ʃe˧	lɔ˩kʰwe˩
305	To pound (rice)	ʔi˩sʰa˥	sʰau˥bɜ˩	tǫ˩ /ʃe˩	tɤ˩ /ʂe˥
306	To cook (rice)	ʔi˩pʰo˧	pau˩˨	pʰɔ˥	pʰo˩
307	To boil (sth)	do˧bɯə˩	pwei˩˨ /do˥bau˧	do˥bɯ˩	do˩bu˥
308	To burn	sʰɯ˥kja˧mi˩	mi̤˥kai˩˨ /sʰu˥mi̤˧	mi˩kɛ˧ /dʒu˧mi˩	tsʰo˥mi˥ /mi˥kɛ˩
309	To extinguish (fire)	me˩pi˧mi˩	ma˩pei˩mi̤˧ /ʔau˥pei˩	ma˥pi˧mi˩	ʔu˥pi˩mi˥
310	To work	ʔe˩rja˩	ʔa˥xai˧	ma˩ta˩ma˩	ma˩ta˩ma˩
311	To play	la˩vɔ˧	ʔɔ˧klɤ˩	ke˧dʒe˩	ʔɤ˥lɔ˩we˩
312	To dance	ʔi˩le˧	ʔa˧tɜ˩kei˥	ma˧kɔ˧tɔ˧ /ʔa˩mi˧	ma˩kɔ˩tɔ˩
313	To shoot	kʰɛ˥	kʰa˥	kʰa˧	kʰa˥
314	To hunt	lɯ˩tɛ˩mi˩	lɛ˥ta˩mi˩	lu˧ta˧mi˧	dʒo˥lo˩ʔa˥
315	To kill	me˩θje˧	ma˩ʂɛ˥	ma˧θi˥ta˧	ma˩ʂi˩
316	To fight	sa˥pa˧ /vɯ˥lu˧	tɜ˩ŋei˥ /sʰai˥ pai˩ /vɯ˥lu˩	ʃe˧ta˧	lo˩ʔa˥lo˩ma˩
317	To buy	ʔi˩pri˩	ʔaŋ˥pwi˩	pri˧kʰɛ˩	pwe˩
318	To sell	ʔi˩sʰɛ˧	ʔaŋ˧sʰa˥	ʂa˥ kʰɛ˩	tsʰa˩
319	To exchange	tʰu˩lja˩	tʰu˥klai˩	tʰu˩lɛ˩ kʰɛ˩	tʰo˥lɛ˥ /bo˥kʰɛ˥

320	To pay	dje˧kʰo˧kɛ˩	dɛ˧ka˦	ʔi˦pri˦ kʰɛ˩	ʔi˧ʔa˩ka˧
321	To steal	ʔe˩ɯə˩	ʔa˦hau˦	ʔa˦wu˩	ʔa˧xu˧
	Numbers				
322	One (person)	tɜ˩prɛ˩	tɜ˩dɯ˧	tɜ˩ra˩	ta˩pwa˩
323	Two (persons)	ʂɛ˧ɲe˦	ɲe˦dɯ˧ /ni˩dɯ˧	θɔ˦kli˦ /ki˦ra˦	ʂɔ˧ki˩ni˩
324	Three (persons)	ʂɛ˧ʂɯ˦	sʰa˦ʂu˧	θɯ˧ra˦ /θɔ˦θɯ˧	ʂɔ˧ʂu˩
325	Four (persons)	ʂɛ˧lwi˦	sʰa˦lwei˥˧	lwi˧ra˦ /θɔ˦lwi˧	ʂɔ˧lwi˩
326	Five (persons)	ʂɛ˧ɲa˦	ŋai˩dɯ˧	jɛ˧ra˦ /θɔ˦jɛ˦	ʂɔ˧jɛ˩
327	Six (persons)	ʂɯ˦ʂwo˧	sʰoŋ˦ʂu˧	ʃu˧ra˧ /pra˩θɯ˧θu˩	pwa˩ʂu˩ʂo˧
328	Seven (persons)	ʂɯ˦ʂwo˧tɜ˩prɛ˩	sʰoŋ˦ʂu˧tɜ˩dɯ˧	ne˧ra˦ /pra˦θɔ˦ne˧	ʂu˩ʂo˧ta˩pwa˩
329	Eight (persons)	lwi˦ʂwo˧	lwei˥˧ʂu˧	ʂo˧ra˦ /pra˦θɔ˦ʂo˧ /pra˩lwi˧θu˩	pwa˩lwi˧ʂo˧
330	Nine (persons)	lwi˦ʂwo˧tɜ˩ prɛ˩	lwei˥˧ʂu˧tɜ˩dɯ˧	kʰwi˧ra˦ /pra˦θɔ˦kʰwi˧	li̤˦ʂo˧ta˩pwa˩
331	Ten (persons)	ʃe˧	tɜ˩sʰɛ˧	pra˦tɜ˦ʃi˧	pwa˩ʃi˧
332	Hundred (persons)	ʔa˩prɛ˩tɜ˩zɛ˩	tɜ˩ja˩	pra˩tɜ˩ja˩	ʔa˩pwa˩ta˩ja˩
333	Thousand (persons)	ʔa˩prɛ˩tɜ˩ri˧	tɜ˩xe˧	pra˦tɜ˦tʰo˩	ʔa˩pwa˩ta˩re˧
334	To be many	ʔo˩ʔɛ˧	ʔa˧ʔuŋ˦ /ʔɔ˩ʔaŋ˧	ʔo˩ʔa˧ /ta˦ka˦	ʔo˧do˧ /ʔo˧pwe˩
335	All	lo̤˦pli˦	lu˧lu˩ /lu˩pli˧	lɤ̈˦	lɤ˧bɔ˩
336	Some	tɜ˩he˩	tɜ˩nɔ˩	to˧ʔo˩	tɜ˩ʔɤ˧ʔɤ˧
337	To be few	tɜ˩ki˩pʰu˧	ʔi˧ŋau˦ /tɜ˩ʃi˧	ti˧tɛ˩	te˩ke˧ /ʔɤ˧pi˧ti˧
338	Half a unit	tɜ˩kla˦me˦	tɜ˩klau˧ma˩	tɜ˩kʰo˧	ta˩ka˩ma˩
	Dimensions				
339	To be big	ʔa˩du˩	pʰa˧du˦	ʔa˩du˩ /ʔa˩pʰru˧	ʔa˩do˧
340	To be small	ʔa˩pi˩ti˧	kʰu˧bi˧ /tɜ˩ʃi˧	ʔa˩ʃi˩ /ʔa˩pri˧	ʔa˩pi˧ti˧
341	To be long	ʔa˩tʰu˦	tʰu˧tɜ˩beŋ˦	tʰu˧	ʔa˩tʰo˩
342	To be short (length)	ʔa˩pʰɯə˩	pʰɯ˦tɤn˦	pʰɤ˩	ʔa˩pʰo˧tu˧
343	To be tall	ʔa˩tʰja˩lɤ˦	tʰa˩tʰu˧ /tau˦lau˥˧	tʰo˩lɤ˧	ʔa˩tʰo˧je˩ /ʔa˩kɤ˩to̤˩
344	To be short (height)	ʔa˩pɜ˩rɯ̈˧	laŋ˩pʰuŋ˧	lo˦prɤ˩	ʔa˩pʰu˧lo˩
345	To be thick	ʔa˩dɯə˦	duŋ˥˧tɜ˩beŋ˧	dɯ˧	ʔa˩du˩
346	To be thin	ʔa˩bɯ˦	buŋ˥˧	prɯ˦	ʔa˩ka˩la˩
347	To be fat	ʔa˩bɯ˩	bɤ˦	bu˩	ʔa˩bo˧
348	To be skinny	ʔa˩krja˦	grai˦	dʒɛ˦	ʔa˩kwɛ˩
349	To be wide, broad	ʔa˩ljạ̈˧	lwai˥˧	lɛ˩	ʔa˩lɛ˩
350	To be narrow	ʔa˩tɜ˩dʒe˦	ɟɤ˦peŋ˦ /tɜ˩dʒɯ˩	ki˦ti˦/ʔi˩	ʔa˩ʔe˧ne˧

351	To be deep	ʔa˩za˧	jɔ˩	dʒɤ˩	ʔaɟo˩
352	To be shallow	ʔa˩tɜ˩lɯə˦	tʰɛ˥tɯ˧	dɔ˩	ʔa˩dɔ˥
353	To be round	ʔa˩tɜ˩lu˧ /ʔa˩tɜ˩vɯ˩	tɜ˩lu˥ /ʔa˩tɜ˩vɯ˩	tɜ˩lɯ˩ /re˧we˧	ʔa˩to˩lo˩ /ʔa˩le˥we˥
354	To be full	ʔa˩ba˧	pwɛ˥	ʔɛ˩bɛ˥	ʔa˩be˩
355	Right side	dʒɔ˥tʰjo˥	dʒau˥tʰwɛ˥˩	θrɛ˧tʰɛ˧	dʒu˥də˩mo˩
356	Left side	dɜɔ˥dʒi˩	dʒau˥dʒi˧	tri˧dʒi˩	dʒu˥dʒɤ˩dʒe˥
357	To be straight	ʔa˩dʒɔ˥	ʔa˩dʒɔ˥	dʒɤ˩	ʔa˩nɔ˩
358	To be far	ʔa˩je˩	ʔa˩ɟɯ˧	ɟi˧	ʔa˩ɟe˩
359	To be near	ʔa˩pʰɯ˩	ʔa˩pʰuŋ˧	bu˧	ʔa˩pʰu˥
360	This	dɜ˥ʔje˧	ʔɛ˥nɯ˩ /tɜ˩ʔɛ˥˩	ha˩jɤ˧	tɤ˥ʔɤ˩
361	That	dɜ˥nɯə˩	dɤ˥nɯ˩	ha˩ni˧	de˥nu˩
	Appearance				
362	Black	ʔa˩lɔ˩	ʔa˩ʂuŋ˩˥	ʔɛ˩θɯ˥	ʔa˩lɤ˩
363	White	ʔa˩bu˧	ʔa˩bu˩˥	ʔɛ˩bu˥ʂɔ˩	ʔa˩bu˩
364	Red	ʔa˩li˩	ʔa˩leŋ˧	ʔɛ˩li˧ko˧	ʔa˩le˩
365	Green	ʔa˩ʂɯ˧	ʔa˩tɜ˩ŋa˧	ʔɛ˩ka˦la˦	ʔa˩ʂu˩
366	Yellow	ʔa˩bja˧	ʔa˩baŋ˩˥	ʔɛ˩bɔ˦	ʔa˩bɔ˩
367	To be dirty	ʔa˩ri˩dʒa̰˦ /ʔa˩mṵ˦mja̰˦	dʒɔ˥pwi˩˥ /ʔa˩mu˥ maŋ˩	dʒɔ˥bo˩	ʔa˩wi˩dʒa˩
368	To be new	ʔa˩ʂɛ˧	ʔa˩ʂaŋ˩˥	ʔɛ˩θa˦	ʔa˩ʂa˩
369	To be old	ʔa˩lje˩	ʔa˩lḛ˧	ʔɛ˩lḭ˧	ʔa˩li˩
370	To be dark	ʔa˩kʰi˥	ʔa˩kʰi˥	ʔɛ˩kʰi˦	ʔa˩kʰi˥
371	To be bright	li˧tɜ˩kʰɛ˧	ʔa˩li˥ /ʔa˩tɜ˩kʰaŋ˥	ʔɛ˩ra˩kʰa˦ /ʔɛ ˩li˥	ʔa˩lje˩ /ʔa˩ra˩k ʰa˩
372	To be the same	ʂja˥lu˧	ʂu˥lu˩	ʔɛ˩lɔ˧lu˦	ʔa˩ʂɤ˥ʂɤ˥ /ʔa˩lɔ˩lɔ˦
373	To be different	kʰo˥lu˧	kʰɔ˥lu˩	ʔɛ˩lɔ˧lu˦ha˥ ʔo˩	ʔa˩ki˥ja˩
	Taste/ Feel				
374	To be sweet	ʔa˩sʰɯ˧	sʰuŋ˥	ʔɛ˩ro˧ba˧	ʔa˩tsʰu˩
375	Sour	ʔa˩ʃe˩	sʰɯ˧	ʔɛ˩ʃi˩	ʔa˩ʃe˥
376	To be bitter	ʔa˩kʰɛ˩	kʰa˩	ʔɛ˩kʰa˩	ʔa˩kʰa˥
377	To be spicy, hot	ʔa˩ça˥	hai˥˩	ʔɛ˩hɛ˦	ʔa˩hɛ˥
378	Rotten	ʔa˩θɔ˧	tɜ˩ʔei˥˩	ʔɛ˩θɤ˦	ʔa˩ʂo˩
379	To be swell	ʔa˩za̰˦	jɔ˥	ʔɛ˩jo˦	ʔa˩jo˥
380	To be dry	ʔa˩kra˧	ʔa˩xei˥˩	ʃi˩ʃe˥	ʔa˩kʰwe˩
381	To be wet	ʔa˩dʒo˩	tʰau˥sei˥ /ʔa˩dʒɔ˧	ʔɛ˩dʒo˩	ʔa˩dʒo˥
382	To be hot	ʔa˩kṵ˦	ʔa˩ku˩	ʔɛ˩ku˩	ʔa˩ko˩
383	To be cold	ta˩klu˩	ʔa˩dʒɛ˧ /ʔa˩ta˩klu˧	ka˩ro˩	ʔa˩to˩kʰlo˥ /ka˩wo˩
384	To be sharp	ʔa˩dʒɜ˧	ʔa˩dʒau˥˩	ʔɛ˩dʒu˥	ʔa˩dʒu˩
385	To be blunt	ʔa˩dɯ˧	ʔa˩duŋ˥˩	ʔɛ˩du˥	ʔa˩du˩
386	To be heavy	ʔa˩tʰɯə˩	ʔa˩tʰɯ˧	ʔɛ˩tʰɤ˩	ʔa˩tʰo˥
387	To be hard	ʔa˩pre˧	ʔa˩pwɛ˩ /ʔa˩paŋ˩ʔa˩sʰaŋ˥˩	ʔɛ˩ʂɔ˧	ʔa˩tsʰɔ˥

388	To be smooth	ba˩pli˧	bi˩ʦɜ˩klɤ˩ /bɔ˩pli˩	ʔɛ˩pli˩	ʔa˩plje˩
	Other Qualities				
389	To be fast	ʔa˩prja˧	ʔa˩pʰwai˩˨	ʔɛ˩lɛ˧	ʔa˩pʰwɛ˩
390	To be slow	ʔa˩ʝɔ˧	ʔa˩ʝɤ˩	ʔɛ˩jɤ˩	ʔa˩ʝɤ˩
391	To be strong	ʔa˩ʃo˩ʔa˩sʰɔ˧	xei˧ʔɔ˧ /ʔa˩sʰu˩ʔa˩sʰɤ˩˨	kʰu˩du˩ʔa˩ du˩	ʔa˩tsʰo˩
392	To be weak	hɛ˧dʒɛ̤˧ri˩dʒɛ̤˧	xei˧ʔɔ˧wa˧ /hɛ˩xei˩dʒaŋ˩˨	kʰu˩sʰi˧ʔa˩ dʒa˩	ʔa˩ʝo˩
393	To be tired	ʂɛ˩pra̤˩	la˩dɔ˩	lɔ˧da˩	lɔ˩de˩
394	To be blind	ʔa˩lɛ˧	kʰi˩ /ʔa˩laŋ˩˨	ʔɛ˩la˩	la˩
395	To be deaf	kɜ˩ʔɔ˧	tɜ˩ʔɤ˩	na˩ku˩ʔɤ˩	kɜ˩ʔɤ˩
396	Bald	ma˧tʰɛ˩dɛ˧	mɛ˩tʰa˩da˩	me˩tʰɔ˩θɔ˩lɔ˩	me˩tʰɔ˩ta˩plɔ˩
397	Naked	ʔo˩ka˩klo˩	ʔɔ˧tɜ˩kli˧ /ʔo˩plau˩kaŋ˩ /ʔɔ˧ka˧klau˧	ʔo˩klo˧li˩	ʔo˩gu˩lje˩
398	To be good	ʔa˩rja̤˧	dʒɯ˩	ʔɛ˩ro˧	ʔa˩vo˩
399	To be bad	ʔa˩dʒe˧	heŋ˧ /ʔa˩dʒɯ˩	ʔɛ˩θɛ˩	ʔa˩dʒɤ˩nɤ˩
400	To be correct	ʔa˩to˧	mwei˩˨ /ʔa˩tɔ˩	ʔɛ˩ba˩	ʔa˩mɛ˩
401	To be wrong	ʔa˩ʂɯ˩	ʔa˩sʰuŋ˩	ʔɛ˩ma˩	ʔa˩ʂu˩
	Question Words				
402a	When (past)	dɜ˩mɔ˩hɔ˧te˧	kʰɔ˩ma˧ga̤˧	la˩kʰa˧tɛ˧	bɔ˩kʰɔ˩tɛ˩
402b	When (future)	bi˩kʰɛ˧te˧	kʰɔ˩ma˧ga̤˧	ba˩kʰɔ˧tɛ˧	bɔ˩kʰɔ˩tɛ˩pe˩
403	Where	bi˩te˧	ʔɔ˧tɔ˩ma˧	ʔo˩ba˩	ba˩tɛ˩
404	Who	ma˩ʔu˧pe˧	ba˧dɯ˩ga̤˧	ho˩lɛ˩	mi˩ʔo˩pɛ˩
405	What	me˩te˧	ʔeŋ˧tɜ˩ga̤˧	tɛ˧tɛ˧	ti˩tɛ˩
406	How many (persons)	ba˩prɛ˩te˧	bwɛ˩dɯ˩ga̤˧	be˩ra˧	be˩pwa˩tɛ˩
407	Stream	tʰje˧klo˧	tʰɛ˩lɔ˩ʔu˩ /tʰɛ˩ pʰu˩tʰɛ˩klau˩	tʰi˩lo˧	lɤ˩
408	Wet rice field	lja̤˧kʰu˩	lai˩	lɛ˩kʰu˩	lɛ˩
409	To be ripe	ʔa˩mi˧	mi˩˨	ʔɛ˩mi˩	ʔa˩mi˩
410	Rice seedling	bɯ̤˧klwi˧	bɜ˩kʰlwei˩˧	bɯ˩kla˩	bu˩kʰli˩
411	Pangolin	ʝu˩	ju˩	ʝu˧	ʝo˩
412	Crested	kʰa˧di˩	kʰu˧tɜ˩ni˩	kʰu˩θɔ˩ʔo˩	ʔa˩kʰɔ˩di˩
413	Water leech	za˩	dʒai˩	ʝa˩	lo˩
414	Land leech	ʂwo˩	tɜ˩vɯ˩ /ʂo˩	θu˧	ʂo˩
415	Earthworm	za˧kro˧	tɜ˩lai˩˧	tʰa˩lje˧	tʰa˩ʝe˩
416	I (1S)	va˧	kʰwɛ˩	he˩	he˩
417	Thou (2S)	nɛ˩	na̤˧	na˧	na˩
418	He/she/it (3S)	ʔɛ˩	ja̤˧	ʔɛ˩	ʔa˩
419	We (1 pincl)	pɛ˩	hɛ˩tʰɔ˩pʰo˩	pa˧	pa˩
420	You (2P)	θi˧	ja˧xɔ˧ /ʂi˧	θi˩	ʂe˩
421	They (3P)	ʔɛ˩θi˧	ja̤˧ʂi˧	ʔɛ˩na˩θi˩	ʔa˩ʂe˩
422	Sleeping area	hi˩dɔ˩ku˧	ʔo˩mei˩ʃein˩tɜ˩ ʔu˩	kʰɔ˩la˩ʃi˩mi˩	tə˩we˩ka˩
423	To take	pʰje˩dʒɣ˧	dʒa̤˧ha˩ /pʰje˩ha˩	pʰi˧kɛ˩	dʒo˩ʔi˩ /pʰje˩dʒo˩

424	To disappear	ʔo˩me̤˦	kʰu˩ma˩	ʔɛ˨lu˦ma˧kɛ˦	ʔa˩ha˥ma˥
425	To split w/a knife	kɛ̤˦dɯ˦	duŋ˥tuŋ˩ /ka˥	dɯ˦tʰa˦tɯ˧	pla˩
426	To bend	ta˩ka˩	tɜ˩kei˩	ʔɛ˩re˧we˧	te˩kwe˩
427	To lift	dʒɔ˧tʰja˩	bei˧	dʒɔ˧	dʒo˩tʰɔ˥
428	To do/ make	me˩	ma˩	ma˩	ma˩
429	Don't do it	me˩ta˥me˥	ma˩ma̤˧	ma˧ma˩	ma˩ma˩
430	Half a quantity	tɜ˩kla˧me˧	tɜ˩kuŋ˥	tɜ˨kʰo˦	ta˩ko˥ke˩
431	Disgusting	ɟo̤˦	tɜ˨jɤ˩	ɟo˥mi˩	ʔa˩we˩dʒa˩
432	Warm	kuː˦lɛ˩	la˩	ʔɛ˨la˧	ʔa˨la˩
433	Cool	kɜ˩dʒṳ˦kɜ˩bɛ̤˦	ʔa˩dʒɛ˧	ʔɛ˩ro˩	ku˩dʒu˩ka˩ba˥
434	Difficult	ʔa˩pja˦ʔa˩sʰɛ˧	ʔa˨ja̤ŋ˩	ʔɛ˩pɔ˨ja˩	pɔ˨tsʰa˩
435	Easy	ʔa˩zu˧	ʔa˨ju˥	ʔɛ˨ju˥	ʔa˨jo˩
436	Loose	ʔa˩tɜ˩klja˧	ʔa˩tɜ˩kʰlaŋ˥	ʔɛ˩kʰlɔ˥	ʔa˩kʰo˩kʰlɔ˩

APPENDIX B

WORDLIST FOR INITIAL TONE CATEGORY ANALYSIS

No		MSEA	Gloss	Kayah	Kayaw	Monu	Yintale
1	Group one	358	far	je˩	ɟi˦	ɟe˩	ɟɯ˦
2		182	name	mwi˦	mi˥	mi˩	mi˩
3		131	tongue	pli˩	pl̤i˦	ple˩	pli˩
4		171	person	prɛ˩	pra˦	pwa˩	pjaŋ˩
5	Group two	33	silver	rɯ˦	ruˀ	vo˩	mɤ˩
6		363	white	bu˦	buˀ	bu˩	buˋ
7		3	moon	lɛ˦	laˀ	la˩	laˊ
8		220	spear	bja˦	boˀ	bo˩	baŋˀ
9	Group three	23	water	tʰje˦	tʰi˥	ʃi˩	tʰɛˀ
10		269	die	ʂje˦	θi˥	ʂi˩	ʂɛˊ
11		368	new	ʂɛ˦	θaˀ	ʂa˩	ʂaŋˋ
12		362	black	lɔ˩	θɯˀ	lɤ˩	ʂuŋˋ
13	Group four	172	father	pʰɛ˦	pʰaˀ	pʰa˩	pʰaˀ
14		102	snake	rṵ˥	ru˩	vo̤˩	wo˩
15		173	mother	mxɯ̤˥	mɤ˩	mo˩	mɯ˩
16		2	sun	mo̤˥	mɯ˩	mu˩	mɤ˩
17	Group five	68	paddy rice	bxɯ̤˥	bɯˀ	buˀ	bɜ˩
18		159	bone	krwi̤˥	ʃuˀ	kʰweiˀ	kʰweiˀ
19		145	hand	kʰu˩	dʒu˦	kʰɔˀ	dʒauˊ
20		377	spicy	ça˥	hɛˀ	hɛˀ	haiˊ
21	Group six	43	leaf	lɛ˩	la˩	laˀ	la˦
22		376	bitter	kʰɛ˩	kʰa˩	kʰaˀ	kʰa˩
23		48	bamboo	vɛ˩	hwu˩	voˀ	va˦
24		212	fire	mi˩	mi˩	mi̤ˀ	mi̤˦
25		18	year	na˩	de˩	neˀ	nei˦
26		4	star	sʰɛ˩	ʂa˩	ʂaˀ	sa˦
27	Group seven	175	son-in-law	mɛ˦	mɔ˦	mɔ˩	ma˩
28		121	brain	nɔ˦	nɤ˦	nɤ˩	nu˩
29		277	enter	nxɯ˦	nɯ˦	nu˩	nu˩
30		351	deep	za˦	dʒɤ˩	ɟo˩	ɟo˩
31	Group eight	163	skin	pʰa˥	pʰe˦	beˀ	bei˦
32		76	monkey	zɔ˦	ɟɤ˦	ɟɤ˩	ɟuˀ
33		85	pig	tʰja˥	tʰo˦	tʰoˀ	tʰoˀ
34		370	dark	kʰi˥	kʰi˥	kʰiˀ	kʰiŋˀ

APPENDIX C

KARENIC TONE BOX WITH REPRESENTATIVE EXAMPLES

<table>
<tr><td></td><td></td><td>*A</td><td>*B</td><td>*D</td></tr>
<tr><td>* Aspirated</td><td>* pʰ/tʰ/kʰ</td><td>Group three
water
die
new
black</td><td>Group six
leaf
bitter
bamboo
fire
year
star</td><td rowspan="2">Group eight
skin
monkey
pig
dark</td></tr>
<tr><td>* Voiceless</td><td>* p/t/k</td><td>Group two
silver
white
moon
spear</td><td>Group five
paddy rice
bone
hand
spicy</td></tr>
<tr><td>* Voiced</td><td>* b/d/g</td><td>Group one
far
name
tongue
person</td><td>Group four
father
snake
mother
sun</td><td>Group seven
son-in-law
brain
enter
deep</td></tr>
</table>

APPENDIX D

WORDLISTS USED FOR LEXICOSTATISTICS

	Nature	Kayah (Kebogyi)	Yintale	Kayaw (Bre)	Monu
1	Sky	mo̤˧kʰu˩ /mo̤˧lɛ˧	mo˧kʰu˧ /mo˧la˩	mɤ˧kʰo˩ /mɤ˧la˧	mo˧kʰo˧ /mo˧la˩
2	Sun	mo̤˧	tɜ˩mɤ˩	lɯ˧mɯ˩	lu˩mu˩
3	moon	lɛ˧	tɜ˩la˥	la˧	la˩
4	Star	sʰɛ˩	la˧sa˧	ʂa˩	ʂa˧
5	Cloud	ʔo̤˧lɯ̤˧	kan˧ʔuŋ˧	ka˧ʔɯ˩tɤ˧	po˩ʔo˧lu˩
7	Rain	ke̤˧dʒɯ˩	kan˧dʒu˩	ʃɛ˧dʒu˧	kʰwɛ˧dʒu˩
12	Night	mo̤˧kʰi˧	mɯ˩kʰi˧	lɯ˧mɯ˩na˧	lu˩mu˩ha˧
18	Year	na˩	nei˧	de˩	ne˧
23	Water	tʰje˧	tʰɛ˧ /tʰai˧	tʰi˧	ʃi˩
26	Earth, soil	he˩kʰu˩	haŋ˧	ha˧	ha˧kʰo˧
29	Stone	lo̤˧	lɤ˩	lɤ˩	lɤ˩
34	Iron	to̤˧tʰɛ˧	tɤ˩tʰa˧	tʰɔ˧lo˧	te̤˧tʰo˧
35	Mountain	sʰo˩	sʰau˧	kʰo˧lo˧	kʰɤ˧lɤ˧
38	Tree	θɔ˩	sein˥	θɯ˩mɯ˩	ʂɤ˧
41	Thorn	sʰu˩ʃa˧	tɜ˩sʰau˧	ʃi˩sʰo˧	ta˩ʃi˧ʂo˧
42	Root	θɔ˩rwi̤˧	sein˥wei˩	θɯ˧kʰɔ˧rɯ˩	ʂɤ˧kʰo˧wi˩
43	Leaf	θɔ˩lɛ˩	sein˥la˧	θɯ˩la˩	ʂɤ˧la˧
44	Flower	tɛ˩pʰo˧	ta˩kɔ˧	ta̤˧pʰo˧	ta˩pʰo˩
45	Fruit	θɔ˩θɛ˩	ʔa˩ʂa˧	ta̤˧θa˩	ta̤˩ʂa˧
46	Seed	ʔa˩plɔ˩	ʔa˩pʰlo˧	ta̤˧plɤ˩	ta˩pʰlo˧
48	Bamboo	vɛ˩	va˧	hwu˩	vo˧
72	Animal	tɛ˩pʰu˧tɛ˩lje˩	ta˩pʰu˧ta˩lai˩	t̤˧pʰu˧ta̤˧li˧	ta˩pʰo˧ta˩li˩
73	Tiger	pʰxɯ˧kʰi˧	pau˩kʰi˧	kʰi˧	kʰje˩ /kla˧le˩pʰo˧
76	Monkey	zɔ˧	ɟu˧	ɟɤ˧	ɟɤ˩
81	Dog	tʰwi˩	tʰwei˧	tʰju˩	tsʰi˧ /tʰwi˧
83	To bite	ʔa˩	ʔei˧	ʔe˩	ʔe˧
89	Buffalo horn	nɔ˩	nɤ˧	nɤ˧	ne˩
90	Tail	kʰa˧mi̤˧	kau˩mi˩	kɔ˧mi˩	gɔ˩me˩
93	Bird	tʰu˩	tʰu˧pʰu˧	tʰu˩	tʰu˧te˩pe˩
95	Wing	ʔa˩da˧	di˧	de˧	de˧ke̤˩
96	Feather	tʰu˩sʰɯ˩	sʰɤ˧	tʰu˩sʰu˩	ʔa˩ʂo˧
97	To fly	zxɯ˩	ɟu˧	wi˧	wi˩

98	Egg	dje˩	dɛ˦	di˩	di˥
101	Fish	tɛ˦	ta˩pʰu˥	to̤˦	to̤˩pʰu˥
102	Snake	rṳ˥	wo˦	ru˩	vo̤˩
110	Head louse	ʂɯ˩	ʂuŋ˥	θi˩	ʂu˥
119	Head	kʰu˩klɔ˥	ʃi˦kɤ˥	ʃu˩kɤ˦	hi˥kɤ˥
125	Eye	mɛ˩ʂɛ˩	mai˩mai˩pʰlɤ˦	mɯ˥ki˩pʰlɤ˩	mi˩ʂalpʰlo˥
127	Nose	kʰalpʰxɯ˦	naŋ˦kʰɛ˥ /naŋ˦kʰai˥	na˩kʰi˥	nɔ˥kʰi˩
129	Ear	kʰa˦lɛ˩	na˦kau˥	na˩ku˥la˩	nɔ˥ku˩la˥
130	Mouth	kʰa˦ʔu˩	kʰa˥kʰu˦	kʰa˩lo˦mo̤˦	kʰo˥pʰe˥
131	Tongue	pli˩	pli˩	pli̤˦	ple˩
133	Tooth	ku˩kʰje˦	tɜ˩kʰɛ˥	θu˦	kʰo˥kʰi˩
139	Belly	hɔ˥	hu˥	pʰɯ˥	pʰu˩
141	Heart	θɛ˥plɔ˩	ʂa˥pʰlɤ˦	θɔ˦	ʂo˥pʰlɤ˥
143	Liver	θxɯ˩	ʔa˩ʂu˦po˩ʂo˦	θu˩θɔ˦	ʂu˥ʂo˥
145	Hand	tɜ˩kʰu˩	dʒau˩	dʒu˦de˦	kʰo˥de˩
150	Fingernail	kɜ˩no˦ba˩	dʒau˥mein˦	dʒɯ˦θi˩mi˩	kʰo˥mu˩be˥
152	Leg	kʰa˦dxɯ˩	kʰaŋ˦dau˦	kʰɔ˩de˥	kʰo˥lo˩po̤˦
154	Knee	kɔ˩ma˦	kʰa˩klei˥mai˦	kʰɔ˩le˥me˩	kʰo˥le˩me˩
159	Bone	krwi̤˥	kʰwei˥ /kʰrei˥	ʃu˦	kʰwi˥
161	Flesh	ʔa˩je˩	ja˦	ja˩	ʔa˩ji˥
163	Skin	ʔa˩pʰa˥	bei˦	pʰe˦	ʔa˩be˥
164	Blood	θwi˩	ʂwei˦	θju˩	ʂi˥
171	Person	kɜ˩za˦	pjaŋ˩	pra˦	kɔ˩jɔ˩
172	Father	pʰɛ˦	pʰa˥jɤ˦	pʰa˦	pʰa˩
173	Mother	mxɯ˥	ʔi˥jɤ˦ /mɯ˩	mɤ˩	mo˩
176	Husband	vɛ˩	va˦	wu˦	vo˩
177	Wife	me˦	ma˥	ma˦	ma˩
182	Name	mwi˦	mi˩	mi˦	mi˩
184	Road, path	klja˥	klai˩	kʰlɛ˦	klɛ˥
186	House	hi˩	ʃein˦	ʃi˩	hi˥
212	Fire	mi˩	mi̤˦	mi˩	mi˥
213	Ashes	kɔ˥pʰɛ˩	pʰa˦	pʰa˩	pʰa˦
214	Smoke	mi˩kʰɯ˩	mi̤˦kau˦	mi˩kʰɯ˩	mi˥kʰu˥
224	To see	mja˥tʰje˩	mɔ˥tʰɛ˦	kɛ˩tʰi˩	kɛ˥ʃi˥
227	To eat	ʔe˩	ʔaŋ˦	ʔa˩	ʔa˥
234	To vomit	ʔa˩prja̤˥	pwɔ˥	pro˦	po˥
251	To think	tɜ˩ne˩	tɜ˦nɛ˦	rɛ˥ta˦	kɛ˩nɛ˩

261	To sleep	ʔoꜛmjeꜜ	ʔɔꜛmeiꜛ	ʃiꜜmiꜜ	haꜛmoꜛʔoꜛ
269	To die	ʂjeꜜ	ʂɛꜘ /ʂaiꜘ	θiꜜ	ʂiꜛ
271	To sit	ʔoꜛɲaꜜ	dʒiꜛnaꜗ	ʃiꜛnɔꜜ	haꜛnɔꜛʔoꜛ
272	To stand	kɜꜛtʰoꜛ	ʔitʰɤꜜ	ʃiꜛtɤꜛ	ʔiꜛtʰɤꜛ
283	To fall	laꜛtaꜜ	laiꜜtaiꜛ	lɔꜜteꜜ	lɔꜛteꜛ
288	To give	djeꜛ	dɛꜘ	ʔiꜜ	ʔiꜛ
308	To burn	sʰɯꜛkjaꜜmiꜛ	mi̤ꜛkaiꜘ /sʰuꜛmi̤ꜜ	miꜛkɛꜜ /dʒuꜜmiꜛ	tsʰoꜛmiꜛ /miꜛkɛꜛ
315	To kill	meꜛθjeꜜ	maꜛʂɛꜛ	maꜜθiꜛtaꜜ	maꜛʂiꜛ
322	One (person)	tɜꜛprɛꜛ	tɜꜛdɯꜛ	tɜꜛraꜛ	taꜛpwaꜛ
323	Two (persons)	ʂɛꜛɲeꜜ	ɲeꜜdɯꜛ /niꜛdɯꜛ	θɔꜜkliꜜ /kiꜜraꜜ	ʂɔꜛkiꜛniꜛ
324	Three (persons)	ʂɛꜛʂɯꜜ	sʰaꜜʂuꜛ	θɯꜛraꜜ / θɔꜜθɯꜛ	ʂɔꜛʂuꜛ
325	Four (persons)	ʂɛꜛlwiꜜ	sʰaꜜlweiꜘ	lwiꜛraꜜ /θɔꜜlwiꜛ	ʂɔꜛlwiꜛ
326	Five (persons)	ʂɛꜛɲaꜜ	ŋaiꜛdɯꜛ	jɛꜛraꜜ /θɔꜜjɛꜜ	ʂɔꜛjɛꜛ
339	To be big	ʔaꜛduꜛ	pʰaꜛduꜜ	ʔaꜛduꜛ /ʔaꜛpʰruꜛ	ʔaꜛdoꜛ
341	To be long	ʔaꜛtʰuꜜ	tʰuꜛtɜꜛbeŋꜜ	tʰuꜛ	ʔaꜛtʰoꜛ
342	To be short (length)	ʔaꜛpʰxɯꜛ	pʰɯꜜtɤnꜜ	pʰɤꜛ	ʔaꜛpʰoꜛtuꜛ
345	To be thick	ʔaꜛdxɯꜜ	duŋꜗ	dɯꜛ	ʔaꜛduꜛ
351	To be deep	ʔaꜛzaꜜ	ɟɔꜛtɜꜛpiŋꜜ /jɔꜛ	dʒɤꜛ	ʔaɟoꜛ
355	Right side	dʒɔꜛtʰjoꜛ	dʒauꜛtʰwɛꜘ	θrɛꜜtʰɛꜜ	dʒuꜛdəꜛmoꜛ
356	Left side	dʒɔꜛdʒiꜛ	dʒauꜛdʒiꜜ	triꜜdʒiꜛ	dʒuꜛdʒɤꜛdʒeꜛ
360	This	dɜꜛʔjeꜜ	tɜꜛʔɛꜘ	haꜛjɤꜜ	tɤꜛʔɤꜛ
361	That	dɜꜛnxɯꜛ	dɤꜛnɯꜛ	haꜛniꜜ	deꜛnuꜛ
362	Black	ʔaꜛlɔꜛ	ʔaꜛʂuŋꜗ	ʔɛꜛθɯꜛ	ʔaꜛlɤꜛ
363	White	ʔaꜛbuꜜ	ʔaꜛbuꜗ	ʔɛꜛbuꜛʂɔꜛ	ʔaꜛbuꜛ
364	Red	ʔaꜛliꜛ	ʔaꜛleŋꜜ	ʔɛꜛliꜜkoꜜ	ʔaꜛleꜛ
365	Green	ʔaꜛʂɯꜜ	ʔaꜛtɜꜛŋaꜜ	ʔɛꜛkaꜛlaꜛ	ʔaꜛʂuꜛ
368	To be new	ʔaꜛʂɛꜜ	ʔaꜛʂaŋꜗ	ʔɛꜛθaꜛ	ʔaꜛʂaꜛ
376	To be bitter	ʔaꜛkʰɛꜛ	kʰaꜛ	ʔɛꜛkʰaꜛ	ʔaꜛkʰaꜛ
382	To be hot	ʔaꜛkʉꜛ	ʔaꜛkuꜛ	ʔɛꜛkuꜛ	ʔaꜛkoꜛ

BIBLIOGRAPHY

Benedict, Paul K. 1972. Sino-Tibetan: A conspectus. Cambridge: Cambridge University Press.

Bennett. J. Fraser. 1991. Two more Kayah Li dialects: A comparison of dɔ tə̀ má and dɔ shò pía dialects with Western and Eastern Kayah. Paper presented at 24th ICSTLL, Bangkok.

Bennett. J. Fraser. 1992. Interim findings report: Central Karen investigation. Unpublished Ms.

BERG. 2000. Karenni State gazette. (Draft Translation). [English translation of the Burmese gazette].

Bradley, David. 1997. Tibeto-Burman languages and classification. Tibeto-Burman Languages of the Himalayas, Papers in Southeast Asian Linguistics 14, ed. by David Bradley, 1-72. Canberra: Australian National University. [Pacific Linguistics A-86].

Bryant, John R., Khu Klaweh & Khu Noah. 1993. Notes on Kayah Li (Western Red Karen) phonology. Payap University Working Papers in Linguistics 1:66-104.

Burling, Robbins. 1969. Proto-Karen: A reanalysis. Occasional papers of the Wolfenden society on Tibeto-Burman linguistics, vol 1.

Burquest, Donald A. and David L. Payne. 1993. Phonological analysis: A functional approach. Dallas: Summer Institute of Linguistics.

Cooper, Justin, and Bert, Vaux. 1999. Introduction to linguistic field methods. Lincom Europa.

Crowley, Terry. 1992. An introduction to historical linguistics. Oxford: Oxford University Press.

Culy, Martin M. 1993. A preliminary investigation of the Pwo Karen dialects of Northern Thailand. Chiang Mai, Thailand: Payap University Research and Development Institute.

Dhananjayananda, Puttachart. 1983. The phonology of Sgaw Karen, with comparisons to Thai. Bangkok: Mahidol University MA thesis.

Egerod, Søren C. 1974. Sino-Tibetan languages. Encyclopedia Britannica 16:796-806.

Grimes, Barbara F, ed. 2000. Ethnologue: Languages of the world. Dallas: Summer Institute of Linguistics.

Henderson, Eugenie J.A. 1961. Tone and intonation in Western Bwe Karen. Burma Research Society Fiftieth Anniversary Publication I, 59-69.

Jones, Robert, B. 1961. Karen linguistic studies: Description, comparison, and text. Berkeley: University of California Press.

Kauffman, William G. 1993. The great tone split and central Karen. Grand Forks: University of North Dakota MA thesis.

Keyes, Charles F., ed. 1980. Ethnic adaptation and identity: The Karen on the Thai frontier with Burma. Philadelphia: Institute for the Study of Human Issues.

Lar Baa, Saw. 2001. The phonological basis of a Sgaw and northwest Karenic orthography. Chiang Mai: Payap University MA thesis.

LaPolla, R.J. 1999. The role of migration and language contact in the development of the Sino-Tibetan language family. Areal diffusion and genetic inheritance, ed. by R.M.W. Dixon & A.Y. Aikhenvald, 225-254. Oxford: Oxford University Press.

Lehman, F. K. 1963. Kayah society as a function of the Shan-Burma-Karen Context. Contemporary change in traditional societies, ed. by J.H Steward. Urbana: University of Illinois Press.

Li Fang-Kuei. 1977. A handbook of comparative Tai. Honolulu: University of Hawaii Press.

Luce, G.H. 1985. Phases of pre-pagan Burma: language and history. (2 vols). Oxford: Oxford University Press.

Manson, Ken. 2002. Karenic language relationships. A lexical and phonological analysis. Chiang Mai: Payap University Department of Linguistics.

Matisoff, James A. 1978. Variational semantics in Tibeto-Burman: The "organic" approach to linguistic comparison. Philadelphia: Institute for the Study of Human Issues Publications

Matisoff, James A. 1991. Sino-Tibetan linguistics: present state and future prospects. Annual Review of Anthropology 20:469-504.

Matisoff, James A. 1997. Sino-Tibetan numeral systems: Prefixes, protoforms and problems. Canberra: Australian National University. [Pacific linguistics. Series B-114].

Pike, Kenneth L. 1982. Tone languages. Ann Arbor, Michigan: University of Michigan Press.

Shafer, Robert. 1955. Classification of Sino-Tibetan languages, Word 11.1:94-111.

Solnit, David B. 1990. Parallelism in Kayah Li discourse: Elaborate expressions and beyond. Berkeley Linguistic Society 21.2:127-140.

Solnit, David B. 1992. When is an affix not a morpheme? Minor syllables in Kayah Li. SEALS 2:343-355.

Solnit, David B. 1997. Eastern Kayah Li: Grammar, texts, glossary. Honolulu: University of Hawaii Press.

STEDT. 2004. Web-page http:// stedt. Berkeley. edu.

UNICEF 1998. Proposal for Burma-Japan multi-bilateral cooperation on the health of mothers and children in Burma. Yangon.

Van Driem, George. 2002. Tibeto-Burman replaces indo-Chinese in the 1990s: Review of a decade of Scholarship. Lingua 111:79-102.

Young, Gordon. 1962. The Hill Tribes of Northern Thailand. (A Socio-Ethnological Report). Bangkok, Thailand: Siam Society.