A PHONOLOGICAL STUDY OF PA-O (TAUNGTHU)
AT BAN HUAY SALOP, TAMBON
HUAY PHA, MUANG DISTRICT,
MAE HONG SON PROVINCE

ORRANAT THANAMTEUN

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MAE HONG SON PROVINCE

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Orranat Thanaument
This thesis was an attempt to present a Phonological Study of Pa-O (Taungthu) at Ban Huay Salop, Tambon Huay Pha, Muang District, Mae Hong Son Province by using the Tagmemics theory.

The result of this study shows that the phonological system is composed of twenty consonant phonemes / p, pʰ, b, t, tʰ, d, c, cʰ, k, kʰ, ?, s, h, m, n, η, l, r, w, j, /, eleven vowel phonemes / i, e, e, a, u, a, u, o, o, a̯, a̯, a̯, /, and four tonemes: high rising, high falling, mid-level, and low falling tone. The syllable structure is C₁(C₃)(C₄)V₁T(C₂). There are three types of syllables: presyllable, minor syllable and major syllable. There are three types of phonological words: monosyllabic words, disyllabic words and trisyllabic words. Intonation is caused by tone of the final syllable of the statement either falling or rising.
วิทยานิพนธ์นี้มีจุดมุ่งหมายเพื่อศึกษากระบวนการเสียงภาษาโปรโม (ดองสู) น้ำแข้งหัวซาง คำกล่าวภาษา อัตลักษณ์เมือง จังหวัดแม่ฮ่องสอน โดยใช้ทฤษฎีเทคนิคที่มีมีกด

ผลการศึกษาพบว่าหน่วยเสียงพังธุ์มี 20 หน่วยเสียง คือ /p, pʰ, b, t, tʰ, d, c, cʰ, k, kʰ, ?, s, h, m, n, ŋ, l, r, w, j/ หน่วยเสียงสมดุล 11 หน่วยเสียง คือ ( i, e, ə, a, u, ʊ, ɔ, ɔ', ə' ) หน่วยเสียงวรรณยุกต์มี 4 หน่วยเสียง คือ วรรณยุกต์สูงขึ้น วรรณยุกต์สูงต่ำ วรรณยุกต์กลางระดับสูงและวรรณยุกต์ต่ำ

โครงสร้างพยางค์ประกอบด้วย CV, (C,C,V) T

พยางค์ประกอบด้วย พยางค์นำ พยางค์หลักและพยางค์รอง ลักษณะประกอบด้วย

คำพยางค์ดื่ม คำของพยางค์และคำแบบพยางค์ ทำนองเสียงมีสองประเภทคือ ทำนองเสียงขึ้น และทำนองเสียงต่ำ ทั้งนี้ขึ้นอยู่กับระดับเสียงวรรณยุกต์ของพยางค์สุดท้ายของประโยค
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LIST OF ABBREVIATIONS AND SYMBOLS

C₁  Initial Consonant
C₂  Final Consonant
C₃  Second Member of Consonant Clusters
C₄  Third Member of Consonant Clusters
V₁  Single Vowel
V₂  Second Member of Diphthong
[v:]  Vowel length which longer than a short vowel
[v:]  Vowel length which much longer than a short vowel
T  Tone
/₁/, /' /  High-Rising Tone
/₂/, /' /  High-Falling Tone
/₃/, /' /  Mid-Level Tone
/₄/, /' /  Low-Falling Tone
[^'₄]  Pitch Level of High-Rising Tone
[^'₂]  Pitch Level of High-Falling Tone
[^'₃]  Pitch Level of Mid-Level Tone
[^'₁]  Pitch Level of Low-Falling Tone
/ /  Phonemic Transcription
[ ]  Phonetic Transcription
( )  Optional Appearance of Phoneme
“ ”  Meaning of the Word
[ ]  Strong Stress
[ ]  Weak Stress
vd  Voiced
vl  Voiceless
?  Bound Morpheme
CHAPTER I

INTRODUCTION

1.1 General Information on the Karen

There are many ethnic groups in Thailand. The nine major ethnic groups cited by the Tribal Research Institute (1990: 5) are Karen, Hmong, Lisu, Lahu, Akha, Yao, Lua, Thin and Khmu. According to the Public Welfare Department, Labor and Social Welfare Ministry (1995: 9), the Karen are the largest of the nine groups. There are approximately 353, 110 Karens in Thailand. This number constitutes 41.38% of the total hilltribe population in the country.

According to Anderson (1981:81), an original homeland of Karens is in the Gobi Desert region of Mongolia, the River of Sand as their ancestors called, where they lived about 4,500 years ago. The Karens and Burmans (Mramma) fled their native southeast Tibet in the face of aggression from both the Tibetans and the Chinese into Burma about 200 BC (Courtauld 1988:49). Karenic settlements in Burma are in the low flat plains of the Irrawaddy, Sittang and Salween deltas, extending into the plain of Tenasserim.

Karens migrated into Thailand before other minorities. Walker (1992:44) counted the Karen among the pre-Tai aboriginal peoples of what is now northern Thailand by the fact that the forefathers of the majority of Karen now in the north arrived from Burma over the past couple of hundred years or so. According to Renard (1980:119-126), during the seventeenth and eighteenth centuries, there were both diplomatic contacts and military conflicts between Khon Muang (northern Thai) and Karen. Later, at the beginning of the nineteenth century, Cao Kawila (who reestablished an independent Northern Thai dynasty in Chiang Mai in 1782) is reported to have forcibly relocated many Karen communities from his far western marches into the Ping valley, often quite close to Chiang Mai Province.

The Karens are plains as well as hill dwellers. Some of the Karens in Thailand can be found in the central plains region, but the majority of them are in the northern and western hill areas.

Karens are generally classified into four major subgroups (Lebar 1964:58).

1. Sgaw Karen (S’gaw, Skaw) or / pakəŋə coko / as they call themselves. The Burmese call them “Bama Kayin” (Burmese Karen). In Thailand they are known as “Yang Khao” (White Karen) by the northern Thai people. They are widely distributed throughout the Irrawaddy and Sittang delta area in Burma and in the western and the northern regions along the Thai-Burmese border in Thailand.
2. **Pwo Karen** (Pho, Po, P wo, Pro or Phong) or / pakoacho / as they call themselves. The Burmese call them “Taliang Kayin” (Mon Karen). In Thailand they are called “Yang Daeng” (Red Karen) by the northern Thai people. In Burma they are concentrated in the Irrawaddy Delta and northern Tenasserim. In Thailand they are found near the Sgaw settlements.

3. **Bwe Karen** (Bre, B’ghwa) or / bre / as the Sgaw Karen and Pwo Karen call them (Suriya Ratanakul 1998 : 272). The Burmese call them “Kayah”, “Kayin-ni” (Red Karen)”. They are in Kayah State, an area in the southern Shan State in Burma. They are also found in northern Thailand, especially in Mae Hong Son and Chiang Mai Provinces.

4. **Pa-O** (Taungthu) or / pao / as they call themselves. They are called “Taungthu” (which means hillman) by the Burmese, or “Tong-Su” by the Shan in Burma and Thailand. The name is borrowed from Burmese. Sgaw Karen and Pwo Karen do not call them as / pakoacho / (which means Karen), they call them “/toasula/” as a loan word from Burmese.

   In this language, /pao/ means to break, and /ao/ means to pick out. The meaning is according to their belief that the Pa-O and other Karens were sons of a Nagra (a big snake in their fairly tale). After lying, other eggs could break themselves but he, as the youngest one, could not so a hermit had to break his egg and picked him out.

   In Burma, they are in the southwestern part of the Shan State, and east of the Gulf of Martaban in Tenasserim. Young (1962.109) reported that a few Pa-O (Taungthu) were found in Mae Hong Son Province in Thailand (five villages). Similary, according to the data collecting on my fieldwork, there are some few Pa-O in Thailand, mostly in Mae Hong Son Province and also, scattered along the Thai-Burmese border in Tak Province. Besides, they are found some in the Lam Phun, Chiang Mai and Chiang Rai Provinces.
Map 1
Location of Karen Population
Source Adapted from Keys (1979)
Map 2
The Migration of Karens to the North of Thailand
Source: Adapted from Young (1962:x)
Map 3
The Distribution of Karens in the North of Thailand
Source Adapted from Young (1962 xii)
1.2 Language Affiliation

The Pa-O language belongs to the Karenic family, which is of Sino-Tibetan stock and is more closely related to Tibeto-Burman than to Sinetic (Benedict 1972:2,128; Lebar 1964:58). However, its relation to the Tibeto-Burman family is still disputed.

Benedict (1972:6) grouped Karen with Tibeto-Burman under the Tibeto-Karen stock whereas Bradley (1979:15) and Matisoff (1973:84) placed Karen under the Tibeto-Burman stock within the Sino-Tibetan superstock. There are some linguistic features, which differentiate the Karenic languages from other languages in the Tibeto-Burman group. For example, the word order in Karen is SVO whereas in other Tibeto-Burman languages, it is SOV (Fraser 1995:159).

![Figure 1. Alternate places of Karenic languages within Sino-Tibetan (Fraser 1995 159)](image)
Karen comprises at least six major languages whose speakers are divided into three main groups by geographical designation: the northern, central, and southern groups. The Pa-O, who lives in the Shan state in Myanmar form the northern group. The central group refers to the Karen language spoken in Kayah State of Myanmar, the adjacent areas in Myanmar and Mae Hong Son Province, Thailand. The southern group has the two largest groups of Karen speakers: the Sgaw and the Pwo as diagrammed below (Fraser 1995:160).

Two varieties of Pa-O (or Taungthu) are spoken in Burma. The northern variety is spoken around Taunggyi. A second, southern variety is spoken around Thaton.

Figure 2: Geographical groupings of Karenic Languages

(Fraser 1995 160)
1.3 Geographical Location

1.3.1 The Pa-O in Thailand

The Pa-O, who number about 200,000, make their principle home near Taunggyi in the Shan State, where they fled during Anawratha’s attack on Thaton in the 11th Century (Anderson 1981:81). They are found from Thaton, on the Gulf of Martaban, and reaching north of Taunggyi into the southern Shan State.

It was after Burma became a British colony in 1826 that the Pa-O migrated into Thailand together with Burmese, Shan and Karens. They were employed by the English Teak Trading Company during the Lan Na Period, i.e. during the reigns of Cao Luang Buddhawong (ชัยหลวงพุทธวงศ์) and Cao Mahotaraprahtet (เจ้ามหาแตระราชอินทร์) (1823-1854) (Parichat Ruengwiset 1993: 30).

According to a document found in Wat Nong Kham (วัดหนองคำ), which located at Chang Moi Street, Muang District, Chiang Mai Province, there were many ethnic groups living near this temple: Pa-O, Shan and Northern Thais. Being Buddhists, they built this temple in 1837. In the history of the temple, most abbots were Pa-O. Today, there are more than twenty Pa-O monks, twenty-five Pa-O novices and fifteen Pa-O people living in this temple. They learn and speak Pa-O. Most Pa-O in Thailand from the Mae Hong Son, Lam Phun, Chiang Mai, Chiang Rai and Tak Provinces and the Pa-O from Taunggyi, Burma, use this place (Wat Nong Kham) as their cultural center. Besides, in the Lam Phun Province, there is an old Pa-O temple called Wat Sri Rong Muang (วัดศรีรองม่วง).

During my field work, I found the Pa-O not only in the Mae Hong Son Province but also in some northern provinces of Thailand: Chiang Rai, Chiang Mai, Tak, and Lam Phun Provinces. About 20 years ago, four Pa-O families migrated from their homeland in Taunggyi to Doi Wa-wi Mountain in the Chiang Rai Province. In the Tak Province, there are Pa-O peoples who migrated from Thaton. They are scattered among other Karen near the Thai-Burmese border in the Tha Song Yang, Mae Sot, and Mae Ramat Districts. They have established the Pa-O People’s Liberation Organization. In the Chiang Mai and Lam Phun Provinces, they have mixed with northern Thai families, but some of them can still speak Pa-O language.

1.3.2 The Pa-O in the Mae Hong Son Province

Mae Hong Son is a mountainous northwestern province bordering on Myanmar to the west and north, the Chiang Mai Province to the east, and the Tak Province to the south.

The Mae Hong Son Province covers an area of 12,681 square kilometers. It is divided into 6 districts and 1 subdistrict. Muang, Mae Sariang, Mae La Noi, Pai,
Khun Yuam, Sop Moei and Pang Ma Pha Subdistrict. It can be reached from Chiang Mai either by Highway No 108 via Mae Sariang, or Highway No 1095 via Pai, which shortens the distance to some 274 kilometers.

The Pa-O came to the Mae Hong Son Province more than 150 years ago (1823-1854) as employees of the English Teak Trading Company (Parichat Ruengwiset 1993: 30) In 1962, when General Ne Win staged a military coup and established the Revolutionary Council of Myanmar, some of the Pa-O fled to the Thai-Burmese border and established the Pa-O People’s Liberation Organization. After they had been attacked by Khun Sa (the Shan State Army), some of them migrated to the Mae Sariang District. It has been reported that the few Pa-Os who live in Thailand can be found in five villages in the Mae Hong Son Province (Young 1962: 109).

The great Pa-O migration from the Thai-Burmese border to the Mae Hong Son Province took place during the premiership of Prem Tinsulanontha when the Thai Army expelled the Shan State Army from the border of Thailand. The Pa-O who lived nearby had to move to the villages of Huay Salop (ห้วยชะลอม) and Huay Khan (ห้วยข่าน) in the Mae Hong Son Province.

According to my informant (Mr. Prasoe Prakandech) and the Residents’ Registration Office of Muang District, there are forty-four Pa-O families in the village of Huay Salop (ห้วยชะลอม), thirty families in the village of Mae Suya (แม่สูยา), Tambon Huay Pha (ห้วยผา), forty families in the village of Huay Khan (ห้วยข่าน), and a few families in the Huay Ma-khue Som (ห้วยแม่ขวี่สาม), Tambon Mok Cam Pae (หมอคุณ-

Figure 3: The Ubosoth of Wat Nong Kham, Chiang Mai Province.
Map 4
Changwat Mae Hong Son Administrative Divisions
Source Adapted from Documents of the Tourism Authority of Thailand (1993)
1.3.3 The Pa-O in the Village of Huay Salop

- History and Geography

Huay Salop is a Pa-O village, which was established about 20 years ago. Before that, the Pa-O was widely scattered along Thai-Burmese border and in Mae Sariang District, Mae Hong Son Province. Huay Salop is situated in Tambon Huay Pha, Muang district and 30 kilometers northern to Muang district. It is surrounded by mountains. A small river crosses and divides the village into two parts, a northern part and a southern one.

- Population

According to the records of the secular headman in 1997, the village has 304 inhabitants, consisting of 44 families with 128 Pa-O females, 175 Pa-O males and one Shan male, a religious headman in the temple who married into the village. Most of the males and some of the females in the village are in contact with the surrounding Thai communities. Most of them have become Thai citizens. There is a Thai government school where most of the children learn Thai. The inhabitants of the village accept the Thai political system and the development projects of the government. The adult inhabitants trade with Thais or work as labourers for Thais.

- Occupation

Most of the Pa-O in the village of Huay Salop are farmers. They earn their living by cultivating upland fields and harvest crops from the forest. They shift their cropping areas from place to place around their village every 4-5 years. The Pa-O dwellers of the wooded hills practice swidden agriculture (slash and burn or shifting cultivation). They mainly grow rice. After the harvest, the rice is stored in granaries. They also grow vegetables (chilies, garlic, onions, pumpkins, peas, and potatoes) and fruit (papayas, corn, bananas and jackfruit). Apart from agriculture they do trade with Thais or work as labourers in restaurants and furniture shops in Bangkok. Their domestic animals include dogs, pigs, and hens.

- Religion

The Pa-O are Buddhists, although most of them still believe in animism. They believe that they adopted Theravada Buddhism earlier than the Mon. They practice the shin-pyu ceremony in which boys at the age of 9 to 12 become “sons of the Buddha”. During the ceremony, the boys are given the saffron-colored robes of the Sangha. They do declare themselves Buddhists who could enunciate the “triple gems” (Buddha, Dhamma, Sangha), nor could most follow the formulation of the “five
precepts' (prohibitions against killing, theft, unlawful sex, lying, and imbibing intoxicants)

- Housing

The Pa-O houses are of the raised floor varieties, made from wood or bamboo. Roofs are of grass or leaf thatch. Here an entire settlement of 40 households occupies a single structure composed of apartments opening on a central corridor, each with its veranda on the outer side. There are Buddha image shelves as a center of the house. Fireplace, pot, jar, utensils, and equipment are kept outside the house. Animals are kept in pen outside the house. Buddhist temple can be founded in most villages.

- Clothes

The Pa-O is easily recognizable by their colorful bath-towel turbans, which are worn by males and females, children and adults. Men generally wear loose-fitting (baggy) dark-blue or black trousers, a tunic, and a tight-fitting jacket with long sleeves reaching to the wrist of the same color. The women wear a dark-blue or black sarong, a sleeveless blouse of hip length made by sewing together two rectangular pieces of cloth with openings for neck and arms, and a jacket like men. But they are embroidered with colored lines around the neck, arms, along the shoulders, and the mid front sheet.

They wear costumes only on ritual or solemn occasions. Normally they dress like Thais.

Figure 4: Buddhist Temple in Huay Salop.
Figure 5: The Extended Thai School in Huay Salop

Figure 6: Pa-O’s House in Huay Salop
Figure 7. Pa-O People in their Costume Dresses

Figure 8. Pa-O Girls
Figure 9  Pa-O Dance
1.4 Objective of this Study

The objective of the study is to describe the phonological system of the Pa-O which is spoken in the village of Huay Salop (ห้วยซาโลป) Village, Tambon Huay-Pha (ห้วยบ่อ), Muang District, Mae Hong Son Province, and to make the data available to scholars and others who are interested in this language.

1.5 Benefits of the Study

1.5.1 This study provides information on Pa-O phonology, the history and the way of life of the Pa-O people.
1.5.2 This study is of use to Tibeto-Burman linguistics as it provide additional information on an unexplored Karen dialect.
1.5.3 This study will help minimize the language barrier for those who need to communicate in Pa-O.
1.5.4 This study will help to improve the relationship between local Thais and Pa-O.

1.6 Scope of the Study

1.6.1 This study presents the phonological system of the Pa-O spoken by native speakers in the village of Huay Salop, Tambon Huay-Pha, Muang District, Mae Hong Son Province.
1.6.2 The study is organized as follows
- Intonation
- the phonological word
- the syllable
- the phoneme
CHAPTER II

LITERATURE REVIEW

Reviews of many important articles are included here to provide a basic overview of the studies that have been done on the Karenic languages.

2.1 Northern Karen: Pa-O

The previous studies of Northern Karen include Karen Linguistic Studies: Description, Comparison, and Text by Robert B. Jones (1961) and Insight Guides Burma by Anderson (1981)

2.1.1 John G. Anderson.

John G Anderson, 1981 Insight Guides Burma Anderson (1981:81) notes on his study That the Pa-o language is an older, purer tongue than standard modern Karen and the written language of the Pa-O is unique.

2.1.2 Robert B. Jones: Pa-O

Robert B Jones, 1961. Karen Linguistic Studies: Description, Comparison, and Texts. Jones presents the northern variety of Pa-O spoken around Taunggyi in Burma The phonemic systems of this variety are presented briefly as follows
Consonant Phonemes: There are 20 single consonant phonemes as follows:

<table>
<thead>
<tr>
<th>Labial</th>
<th>Alveolar</th>
<th>Palatal</th>
<th>Retroflex</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VL unasp.</td>
<td>p</td>
<td>t</td>
<td>c</td>
<td>k</td>
<td>?</td>
</tr>
<tr>
<td>VL asp.</td>
<td>pʰ</td>
<td>tʰ</td>
<td>cʰ</td>
<td>kʰ</td>
<td></td>
</tr>
<tr>
<td>Vd</td>
<td>b</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td>n</td>
<td></td>
<td>η</td>
<td></td>
</tr>
<tr>
<td>Fricative</td>
<td>s</td>
<td></td>
<td></td>
<td>h</td>
<td></td>
</tr>
<tr>
<td>Lateral</td>
<td>l</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>r</td>
</tr>
<tr>
<td>Semi-vowel</td>
<td>w</td>
<td>j</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jones notes “/h/ has an affricated allophone in free variation with the spirant allophone. /w/ has a labido-dental allophone [v] in initial position, and a post-consonantal allophone which is a nonsyllabic high back rounded vowel, [u]. /j/ has an allophone with spirantal friction [j] in initial position, and a post-consonantal allophone which is a nonsyllabic high front unrounded vowel, [i].”

Final consonants: There are 7 consonant phonemes /p, t, k, ?, m, n, η/ occur in final position. All are unreleased in final position. The stops /p, t, k/ are somewhat frontier. Final /η/ sometimes has weak closure resulting in a lenis nasalized prevelar stop which is in free variation with simple nasalization of the vowel. Final /?/ in unstressed syllables is dropped, but the nucleus retains its proper allophones of position and length. Such unstressed syllables occur only in normal transition with the following syllable. Final stops occur only with high and low tones.

Consonant Clusters: There are 4 second consonant phonemes /w, j, r, l/ occurs with initial consonants as consonant clusters as follows:

<table>
<thead>
<tr>
<th>Second and third Consonant</th>
<th>Initial Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>p b t tʰ n c cʰ k kʰ η ? s h l</td>
</tr>
<tr>
<td>j</td>
<td>pʰ m t n cʰ k kʰ ? r l</td>
</tr>
<tr>
<td>r</td>
<td>pʰ b k kʰ</td>
</tr>
<tr>
<td>l</td>
<td>pʰ b k kʰ</td>
</tr>
</tbody>
</table>
Vowel phonemes: There are 10 single vowel phonemes / i, e, ε, y, a, u, o, o / and 2 glide vowels / a', a'' /, as follows.

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th></th>
<th>Central</th>
<th></th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unround</td>
<td>round</td>
<td>unround</td>
<td>round</td>
<td>unround</td>
</tr>
<tr>
<td>Close</td>
<td>i</td>
<td></td>
<td>y</td>
<td>u</td>
<td>u</td>
</tr>
<tr>
<td>Half-Close</td>
<td>e</td>
<td></td>
<td>o</td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>Half-Open</td>
<td>ε</td>
<td></td>
<td></td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>Open</td>
<td></td>
<td></td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glide</td>
<td>a'</td>
<td></td>
<td>a''</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jones suggests "/u/ is a high back unrounded vowel, founded only in Taungthu deviation from the nine-vowel system of syllabic nuclei of the other five varieties of Karen /y/ is high central. /o/ is diphthongal, [o̞], but /e/ is monophthongal. The mid central vowel, /a/, is somewhat lower when stressed, somewhat higher and fronter when unstressed. The high vowels are all somewhat lower before final stops and nasals. The low central vowel, /a', is fronter before /i/, backer before /u/. All nuclei are considerably shorter when followed by a stop."

Tone phonemes: There are four phonemic tones: high, high, falling, mid, and low. Closed syllables occur only with the high and the low tones. In unstressed position the high tone of closed syllables has a somewhat lower allitone. Similarity, the low tone has a somewhat higher allitone under the same conditions. In the accompanying diagram the relative pitch and contour of the tones in stressed positions are indicated by solid lines. Unstressed allophone of the high and the low tones in closed syllables are indicated by broken lines.

<table>
<thead>
<tr>
<th>TONE</th>
<th></th>
<th>High</th>
<th>High</th>
<th>Mid</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Falling</td>
<td>level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/</td>
<td>/</td>
<td>/̂</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>/</td>
<td>/̂</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>/</td>
<td>/̂</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>/</td>
<td>/̂</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Diagram:
2.2 Central Karen

The previous studies of Central Karen languages include *A Grammatical Sketch of Eastern Kayah (Red Karen)* by David Solnit (1986) and *The Phonological Study of Padaung (Long-Necked Karen)* by Sarinya Khammuang (1998).

2.2.1 David Solnit

David Solnit, 1986. *A Grammatical Sketch of Eastern Kayah (Red Karen).* Solnit describes the phonology and grammar of the Eastern Kayah (Red Karen) language spoken at Khun Huay Dya, the village on the right bank of the Paj river and Huay Sya Thaw, Huay Dya, the villages on the left bank of Paj river, Mae Hong Son Province, Thailand.

Since the present study is focused on phonology, the review of Solnit's work will be confined to Eastern Kayah Phonology as follows:

**Consonant Phonemes:** There are 21 single consonant phonemes, as follows:

<table>
<thead>
<tr>
<th>Labial</th>
<th>Alveolar</th>
<th>Palatal</th>
<th>Retroflex</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vl. p̥p</td>
<td>p̥</td>
<td>t̥</td>
<td>ž̥</td>
<td>k̥</td>
<td>(ʔ)</td>
</tr>
<tr>
<td>Vl. p̥h</td>
<td>pʰ</td>
<td>tʰ</td>
<td>žʰ</td>
<td>kʰ</td>
<td></td>
</tr>
<tr>
<td>Vd</td>
<td>b</td>
<td>d</td>
<td>(j)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td>n</td>
<td></td>
<td></td>
<td>η</td>
</tr>
<tr>
<td>Fricative</td>
<td>s</td>
<td></td>
<td></td>
<td></td>
<td>h</td>
</tr>
<tr>
<td>Continuant</td>
<td>w</td>
<td>l</td>
<td>(j)</td>
<td></td>
<td>r</td>
</tr>
</tbody>
</table>

Solnit notes "/j/ varies between standard palatal and voiced palatal, also occasionally appearing as a slightly prenasalized alveolar-palatal affricate [ "dz" ], especially in the low falling tone."

**Vowel Phonemes:** There are 10 single vowels / i, e, ə, a, ɯ, ʏ, u, o, ɔ /. 
**Tones:** There are 4 major tones and one marginal tone.

<table>
<thead>
<tr>
<th>Description</th>
<th>Tone Stick</th>
<th>Phonetic Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>High tone</td>
<td>-</td>
<td>[ 55 ]</td>
</tr>
<tr>
<td>High falling tone</td>
<td>( \uparrow )</td>
<td>[ 52 ]</td>
</tr>
<tr>
<td>Mid tone</td>
<td>-</td>
<td>[ 33 ]</td>
</tr>
<tr>
<td>Low level tone</td>
<td>( \uparrow )</td>
<td>[ 22 ]</td>
</tr>
<tr>
<td>Low falling tone</td>
<td>( \uparrow )</td>
<td>[ 21 ]</td>
</tr>
</tbody>
</table>

Solnit mentions about the marginal tone, which is a high-falling tone that "the high-falling tone is quite rare, occurring most often in animal names and some other polysyllabic morphemes." He treats the high-falling tone as an allophone of the high tone. Suriya (1986. XL-XLI) notes that this tone is insignificant because it is predictable, that is, it occurs with a question particle or emphatic sentence.

### 2.2.2 Sarinya Khammuang

Sarinya Khammuang, 1998. *The Phonological Study of Padaung (Long-Necked Karen).* Sarinya describes the phonology of the Padaung (Long-Necked Karen) spoken at Ban Naisoi, Tambol Pang Mu, Muang District, Mae Hong Son Province as follows...
**Consonant Phonemes** : There are 22 single consonant phonemes as follows:

<table>
<thead>
<tr>
<th></th>
<th>Labial</th>
<th>Alveolar</th>
<th>Palatal</th>
<th>Retroflex</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td>V.l.unasp.</td>
<td>p</td>
<td>t</td>
<td>c</td>
<td>k</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>V.l.asp.</td>
<td>p&lt;sup&gt;h&lt;/sup&gt;</td>
<td>t&lt;sup&gt;h&lt;/sup&gt;</td>
<td>c&lt;sup&gt;h&lt;/sup&gt;</td>
<td>k&lt;sup&gt;h&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V.d.</td>
<td>b</td>
<td>d</td>
<td>j</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td>i&lt;sup&gt;η&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fricative</td>
<td>s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>h</td>
</tr>
<tr>
<td>Lateral</td>
<td>l</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>r</td>
</tr>
<tr>
<td>Trill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi- vowel</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>y</td>
</tr>
</tbody>
</table>

Sarinya notes that all of the consonant phonemes can occur initially in the syllable. The phonemes / l, r, w / can also occur as the second element of the consonant cluster and there are seven final consonants: / k, ?, m, n, η, w, y /

**Vowel phonemes** : There are 9 single vowel phonemes / i, e, ε, u, ι, a, , u, o, ι / and 4 diphthongs / ia, ιυ, ua, ιι /, as follows:

<table>
<thead>
<tr>
<th></th>
<th>’Front’</th>
<th>’Central’</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unround</td>
<td>round</td>
<td>unround</td>
</tr>
<tr>
<td>Close</td>
<td>i</td>
<td>y</td>
<td>u</td>
</tr>
<tr>
<td>Half-Close</td>
<td>e</td>
<td>ι</td>
<td>o</td>
</tr>
<tr>
<td>Half-Open</td>
<td>ε</td>
<td>ι</td>
<td></td>
</tr>
<tr>
<td>Open</td>
<td></td>
<td>a</td>
<td></td>
</tr>
<tr>
<td>Diphthongs</td>
<td>ia</td>
<td>ιυυ</td>
<td>ua</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ai</td>
<td></td>
</tr>
</tbody>
</table>

Sarinya mentions that the length of vowel is not contrastive.
**Tones.** There are 4 contrastive tones

<table>
<thead>
<tr>
<th>Description</th>
<th>Tone Stick</th>
<th>Phonetic Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>low-falling</td>
<td>(\downarrow)</td>
<td>([21] \sim [31], [. .21])</td>
</tr>
<tr>
<td>mid-level</td>
<td>(\uparrow)</td>
<td>([33])</td>
</tr>
<tr>
<td>high-rising</td>
<td>(\uparrow)</td>
<td>([45], [.45])</td>
</tr>
<tr>
<td>high-falling</td>
<td>(\uparrow)</td>
<td>([52])</td>
</tr>
</tbody>
</table>

Sarinya notes that a low-falling tone with breathy voice, \([. .21]\), which can occur with an unaspirated stop, affricate and trill and a high-rising tone with breathy voice, \([.45]\), which can occur only with unaspirated voiceless stops are in the process of being lost of the breathiness as seen in the speech of young informants who speak with barely audible breathiness.

### 2.3 Southern Karen: Sgaw Karen and Pwo Karen

There are many scholars who are interested in these Southern Karen languages. They are provided many important articles. However, reviews of a few important articles are included here to provide a basic overview of the studies that have been done on the Sgaw Karen and the Pwo Karen languages.

The previous studies of **Sgaw Karen** include *Karen Linguistic Studies : Description, Comparison, and Text* by Robert B. Jones (1961) and *Thai-Sgaw Karen Dictionary* by Suriya Ratanakul (1986).
2.3.1 Robert B. Jones: Sgaw Karen


**Consonant Phonemes**: There are 27 single consonant phonemes in Moulmein Sgaw (MS) and 23 single consonant phonemes in the Bassein Sgaw (BS) as follows:

### Moulmein Sgaw Consonants

<table>
<thead>
<tr>
<th>p</th>
<th>t</th>
<th>c</th>
<th>k</th>
<th>s</th>
<th>?</th>
</tr>
</thead>
<tbody>
<tr>
<td>pʰ</td>
<td>tʰ</td>
<td>cʰ</td>
<td>kʰ</td>
<td>sʰ</td>
<td>θ</td>
</tr>
<tr>
<td>b</td>
<td>d</td>
<td>z</td>
<td>γ</td>
<td>h</td>
<td>j</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>j</td>
<td>ŋ</td>
<td>l</td>
<td>r</td>
</tr>
</tbody>
</table>

### Bassein Sgaw Consonants

<table>
<thead>
<tr>
<th>p</th>
<th>t</th>
<th>k</th>
<th>s</th>
<th>?</th>
</tr>
</thead>
<tbody>
<tr>
<td>pʰ</td>
<td>tʰ</td>
<td>kʰ</td>
<td>sʰ</td>
<td>θ</td>
</tr>
<tr>
<td>b</td>
<td>d</td>
<td>γ</td>
<td>γ</td>
<td>y</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>j</td>
<td>ŋ</td>
<td>l</td>
</tr>
</tbody>
</table>

Jones notes that the phonemes (except / ŋ /) which were identified in MS as occurring rarely, / c, cʰ, z, ŋ, h(ɨ)/, do not occur in BS. / h / and / γ / are separate phonemes in BS (and / h / is a voiceless glottal spirant), whereas the two phones [h] and [ŋ] are allophones of a single phoneme in MS / ? / occurs in final position in mid and low tones only. No other consonants occur in final position.
Consonant Clusters: The same system applies to both dialects

Moulmein Sgaw Consonants

<table>
<thead>
<tr>
<th>Second Consonant</th>
<th>Initial Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>p t tʰ d n k kʰ s sʰ θ j n l r</td>
</tr>
<tr>
<td>l</td>
<td>p pʰ b m k kʰ</td>
</tr>
<tr>
<td>Y</td>
<td>p pʰ b m s sʰ</td>
</tr>
<tr>
<td>r</td>
<td>p b t tʰ k θ</td>
</tr>
<tr>
<td>j</td>
<td>pʰ m</td>
</tr>
</tbody>
</table>

Bassein Sgaw Consonants

<table>
<thead>
<tr>
<th>Second Consonant</th>
<th>Initial Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>p b m t tʰ d n k kʰ s sʰ θ j n l</td>
</tr>
<tr>
<td>l</td>
<td>p pʰ b m k kʰ</td>
</tr>
<tr>
<td>Y</td>
<td>p pʰ b s sʰ</td>
</tr>
<tr>
<td>r</td>
<td>p b t k θ</td>
</tr>
<tr>
<td>j</td>
<td>p pʰ</td>
</tr>
</tbody>
</table>

Jones notes that the cluster /jw/ occurs only as a variant of /jw/.

Syllabic Nuclei: The two varieties have identical systems, as follows

\[
\begin{array}{ccc}
  1 & y & u \\
  e & ø & o \\
  ε & a & ø \\
\end{array}
\]
Jones mentions that all nuclei except / e / occur in both open and closed syllables. / e / occurs only in open syllables. Syllables are closed if they have mid or low tone and are terminated by a glottal stop. In MS, the glottal stop with high tone has an allophone of glottal construction and the syllable is open.

**Tones.** Jones notes that, phonemically, MS and BS differ only in that all three tones in MS have two allophones each, depending on the presence of final / ? / or its absence, whereas in BS differs slightly from MS in relative pitch, as is indicated in the following diagram.

<table>
<thead>
<tr>
<th>TONE</th>
<th>High</th>
<th>Mid</th>
<th>Low</th>
<th>High</th>
<th>Mid</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL</td>
<td>/&quot;/</td>
<td>/’?/</td>
<td>/”/</td>
<td>/’?/</td>
<td>/’?/</td>
<td>/’?/</td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.3.2 Suriya Ratanakul


**Consonant Phonemes:** There are 24 single consonant phonemes. All of which only occur initially in the syllable, except / ? / which can occur initially and as the final consonant in this dialect.
Suriya notes that the phonemes enclosed in parentheses, /θ/, /j/, and /v/ are free variation of /s/, /z/, and /w/ respectively. However, /j/ is an isolated phoneme because in many words /z/ can not occur in free variation of /j/. Final /ʔ/ can occur only with low-level and high tone

**Consonant Clusters:** There are five consonant phonemes: /w, l, y, r, j/, that can occur as the second element of consonant clusters as follows.
**Vowel phonemes**: There are 9 vowel phonemes as in the table below.

<table>
<thead>
<tr>
<th></th>
<th>i</th>
<th>ɨ</th>
<th>u</th>
</tr>
</thead>
<tbody>
<tr>
<td>e</td>
<td>ə</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>æ</td>
<td>a</td>
<td>o</td>
<td>ə</td>
</tr>
</tbody>
</table>

Suriya notes that, phonemically, the length of vowels is not contrastive in this language.

**Tones**: There are three contrastive tonemes. The open syllable can bear only two tones; low-level and mid level, while the closed syllable with final /ʔ/ can bear only two tones; low-level and high tone.

<table>
<thead>
<tr>
<th>Description</th>
<th>Tone Stick</th>
<th>Phonetic Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>low-level</td>
<td></td>
<td>[²¹]</td>
</tr>
<tr>
<td>mid-level</td>
<td></td>
<td>[³³]</td>
</tr>
<tr>
<td>high</td>
<td></td>
<td>[⁴⁵]</td>
</tr>
</tbody>
</table>

Suriya mentions that there is a high-falling tone, which is a free variation of a low-level tone, when occurring in some syllables with final glottal /ʔ/. Besides, phonetically, there is a low-rising tone, which is in free variation of the low-level or mid-level tone, when occurring in the interrogative or emphatic sentences.

2.3.3 Robert B. Jones: Pwo Karen


Consonant Phonemes: Single consonants, except as noted, are the same for both to the Moulmein and the Bassein dialects of Pwo.

\[
\begin{array}{cccccccc}
\text{p} & \text{t} & \text{c} & \text{k} & \text{s} & \text{ʔ} \\
\text{p}^h & \text{t}^h & \text{k}^h & \text{s}^h & \text{ʔ} & \text{x} & \text{(h)} \\
\text{b} & \text{d} & \text{ŋ} & \text{ɾ} & \text{ɣ} & \\
\text{w} & \text{j} & \text{ś} & \\
\text{m} & \text{n} & \text{(ŋ)} \\
\text{l} & \text{r} \\
\end{array}
\]

The two phonemes enclosed in parentheses, (h) and (ŋ), do not occur in Bassein Pwo (BP) and occur rarely in Moulmein Pwo (MP). Aspirated consonants are more heavily in MP than in BP. In final position, /ʔ/ has a stop allophone with mid and low tones in MP and low tone in BP. It has an allophone of constriction with the high tone in both dialects. Moreover, in final position, /ŋ/ is nasalization from the preceding nucleus. Non of other consonants occur in final position.

Consonant Clusters: The same system applies to both dialects: · · ·

<table>
<thead>
<tr>
<th>Second Consonant</th>
<th>Initial Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>p b m t^h d n k k^h ʔ s s^h θ x j l</td>
</tr>
<tr>
<td>j (p)</td>
<td>p^h b</td>
</tr>
<tr>
<td>r</td>
<td>p t^h k</td>
</tr>
<tr>
<td>l</td>
<td>p p^h b m k k^h</td>
</tr>
</tbody>
</table>

Parentheses in the table indicate that the cluster /θɾ/ occurs only in BP and the cluster /pj/ occurs only in MP.
**Syllabic Nuclei** : the two varieties have the following syllabic nuclei :

### Moulmein Pwo Syllabic Nuclei

<table>
<thead>
<tr>
<th>Plain Nuclei</th>
<th>Nasalised Nuclei</th>
<th>Stopped Nuclei</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>y</td>
<td>y?</td>
</tr>
<tr>
<td>e</td>
<td>o</td>
<td>e?</td>
</tr>
<tr>
<td>e</td>
<td>o</td>
<td>o?</td>
</tr>
<tr>
<td>ai</td>
<td>au</td>
<td></td>
</tr>
</tbody>
</table>

All nuclei are somewhat shorter when terminated by glottal stop.

### Bassein Pwo Syllabic Nuclei

<table>
<thead>
<tr>
<th>Plain Nuclei</th>
<th>Nasalised Nuclei</th>
<th>Stopped Nuclei</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>y</td>
<td>y?</td>
</tr>
<tr>
<td>e</td>
<td>o</td>
<td>e?</td>
</tr>
<tr>
<td>e</td>
<td>o</td>
<td>o?</td>
</tr>
<tr>
<td>ai</td>
<td>au</td>
<td></td>
</tr>
</tbody>
</table>

All mid and low vowels are diphthongised with nasalisation.

In comparison with Moulmein vowels, Bassein vowels are all in approximately cardinal position. Note also that, in this dialect, diphthongs occur only as plain nuclei, whereas in Moulmein, they occur only as stopped nuclei. The vowels /ɛ, ɔ, ø/ are rare.
Tones: There are three phonemic tones in MP: high, mid, and low. In BP, there are only two phonemic tones: high and low. In both dialects, each tone has two allotones, depending on the presence or absence of final /ʔ/. Besides the allophonic features of final /ʔ/, the low tone itself has fairly strong pharyngeal constriction in MP. The relative pitches and contours of the various allophones of the tones are indicated in the diagram. Note that the presence of a final /ʔ/ tends to raise the pitch of the tone.

<table>
<thead>
<tr>
<th>TONE LEVEL</th>
<th>MP Tones</th>
<th>BP Tones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Mid</td>
</tr>
<tr>
<td>H</td>
<td>/ˈ/</td>
<td>/ˈʔ/</td>
</tr>
<tr>
<td>M</td>
<td>/ˈʔ/</td>
<td>/ˈʔ/</td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.3.4 Naruemon Chuensukon


Consonant phonemes: There are 23 single consonant phonemes. All of which only occur initially in the syllable, except /w, j, l, r/ which can occur initially and as the second element in the consonant cluster. Moreover, there is no final consonant in this dialect.
### Consonant Phonemes

<table>
<thead>
<tr>
<th>Category</th>
<th>Labial</th>
<th>Alveolar</th>
<th>Alveolar-Palatal</th>
<th>Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosives</td>
<td>Vl.unasp.</td>
<td>$p$</td>
<td>$t$</td>
<td>$c$</td>
<td>$k$</td>
<td>$?$</td>
</tr>
<tr>
<td></td>
<td>Vl.asp.</td>
<td>$p^h$</td>
<td>$t^h$</td>
<td>$c^h$</td>
<td></td>
<td>$k^h$</td>
</tr>
<tr>
<td></td>
<td>Vd.</td>
<td>$b$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>Vd.</td>
<td>$m$</td>
<td>$n$</td>
<td></td>
<td></td>
<td>$n$</td>
</tr>
<tr>
<td>Fricative</td>
<td>Vl.</td>
<td>$s$</td>
<td>$ʃ$</td>
<td></td>
<td>$x$</td>
<td>$h$</td>
</tr>
<tr>
<td>Affricates</td>
<td>Vl.unasp.</td>
<td></td>
<td></td>
<td>$t$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vl. Asp.</td>
<td></td>
<td></td>
<td>$t^h$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral</td>
<td>Vd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$l$</td>
</tr>
<tr>
<td>Trill</td>
<td>Vd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$i$</td>
</tr>
<tr>
<td>Approximants</td>
<td>Vd.</td>
<td>$w$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$[w]-[v]$</td>
<td></td>
<td></td>
<td>$j$</td>
<td>$[u]-[y]$</td>
</tr>
</tbody>
</table>

### Vowel Phonemes

There are 24 vowel phonemes as in the table below.

<table>
<thead>
<tr>
<th>Plain Vowels</th>
<th>Nasal Vowels</th>
<th>Glottal Vowels</th>
</tr>
</thead>
<tbody>
<tr>
<td>$i$ $u$ $u$</td>
<td>$ə$</td>
<td>$u$</td>
</tr>
<tr>
<td>$e$ $ə$ $o$</td>
<td>$ɛ$</td>
<td>$e$ $ə$ $o$</td>
</tr>
<tr>
<td>$ɛ$ $a$ $ɔ$</td>
<td>$ɛ$</td>
<td>$a$ $ɔ$</td>
</tr>
<tr>
<td>$ui$ $oi$ $eu$</td>
<td>$ai$ $au$</td>
<td>$ai$ $au$</td>
</tr>
</tbody>
</table>

Naruemon notes that all vowels are basically pronounced with medium length. However, the glottal vowels tend to be phonetically shorter than their plain
counterparts and can bear only two tones: low-falling and high-level tones, except /u?/ which occurs in syllable with low-falling tone only.

**Tones:** There are five contrastive tonemes. The plain and nasal vowels can bear all five of them while the glottal vowels can bear only two tones; low-falling and high-level.

<table>
<thead>
<tr>
<th>Description</th>
<th>Tone Stick</th>
<th>Phonetic Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>low-falling</td>
<td>[ ]</td>
<td>[ 21 ]</td>
</tr>
<tr>
<td>mid-level</td>
<td>[ ]</td>
<td>[ 33 ]</td>
</tr>
<tr>
<td>high-level</td>
<td>[ ]</td>
<td>[ 55 ]</td>
</tr>
<tr>
<td>high-falling</td>
<td>[ ]</td>
<td>[ 51 ]</td>
</tr>
<tr>
<td>Low-rising</td>
<td>[ ]</td>
<td>[ 25 ]</td>
</tr>
</tbody>
</table>

2.4 Robert B. Jones: Proto-Karen

Robert B. Jones, 1961. *Karen Linguistic Studies : Description, Comparison, and Texts.* Jones reconstructed the Proto-Karen from the studies of six varieties of Karen: two varieties of Sgaw Karen (Moulmein and Bassein), two varieties of Pwo Karen (Moulmein and Bassein), the northern variety of Pa-O spoken around Taunggyi, and the Palaychi spoken in Tawbyagyi Village in Burma.

He describes the Karen Language as monosyllabic, with five to seven tones and some subgroups having phonemic nasalization. Otherwise the syllables can be considered open. All have the final glottal, but this can be conveniently analyzed as a tonal modification. It has a nine-vowel system with various modifications as just mentioned. The language is replete with particles, which are attached finally to phrases, clauses and sentences to indicate the mood of the speaker, the nature of the
subject matter, or the degree of the imperative. Along with these are many expressive couples in most parts of speech.

The Proto-Karen are presented briefly as follows:

**Proto-Karen Consonant Phonemes**: There are 20 single consonant phonemes as follows:

<table>
<thead>
<tr>
<th>p</th>
<th>c</th>
<th>k</th>
<th>x</th>
<th>?</th>
</tr>
</thead>
<tbody>
<tr>
<td>pʰ</td>
<td>tʰ</td>
<td>cʰ</td>
<td>kʰ</td>
<td>Y</td>
</tr>
<tr>
<td>b</td>
<td>d</td>
<td>j</td>
<td>n</td>
<td>r</td>
</tr>
</tbody>
</table>

**Proto-Karen Consonant Clusters**: There are 4 second consonant phonemes / w, j, r, l/, occurs with initial consonants as consonant clusters as follows:

<table>
<thead>
<tr>
<th>Second and third Consonant</th>
<th>Initial Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>pʰ (ʔ)b tʰ d cʰ kʰ kʰ x ? s l m n</td>
</tr>
<tr>
<td>j</td>
<td>cʰ k</td>
</tr>
<tr>
<td>l</td>
<td>pʰ b</td>
</tr>
<tr>
<td>r</td>
<td>pʰ cʰ kʰ</td>
</tr>
<tr>
<td>lw</td>
<td>pʰ kʰ x</td>
</tr>
<tr>
<td>rw</td>
<td>pʰ (kʰ)</td>
</tr>
</tbody>
</table>

**Proto-Karen Final Consonants**: There are three types of final consonant as follows:

Final stops : ? t tʰ k kʰ d dʰ g gʰ
Final nasals : m n n̄
Final laryngeals : ʰ h q
Proto-Karen Vowel phonemes: There are 9 single vowel phonemes \(/i, e, \epsilon, y, a, u, o, \sigma, o\) / and 4 diphthongs \(/ei, ai, ai, au\) /, as follows:

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unround</td>
<td>round</td>
<td>unround</td>
</tr>
<tr>
<td>Close</td>
<td>(i)</td>
<td>(y)</td>
<td>(u)</td>
</tr>
<tr>
<td>Half-Close</td>
<td>(e)</td>
<td>(\sigma)</td>
<td>(o)</td>
</tr>
<tr>
<td>Half-Open</td>
<td>(\epsilon)</td>
<td></td>
<td>(\sigma)</td>
</tr>
<tr>
<td>Open</td>
<td></td>
<td>(a)</td>
<td></td>
</tr>
<tr>
<td>Diphthongs</td>
<td>(ei)</td>
<td>(ai)</td>
<td>(ai)</td>
</tr>
</tbody>
</table>

Proto-Karen Tone phonemes: There are two phonemic tones: high and low tone as follows:

<table>
<thead>
<tr>
<th>TONE</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL</td>
<td>/`|</td>
<td>/`|</td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jones notes that loss of aspiration of an initial stop is frequently connected with change of final stop, change of tone, or both. Since changes in tone are usually connected with changes in final stops and laryngeals, all these final stops, the "real" and the "hypothetical," have fallen together with various other laryngeal finals, /\$\|, or are lost altogether, but differing effects on tones and vowels. Final stops other than /\$\| occur only in Pa-O.
CHAPTER III

METHODOLOGY

3.1 Preparation

In the preliminary stage of this study the literature relating to the Karen languages is reviewed. The fieldwork area is also studied in detail to get a general knowledge of its geography, history, society, culture and way of life.

A word list has been set up by using the following sources:

(1) Southeast Asian Word List Mahidol University Field Methods (revised 1990): 281 words.

The word list consists of 936 words used in daily life. It covers the following lexical fields:

(1) Nature, Geography
(2) Utensils, Household Appliances
(3) Parts of the Human Body
(4) Plants and Animals
(5) Food and Cooking
(6) Clothes and Ornaments
(7) Weather, Direction, Time
(8) Numerals
(9) Kinship Terms, Pronouns
(10) The names of things used in daily life
(11) Action
(12) Senses and Emotions
(13) Communication, Transportation
(14) Quantity, Quality
(15) Entertainment, Recreation
(16) Diseases, Symptoms

In addition to the word lists, pictures are have been prepared to facilitate the eliciting of data.
3.2 Field Work

3.2.1 Survey of the Field Work Area

A preliminary survey was made in November 1996. Its aim was to examine areas suitable for the researcher to stay in. They were not to be too far from the provincial administrators. The preliminary survey also helped the researcher get acquainted with the people in the research area. Since at the time of the survey the Pa-O lived along the Thai-Myanmar border several factors such as accommodation and facilitation needed to be taken into consideration.

3.2.2 Data Collecting

The data were first collected in February 1997. The lexical items in the word list were read out to the informant both in Standard Thai and in Northern Thai. The informant was asked, “What do you call this thing?” The informant pronounced the word in his local dialect three times. The author then imitated the word pronounced by the informant and asked the informant if the imitated pronunciation was acceptable.

Apart from direct questions and pictures, real objects were used along with the question “What is this?” The informant was also asked to describe the pictures and tell a story. The next step was to transcribe the words into the International Phonetic Alphabet and to record them on a cassette tape. After all words in the word list had been elicited, they were organized alphabetically in note cards and filed in a rhyme book by using the Linguist’s Shoebox Program - Computerization. In September 1997 and March 1999, the collected data were rechecked.

3.3 Criteria in Choosing the Informants

Native speakers of Pa-O who were to be used as informants had to meet the following criteria:
1. The informants must be Pa-O who are native of the village of Huay Salop.
2. The informants must have a complete set of articulators so that they can pronounce the sounds clearly and fluently.
3. The informants must know some Thai, but must use Pa-O in their daily lives.
4. The informants must be over 15 years of age i.e. have sufficient experience in using their own language and a responsible attitude toward the researcher. The informants must have enough time to work with the researcher.
5. Occupation and education do not use to be the criteria in choosing the informants because all of them are agriculturists and, with high education, it may have an influence from other languages.

3.4 Source of Data

The data used in this study were collected in the village of Huay Salop (บ้านห้วยสอง), Tambon Huay Pha (ตําบลบห้วยษา), Muang District (อำเภอเมือง), Mae Hong Son Province (จังหวัดแม่ฮ่องสอน) from utterances of Pa-O native speakers as follows:

- Phra Canyano (พระเจ้าญานโอ), a thirty-year-old, was my main informant. He was born in the village of Huay Salop (บ้านห้วยสอง). He is able to speak Central and Northern Thai. He become a monk at Wat Nong Kham (วัดหนองคำ), Tambon Chang-Moi (ตำบลฉางม่อย), Muang District (อำเภอเมือง), Chiang Mai Province (จังหวัดเชียงใหม่) for five years.

- Mr. Prasoet Kamoldecha (นายประสิทธิ์ กมลเดชา) or Thungyi (ทุงยี) in Pa-O, a forty-three-year-old, was my co-informant. He was born at Ban Rong Muang Village (บ้านรองเมือง), Mae Sariang District (อำเภอสารีรง), Mae Hong Son Province (จังหวัดแม่ฮ่องสอน). When he was about ten years old, he migrated with other Pa-O to the village of Huay Salop. He is able to read and write Thai. He has been a secular headman or phu yai ban the village of Huay Salop since 1996.

- Mr. Khunphua Rakhrue (นพชูพ่ ระเขรือ), a thirty-year-old, was my co-informant. He came from Taunggyi near the Shan State in Burma when he was a young man. He can read and write Thai very well. He used to work in Bangkok (กรุงเทพมหานคร) as an employee at a furniture shop.

- Mr. San Congleng (นายชื่น จึงเหล็ก), a fifty-year-old, was my first informant. He came from Taunggyi, Burma, in 1974. He lives at Doi Wa-wi Mountain (ดอยวาวี), Mae Soi District (อำเภอแม่สาย), Chiang Rai Province (จังหวัดเชียงราย). He can speak northern Thai.

My word-list was first used on Mr. San Congleng (นายชื่น จึงเหล็ก), but all of my data are based primarily on Phra Canyano (พระเจ้าญานโอ). However, I checked all the data with Mr. Thungyi (นายทุงยี) and also elicited some conversation and a few short stories from him in order to get more words.
1. Phra Canyano at Wat Nong Kham.

2. Mr. Praseot Kamoldecha

Figure 10: Main Informants
3.4 Descriptive Approach

The phonological approach used in this study is Tagmemics, which sees phonology as a hierarchy of ranks. The phonological hierarchy is postulated with such ranks of the intonation group, the phonological word, the syllable and the phoneme. The unit of each rank has a structure stated in terms of the rank below (except for the lowest rank, the phoneme) and the function stated in terms of the rank above (except for the highest one, the intonation).

The phonological hierarchy can be diagrammed as follows:

![Image of the phonological hierarchy]

Figure 11. The Phonological Hierarchy
CHAPTER IV

THE INTONATION GROUP

4.1 Definition

The intonation group is the unit over which the intonation contour occurs. Pitch, length and stress form the intonation contour, a supra-segmental feature which is distinguishing characteristic of the phonological phrase or units higher in the phonological hierarchy (Lowe 1983:181).

The intonation group is the unit of the highest rank of the phonology as here presented, so its function in higher units is not discussed. The structure of the intonation group is stated in terms of final contours.

In Huay Salop Pa-O language, no particular types of intonation can be mentioned. Only tones of final syllable of the sentence and particles of statements seem to create different intonation types. So, the final contour can be falling or rising depending on the tone of the final syllable of the sentence as in the following examples:

4.1.1 Affirmative Sentences

The intonation of the affirmative sentence has a falling pitch or a rising pitch according to the tone of the final syllable at the end of the sentence.

/ kʰwi⁴ ʔam¹ deŋ⁴ /  
I eat rice

/ kʰwi⁴ lwa¹³ lu⁴ tʰi⁴ /  
I go wash water

/ kʰwi⁴ kjok¹ na³ /  
I like you
"I dry clothes."

"I wash my face."

"Mother comes home."

"He hit a mosquito."

"I read a book."

### 4.1.2 Negative Sentences

The intonation of the negative sentence has a falling pitch or a rising pitch according to the tone of the final syllable at the end of the sentence.

"My leg is not good."

"We are not hungry."

"No, we are not yet hungry."

"He does not eat pork."

"I do not smoke cigarette."
4.1.3 Interrogative Sentences

4.1.3.1 The content question

The intonation of the content question has a falling pitch or a rising pitch according to the tone of the final syllable at the end of the sentence.

/\(\text{waŋ}^{3} \text{ ma}^{3} \text{ tʰaʔ}^{4} \text{ ma}^{3}\) / “What does he do?”
He do what

/\(\text{paʔ}^{4} \text{ ma}^{3} \text{ lwa}^{1} \text{ čʰe}^{3}\) / “Who goes to the market?”
Who go market

/\(\text{na}^{3} \text{ ?oŋ}^{4} \text{ ?a}^{1} \text{ ma}^{3}\) / “Where do you live?”
You live where

/\(\text{i}^{2} \text{ ma}^{3} \text{ na}^{1} \text{ ma}^{3}\) / “How will (we) do?”
Will do how

/\(\text{ma}^{3} \text{kʰa}^{3} \text{ ?i}^{2} \text{ lwa}^{1}\) / “When will (you) go?”
when will go

4.1.3.2 The Polar question

The intonation of the polar question has a falling pitch according to the tone of the question particle (q.p.) /\(\text{ne}^{4}\), \(\text{ne}^{4}\text{həŋ}^{2}\) at the end of the sentence.

/\(\text{waŋ}^{3} \text{ ?waʔ}^{1} \text{ len}^{2} \text{ tʰi}^{4} \text{ ne}^{4}\) / “Did he drink water?”
He drink already water q.p.
/ lo¹pe¹ lwa¹³ da¹ lën² tʰa⁴ ne⁴/  "Can the child walk or not?"
     Child  walk  can already or q.p.

/ waŋ³ ja¹ tʰi⁴ da¹ ne⁴ həŋ²/  "Can he swim?"
     He    swim  water  can  q.p.

/ na³ kʰjaŋ³ na¹ taʔ⁴ kʰjaŋ³ da¹ ne⁴ həŋ²/  "Can you sing a song?"
     You  sing  one  song(cN)  can  q.p.

4.1.4 Imperative Sentences

The intonation of the imperative sentence has a falling pitch or a rising pitch according to the tones of the final syllable at the end of the sentence.

/ ¿oŋ⁴ tʰəŋ³/  "Stand up."
     Be  stand

/ ¿oŋ⁴ ·lan²/-  "Sit down."
     Be  sit

/ seŋ³ lan²/  "Return home."
     Return  home

/ lwa¹³ ¿am¹ den⁴/  "Go and eat rice."
     Go  eat  rice

/ lən⁴ ¿oŋ⁴ lan² ¿aŋ⁴ jo⁴/  "Come and sit here."
     Come  be  sit  here
4.1.5 Imperative Negative Sentences

The imperative negative marker /la^3 ta^u^2/ is placed at the end of sentence, then, the intonation of the imperative negative sentence has a falling contour.

/ bəŋ⁴ taʔ kʰa⁴ la^3 ta^u^2 /  
Open door forbid

/ cʰon⁴ cʰiʔ⁴ lɨ⁴ la^3 ta^u^2 /  
Smoke cigarette forbid

/ saʔ tɨ⁴ cʰon⁴ cʰiʔ⁴ lɨ⁴ la^3 ta^u^2 /  
Please smoke cigarette forbid

/ pʰom² kʰaŋ³ pʰa³ nəʔ¹ cjoŋ³ la^3 ta^u^2 /  
wear shoes into temple forbid

/ saʔ tɨ⁴ pʰom² kʰaŋ³ pʰa³ nəʔ¹ cjoŋ³ la^3 ta^u^2 /  
Please, do not wear shoes into the temple.

The intonation group patterns are predictable according to the tone of final syllables. In addition, the intonation contour may be distinguished in order to express attitudes and emotions of the speakers.
CHAPTER V

THE PHONOLOGICAL WORD

5.1 Definition

The phonological word is the unit above the syllable in the phonological hierarchy. It is made up of syllables and functions in the phonological phrase.

The phonological word is distinguishing by nuclear stress in languages where every word has a nuclear syllable made prominent by a strong primary stress. The phonological word is then known as a stress group (Lowe 1983: 183).

5.2 Structure

The syllabic pattern of Pa-O language is basically monosyllabic. There are also a small number of disyllabic words and an even rarer number of trisyllabic and polysyllabic words. Based on a placement of various stress types, i.e. zero stress or unstressed (u), weak stress (w), and strong stress (s), these small classes of words are further classified into 3 sub-types.

5.2.1 Monosyllabic Word

A monosyllabic word is a word with only one syllable. The strong stress usually occurs on that syllable. Its structure is ['s].

Examples:

/ pi^4 / [ 'pi: 21 ] “skin”
/p^h^a^3 / [ 'p^h^a: 33 ] “ashes”
/b^e^g^3 / [ 'b^e^g^3 ] “lie down”

* [v] = longer than a short vowel
[v:] = much longer than a short vowel
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[ˈtom^21]</td>
<td>[tʰəŋ^42]</td>
<td>[ˈdoŋ^33]</td>
<td>[ˈcuː^21]</td>
<td>[ˈcʰut^45]</td>
<td>[ˈkiːm^45]</td>
<td>[ˈkʰaŋ^33]</td>
<td>[ˈʔɛn^33]</td>
<td>[ˈmeː^42]</td>
<td>[ˈnɛn^42]</td>
<td>[ˈŋaŋ^21]</td>
<td>[ˈsuŋ^33]</td>
<td>[ˈjɔŋ^21]</td>
<td>[ˈhoː^33]</td>
<td>[ˈlaːm^42]</td>
<td>[ˈraː^42]</td>
<td>[ˈwan^33]</td>
</tr>
<tr>
<td>keep’</td>
<td>paper’</td>
<td>hit by hand’</td>
<td>hand’</td>
<td>bone’</td>
<td>like’</td>
<td>foot’</td>
<td>narrow’</td>
<td>tail’</td>
<td>breast’</td>
<td>laugh’</td>
<td>liver’</td>
<td>monkey’</td>
<td>read’</td>
<td>house’</td>
<td>hot’</td>
<td>dish’</td>
</tr>
</tbody>
</table>

### 5.2.2 Disyllabic Word

A disyllabic word is a word with two syllables. It can be classified according to its structure into 2 sub-types.

#### 5.2.2.1 Disyllabic Word of the First Type

This sub-type is composed of a presyllable which has an unstress followed by a major syllable. The strong stress is on the last syllable. Its structure is [u.' s].

Examples:

<table>
<thead>
<tr>
<th>/pæ juŋ^2/</th>
<th>/pæ tʰo^4/</th>
<th>/pæ leŋ^3/</th>
<th>/tə koŋ^1/</th>
</tr>
</thead>
<tbody>
<tr>
<td>[pæ^33 'juŋ^42]</td>
<td>[pæ^33 'tʰoː^21]</td>
<td>[pæ^33 'leŋ^33]</td>
<td>[tə^33 'koŋ^21]</td>
</tr>
<tr>
<td>smile”</td>
<td>spit’</td>
<td>bottle(cN**)”</td>
<td>hill’</td>
</tr>
</tbody>
</table>

** cN = Numeral classifier
The presyllable of this sub-type can not occur as a free form and has no lexical meaning of its own.

5.2.2.2 Disyllabic Word of the Second Type

This sub-type is composed of two syllables. The weak stress falls on the first syllable and the strong stress is on the last syllable. Its structure is [w.'s].

Examples:

/pleŋ⁴ ?ɔŋ⁴/  [,pleŋ²¹ '?ɔŋ⁴]  "armpit"
/pʰtəŋ² təŋ⁴/  [,pʰtəŋ⁴ 'təŋ²¹]  "pen"
/bəŋ³ tʰa³/  [,bəŋ³ 'tʰa³]  "sleep"
/bwa¹¹ caŋ³/  [,bwa¹¹ 'caŋ³]  "monk"
/cu⁴ deŋ⁴/  [,cu²¹ 'deŋ²¹]  "wrist"
/ki³ tʰja³⁴/  [,ki³ 'tʰja³⁴]  "thigh"
/kʰaŋ³ pʰa³/  [,kʰaŋ³ 'pʰa³]  "shoes"
/saŋ³ re³/  [,saŋ³ 're³³]  "glad"  . . .

The first syllable of this sub-type can occur as a free form and has a lexical meaning of its own while the last syllable can not occur as a free form.

5.2.3 Trisyllabic Word

A trisyllabic word is a word with three syllables, which is rare in Pa-O language. According to the structure, they are divided into 4 sub-types as follows:

(I)  [u. u.'s]

Examples:

/ta ko 1i¹⁴/  [tᵃ³³  kᵃ³³ 'li²¹]  "tick"
/ʔə tə  neŋ²/  [,ʔə³³ 'tə³³ 'neŋ²]  "sob"
II) [u. w.’s]

Examples:
/ tɔ b̥e¹ ra³ / [ tɔ³³ , b̥e:⁴⁵ , ra:³³ ] “rose-apple”
/ tɔ kʰo¹ pʰu³³ / [ tɔ³³ , kʰo:⁴⁵ , pʰu³³ ] “powder”
/ ʔə som³ pʰra² / [ ʔə³³ , som³³ , pʰra:⁴² ] “blue color”

(III) [w. u.’s]

Examples:
/kʰwəʔ¹ tɔ naʔ¹ / [ kʰwəʔ⁴⁵ , tɔ³³ , naʔ⁴⁵ ] “chill”
/ʔən³ tɔ keŋ³ / [ ʔən³³ , tɔ³³ , keŋ³³ ] “incline”

(IV) [w. w.’s]

Examples:
/cam³ ma¹ ri⁴ / [ ca:m³³ , ma:⁴⁵ , ri:²¹ ] “body”
/ka³³ neŋ¹ si⁴ / [ ka³³ , neŋ⁴⁵ , si:²¹ ] “rose”
/kʰam³ pʰa³ ham³ / [ kʰa:m³³ , pʰa:³³ , ha:m³³ ] “earth”

5.3 Note on Phonological Word

In addition to three types of word mention above, there are groups of words consisting of four to five syllables. Some syllables have independent meanings and some do not. Therefore, it should be analyzed into two classes, compound words and polysyllabic words.

5.3.1 Polysyllabic Word

Polysyllabic word comprises of a free morpheme which is a syllable that has its independent meaning and occurrence together with bound morphemes which are syllables that do not have any meaning and can not occur independently. The symbol “?” below represents the syllables which are bound morphemes.

Examples:
/ tɔ reŋ⁴ suk¹ sjak¹ / [ tɔ³³ , reŋ²¹ , suk⁴⁵ , sjak¹ ] “disorderly”
/ tɔ b̥o⁵ ?ə¹ tɔ b̥o⁵ cʰa⁴ / [ tɔ³³ , b̥o⁵ , ?ə¹ , tɔ b̥o³³ , cʰa:²¹ ] “sick”
/ ? ? ? pa:n
5.3.2 Compound Words

Compound word comprises of at least two free morphemes which are syllables that have their independent meanings and occurrences together with or without bound morphemes (?) which are syllables that do not have independent meaning and occurrence.

Examples:

/sen\^3 ron\^4 sen\^3 ra\^3 t\(^h\)i\(^4\)/ \([se^n\, h^3, r\, n\, 21, se^n\, h^3, r\, a\, 33, t\, h\, i\, 21]\) “fruit juice”

tree fruit water

/p\(^h\)u\(^2\) po\(^4\) we\(^2\) po\(^4\)/ \([p\, h\, u\, 42, p\, o\, 21, w\, e\, 42, p\, o\, 21]\) “cousin”

elder child younger child
CHAPTER VI

THE SYLLABLE

6.1 Definition

The syllable is a unit of pronunciation typically larger than a single sound and smaller than a word. It is defined as the rank whose unit functions in the phonological word, and its structure is stated in terms of phonemes (Crystal 1992:338).

6.2 Structure

In Huay-Salop Pa-O language, the structure of syllable is described in terms of a nucleus formed by a single vowel accompanied simultaneously by a tone and peripheral formed by one to three consonants.

There are two types of syllable structure in Huay-Salop Pa-O language, open syllable and closed syllable. The open syllable consists of one to three initial consonants, a single vowel, and a tone C(C)(C)V<sup>T</sup>, and closed syllable consists of one or two initial consonants, a single vowel, a final consonant, and a tone C(C)V<sup>T</sup>(C).

6.3 Types of Syllables

There are three types of syllables in Pa-O: presyllable, major syllable and minor syllable.

6.3.1 Presyllable

The presyllable consists of a single consonant followed by a vowel which is usually has the neutral vowel [ə] in free variation with the open central vowel [a]
with the phonemic realization /ə/. This syllable type bears the original high rising or low falling tones with final glottal stop [ʔ], which its nuclei is considerably shorter when followed by a stop.

In unstressed syllables, the final glottal stop [ʔ] is dropped, but the nucleus retains its proper allophones of position and length. The high rising tone of this syllable type has a somewhat lower allophone. Similarly, the low falling tone has a somewhat higher allophone under the same conditions.

The presyllable occurs on the first syllable of disyllabic words. In this study, one dot after a vowel symbol [v] means longer than a short vowel, two dot after a vowel symbol [v:] means much longer than a short vowel.

The structure of the presyllable is: [Cə ]

Examples:

/pə tɛŋ³/ [pə³  tɛŋ³] “look upward”
/pə cʰuʰ/ [pə³ cʰuʰ 45] “laundry”
/pə maⁿ³/ [pə³ maⁿ³] “who?”
/pə si⁴/ [pə³ si¹] “wash”
/pə ra³/ [pə³ ra³] “monk”
/pʰə bo³ mu¹/ [pʰə³ bo³ 45] “union”
/bə si³ mu¹/ [bə³ si³ 45] “hail”
/tə li³/ [tə³ li³] “wind”
/tə sa³/ [tə³ sa³] “salt”
/tə wa³/ [tə³ wa³] “land lichee”
/tʰə kɔn²/ [tʰə³ kɔn⁴] “bed”
/tʰə sa²/ [tʰə³ sa³] “animal”
/tʰə ru¹/ [tʰə³ ru¹] “eel”
/kə tɔn⁴/ [kə³ tɔn¹] “forehead”
/kə lu³/ [kə³ lu³] “hair”
/kə loŋ⁴/ [kə³ loŋ¹] “pen”
/ʔə beʔ⁴/ [ʔə³ beʔ¹] “fat”
/ʔə doŋ⁴/ [ʔə³ doŋ¹] “thickness”
/ʔə cwa¹ 2/ [ʔə³ cwa¹ 42] “fang”
/sə ləp²/ [sə³ ləp⁴ 2] “public rest-house”
/ʔə lam⁴/ [ʔə³  ¶m¹] “opium”
|     | p | pʰ | b | tʰ | d | cʰ | k | kʰ | ? | m | n | ŋ | j | s | h | l | r | w |
|-----|---|----|---|----|---|----|---|----|---|---|---|---|--|--|--|--|--|--|--|
| ːa  | + |    | + |    | + |    | + |    | + |    |   |    |   |   |   |   |   |   |   |
| ʰa  |    | + |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| ːa  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

Table 1: The co-occurrence of a consonant with [a] in the presyllable with the single initial consonants of a major syllable.

The co-occurrence of a consonant with [a] in the presyllable with the single initial consonants of major syllables in Table 1 shows that

1. No consonants in the presyllables occur with identical consonants in the major syllables.
2. The presyllables / pə, pʰə, bə, tə, tʰə, kə, kʰə, ʔə, ja, sə / occur with initial consonant in major syllables.
3. Only the presyllables / da, ca, cʰə, ma, na, ɲə, ha, la, ra, wa / never occur with initial consonant in major syllables.
4. The presyllable / bə / is followed by / s / only.
5. The presyllable / ja / is followed by / l / only.
6. The consonant phonemes / ŋ, w / follow the presyllable / tə / only.
7. The consonant phoneme / h / follows the presyllable / tə, ʔə / only.
6.3.2 Major Syllable

A Major syllable consists of a single consonant or consonant clusters, a single vowel, a tone, and an optional final consonant (which can be stops or nasals). It always takes a strong stress because it is the nucleus of the phonological word. Its occurrence is obligatory in monosyllabic word and in the last position of polysyllabic word, that is, every word must have one major syllable.

The structure of the major syllable in this Pa-O dialect is \( C_1(C_3)(C_4)V_1^T(C_2) \). There are two subtypes of the major syllable, open major syllable and closed major syllable as follows:

6.3.2.1 Open major syllable

The structure of the open major syllable in the Huay-Salop Pa-O dialect is consisting of one to three initial consonants, a single vowel, and a tone \(( C_1 C_3 C_4 V_1^T )\)

This syllable type bears all tones: high rising, high falling, mid level, and low falling tones. Without final consonant, all nuclei (vowels) are considerably longer than any other types of syllables.

**Pattern I :** \( C_1 V_1^T \)

**Examples:**

\[
\begin{align*}
\text{/pi}^4/ & \quad [\text{pi}; 21] \quad \text{"people skin"} \\
\text{/p}^b\text{a}^4/ & \quad [\text{p}^b\text{a}; 21] \quad \text{"father"} \\
\text{/ba}^1/ & \quad [\text{-ba}; 45] \quad \text{"bean"} \\
\text{/t}^b\text{a}^4/ & \quad [\text{t}^b\text{a}; 21] \quad \text{"gold"} \\
\text{/da}^3/ & \quad [\text{d}^a; 45] \quad \text{"cook"} \\
\text{/ce}^4/ & \quad [\text{ce}; 21] \quad \text{"unloose"} \\
\text{/c}^b\text{a}^3/ & \quad [\text{c}^b\text{a}; 33] \quad \text{"star"} \\
\text{/ke}^4/ & \quad [\text{ke}; 21] \quad \text{"tiger"} \\
\text{/k}^b\text{a}^1/ & \quad [\text{k}^b\text{a}; 45] \quad \text{"bitter"} \\
\text{/e}^3/ & \quad [\text{e}; 33] \quad \text{"feces"} \\
\text{/m}^a^1/ & \quad [\text{m}^a; 45] \quad \text{"mother"} \\
\text{/ni}^3/ & \quad [\text{ni}; 33] \quad \text{"day"} \\
\text{/n}^a^1/ & \quad [\text{n}^a; 45] \quad \text{"cry"} \\
\text{/su}^3/ & \quad [\text{su}; 33] \quad \text{"louse"}
\end{align*}
\]

***

\( C_1 = \text{The initial consonant} \quad \text{V}_1 = \text{The single vowel} \)

\( C_2 = \text{final consonant} \quad \text{T} = \text{Tone} \)

\( C_3 = \text{The second member of consonant clusters} \quad ( ) = \text{Optional occurrence} \)

\( C_4 = \text{The third member of consonant clusters} \)
| / ju² / | [ ju: 42 ] | “rat” |
| / ho³ / | [ ho: 33 ] | “read” |
| / la⁴ / | [ la: 21 ] | “moon, month” |
| / ri² / | [ ri: 21 ] | “ask” |
| / wa¹ / | [ wa: 45 ] | “bamboo” |
| / ba¹³ / | [ ba: 33 ] | “cheek” |
| / ta²² / | [ ta: 42 ] | “not” |
| / ka³ / | [ ka: 33 ] | “flower” |
| / ?a¹¹ / | [ ?a: 45 ] | “to be” |
| / ma¹³ / | [ ma: 33 ] | “question marker” |
| / na²² / | [ na: 42 ] | “language” |
| / sa¹³ / | [ sa: 33 ] | “sand” |
| / ha³⁴ / | [ ha: 21 ] | “good” |
| / la¹² / | [ la: 42 ] | “wide” |
| / ra¹ / | [ ra: 33 ] | “cut” |

**Pattern II : C₃V₁ T**

Examples :

| / pra³ / | [ pra: 33 ] | “arrow” |
| / pb ⁿi⁴ / | [ pbⁿi: 21 ] | “gondola” |
| / pb ri³ / | [ pbri: 33 ] | “tongue” |
| / pb wi⁴ / | [ pbwi: 21 ] | “light” |
| / dja³ / | [ dja: 33 ] | “floor” |
| / cb ja¹ / | [ cbja: 45 ] | “sour” |
| / cb wa¹ / | [ cbwa: 33 ] | “long” |
| / kju¹ / | [ kju: 45 ] | “dance” |
| / kwi³ / | [ kwi: 33 ] | “chameleon” |
| / kⁿje⁴ / | [ kⁿje: 21 ] | “gibbon” |

| / kⁿ ru³ / | [ kⁿ ru: 33 ] | “dig” |
| / nj a³ / | [ nj a: 33 ] | “far” |
| / ny w² / | [ ny w: 42 ] | “shell” |
| / swi³ / | [ swi: 33 ] | “blood” |
| / lw i² / | [ lw i: 42 ] | “smell” |
| / rja² / | [ rja: 42 ] | “hot” |
| / rwi² / | [ rwi: 42 ] | “root” |
| / pja¹¹ / | [ pja¹: 45 ] | “fun” |
| / bwa³ / | [ bwa: 33 ] | “ight(adj)” |
| / bwa⁴ / | [ bwa: 21 ] | “full” |
| / twa ³ / | [ twa: 33 ] | “to whip” |
| / kⁿ la⁴ / | [ kⁿ la: 21 ] | “to shout” |
| / kⁿ wa³ / | [ kⁿ wa: 33 ] | “to turn” |
| / mwa¹¹ / | [ mwa¹: 45 ] | “yes” |
| / lw a³ / | [ lw a: 33 ] | “to go” |
| / cwa² / | [ cwa¹: 42 ] | “fang” |
Pattern III: $C_1C_2C_3V_1^T$ : There are only four major syllables occurred in this study.
Examples:
/ $p^h\text{rwi}^3$/  $\quad [\, p^h\text{rwi}^{33}]$  “to plane”
/ $k^h\text{rwi}^4$/  $\quad [\, k^h\text{rwi}^{21}]$  “rich”
/ $k^h\text{rwa}^3$/  $\quad [\, k^h\text{rwa}^{33}]$  “to saw”
/ $\text{?}\, p^h\text{rwi}^3$/  $\quad [\, \text{?}\,^{33} \, p^h\text{rwi}^{33}]$  “rope”

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Table 2: The co-occurrence of single initial consonants and vowels of open major syllable.

+ : occurrence  
(blank) : non-occurrence
The co-occurrence of single initial consonants and vowels of the major syllable in table 2 shows that:

1. All consonant phonemes can be the initial consonant of major syllable.
2. All vowel phonemes can occur in major syllable.
3. /a/ is the vowel phonemes that has the widest distribution in major syllable.
4. /e/ is the vowel phonemes that has the narrowest distribution in major syllable.
5. /r/ is the consonant phonemes that has the widest distribution in major syllable.
6. /t/ is the consonant phonemes that has the narrowest distribution in major syllable.
7. /t/ only occurs with glide vowel /a'/.
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**Table 3:** The co-occurrence of initial consonant clusters and vowels of open major syllable.

+ : occurrence

(blank) : non-occurrence
The co-occurrence of initial consonant clusters and vowels of open major syllable in Table 3 shows that:

1. There are 7 vowel phonemes /i, e, a, u, o, a', a'/ that occur after consonant clusters.
2. The vowel phonemes, which never occur with consonant clusters, are /ε, u, a, o/.
3. The vowel phoneme, which has the widest distribution with consonant clusters in major syllable, is /i/.
4. The vowel phoneme which has the narrowest distribution with consonant clusters in major syllable is /a'/.
5. There are 32 initial consonant clusters /pj, dj, cj, c'hj, kj, k'hj, nj, rj, pl, p'h, kl, k'h, pr, p'hr, kr, k'hr, p'hw, bw, tw, t'hw, cw, c'hw, kw, k'hw, ?w, mw, ηw, sw, lw, rw, p'hw, k'hw/ that occur with the vowel phonemes.
6. The consonant clusters which has the widest distribution with vowel phoneme in major syllable is /p'h, k'h, bw, k'hw/.
7. The consonant clusters which has the narrowest distribution with vowel phoneme in major syllable is /pj, dj, cj, c'hj, nj, pl, kl, k'h, kr, p'hw, ?w, mw, sw, p'hw/.
8. Only two consonant phonemes /p'hw, k'hw/ can occur with the second and the third member of consonant clusters /rw/.
6.3.2.2 Closed major syllable

The structure of the closed major syllable in the Huay Salop Pa-O dialect is consisting of one or two initial consonants, a single vowel, a final consonant, and a tone $C(C)V^1C$.

The closed major syllable can be divided into two subtypes according to its final consonants: final stops and final nasals.

**Subtype I)** The closed major syllable with final stops / p, t, k, ? /

The closed major syllable with final voiceless stops / p, t, k, ? / bears only two tones: high rising and low falling tones in this dialect. It is the voiceless final consonant that conditions the vowel immediately preceding it to be shorter. According to Jones (1961: 71), all nuclei are considerably shorter when follow by a stop. This syllable type bears the shortest nuclei.

**Subtype I I) The closed major syllable with final nasals / m, n, η /

The closed major syllable with final voiced nasals / m, n, η / type bears all tones. high rising, high falling, mid level, and low falling tones. It is the voiced final consonant that conditions the vowel immediately preceding it to be longer. This syllable type bears longer nuclei than the closed major syllable with final stops, but shorter than the open one.

**Pattern I : $C_1V_1^TC_2$**

When final consonant ($C_2$) are stops / p, t, k, ? /

Examples .

/ $\text{tæt}^1$ /  [$\text{tæt}^{45}$]  “rub”
/ $\text{kut}^1$ /  [$\text{kut}^{45}$]  “nine”
/ $\text{kok}^1$ /  [$\text{kok}^{45}$]  “suck”
/ $\text{kak}^1$ /  [$\text{kak}^{45}$]  “jaw”
/ $\text{ʔok}^1$ /  [$\text{ʔok}^{45}$]  “volume (cN)”
/ $\text{doʔ}^9$ /  [$\text{doʔ}^{21}$]  “say”
/ $\text{deʔ}^1$ /  [$\text{deʔ}^{45}$]  “wing”
/ $\text{tap}^4$ /  [$\text{tap}^{21}$]  “smooth”
/ $\text{cop}^4$ /  [$\text{cop}^{21}$]  “play”
When final consonant ($C_2$) are nasals / m, n, ñ /

Examples:

/ tem$^2$/  [tɛm$^{42}$]  “write”
/ t$^b$om$^1$/  [tʰo$^{45}$m]  “put on (shoes)”
/ c$^b$em$^2$/  [cʰɛ$^{42}$m]  “stamp foot”
/ bɔn$^3$/  [bɔ$^{33}$n]  “same”
/ t$^b$an$^1$/  [tʰa$^{45}$n]  “come out”
/ dɔn$^4$/  [dɔ$^{21}$n]  “thick”
/ bɔŋ$^3$/  [bɔŋ$^{33}$]  “take off”
/ t$^b$oŋ$^4$/  [tʰo$^{45}$ŋ]  “drum”
/ dɔŋ$^1$/  [dɔŋ$^{45}$]  “short”

Pattern II : $C_1 C_3 V_1^T C_2$

When final consonant ($C_2$) are stops / k, t, ? /

Examples:

/ k$^b$rat$^4$/  [kʰrɔt$^{45}$]  “scrape”
/ bjak$^4$/  [bjak$^{21}$]  “basket”
/ twak$^1$/  [twak$^{45}$]  “count”
/ kjɔk$^1$/  [kjɔk$^{45}$]  “like”
/ sje$^1$/  [sje$^{45}$]  “insects”
/ lja$^1$/  [lja$^{45}$]  “rip out”
/ k$^b$le$^4$/  [kʰle$^{45}$]  “turtle”
/ k$^b$wa$^2$/  [kʰwa$^{25}$]  “cold”
/ ?wa$^4$/  [ʔwa$^{21}$]  “drink”
/ lwa$^4$/  [lwa$^{21}$]  “fall off”

... When final consonant ($C_2$) are nasals / m, n, ñ /

Examples:

/ p$^b$lam$^2$/  [pʰla$^{42}$m]  “wash”
/ p$^b$rom$^3$/  [pʰro$^{33}$m]  “fruit (cN)”
/ k$^b$rom$^3$/  [kʰro$^{33}$m]  “brittle”
/ k$^b$lam$^4$/  [kʰla$^{21}$m]  “garden”
/ p$^b$ran$^1$/  [pʰra$^{21}$n]  “poor”
/ plaŋ$^3$/  [plaŋ$^{33}$]  “wheat”
/ cjɔŋ$^1$/  [cjɔŋ$^{45}$]  “fly”
/ k$^b$len$^2$/  [kʰle$^{42}$ŋ]  “hunt”
/ k$^b$roŋ$^4$/  [kʰroŋ$^{21}$]  “to steam”
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Table 4: The co-occurrence of single initial consonants and vowels of closed major syllable.

+ : occurrence

(blank) : non-occurrence
The co-occurrence of single initial consonants and vowels of closed major syllable in Table 4 shows that:

1. All the consonant phonemes can be the initial consonant of the closed major syllable.
2. All single vowel phonemes can occur in closed major syllable.
3. All glide vowels /a', a''/ never occur in closed major syllable.
4. /a/ is the vowel phoneme that has the widest distribution.
5. /u/ is the vowel phoneme that has the narrowest distribution.
6. /k, m, n, s/ are the consonant phonemes that have the widest distribution.
7. /w/ is the consonant phoneme that has the narrowest distribution and only occurs with vowel phoneme /e, a/ and /a/.

\[
\begin{array}{cccccccccccccccc}
\text{p} & \text{p}^h & \text{b} & \text{t} & \text{t}^h & \text{c} & \text{c}^h & \text{k} & \text{k}^h & \text{?} & \text{m} & \text{n} & \text{ŋ} & \text{s} & \text{j} & \text{h} & \text{l} & \text{r} & \text{W} \\
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\end{array}
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Table 5: The co-occurrence of single initial consonants and tones of major syllable.

+ : occurrence
(blank) : non-occurrence

The co-occurrence of single initial consonants and tones of major syllable in Table 5 shows that:

1. All the consonant phonemes can occur with all tones of the closed major syllable.
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Table 6: The co-occurrence of initial consonant clusters and vowels of closed major syllable.

+ : occurrence

(blank) : non-occurrence
The co-occurrence of initial consonant clusters and vowels of the closed major syllable in Table 6 shows that:

1. There are 8 vowel phonemes / i, e, ə, a, o, ɔ / that occur after consonant clusters in the closed major syllable.
2. The vowel phonemes, which never occur with consonant clusters in the closed major syllable, are / u, a', a" /.
3. The vowel phoneme, which has the widest distribution with consonant clusters in the closed major syllable, is / a /.
4. The vowel phonemes which have the narrowest distribution with consonant clusters in the closed major syllable are / i, e, u /.
5. There are 27 initial consonant clusters / bj, tʰj, dj, cj, kj, kʰj, nj, nj, sj, lj, tj, pl, pʰl, kl, kʰl, pr, pʰr, kr, kʰr, kʰh, pw, tw, cw, kw, ?w, jw, lw / that occur with the vowel phonemes in the closed major syllable.
6. The initial consonant clusters / pʰl, kʰl, pʰr/ are the phonemes that have the widest distribution.
7. Almost the initial consonant clusters / bj, tʰj, dj, cj, nj, nj, lj, tj, kl, pr, kr, pw, tw, cw, kw, kʰw, ?w, jw, lw / have the narrowest distribution.
6.3.3 Minor Syllable

A minor syllable consists of an initial single consonant or consonant cluster, a single vowel, an optional final consonant, and a tone. It bears a weak stress which has the lower intensity of volume and the shorter duration of vowel length than the major syllable. It occurs as the first, second, or penultimate syllable in the word of two syllables or in the polysyllabic word. The minor syllable can be either an opened or a closed syllable. It bears tones and characteristics like major syllable excepts the position and the stress. Here the minor syllable is marked by the underline (_).

The structure of the minor syllable in Pa-O language is $C_1(C_2)V_1^T(C_2)$.

6.3.3.1 Open minor syllable

**Pattern I : $C_1V_1^T$**

Examples:

/ pe$^1$ na$^u_3$ / [pe$^{45}$ na$^{u:33}$] “younger brother sibling”
/ p$^b$u$^2$ k$^b$o$^4$ / [p$^{b:u:42}$ k$^{b:o:21}$] “younger brother”
/ ba$^1$ jo$^1$ / [ba$^{45}$ jo$^{1:21}$] “cow pea”
/ ti$^3$ po$^v$ / [ti$^{33}$ po$^{v:33}$] “penis”
/ de$^5$ su$^3$ / [de$^{33}$ su$^{33}$] “toad”
/ ki$^3$ le$^2$ / [ki$^{33}$ le$^{2:42}$] “knee”
/ ka$^v$ tu$^3$ pi$^4$ / [ka$^{33}$ tu$^{33}$ pi$^{4:21}$] “scalp”
/ ?a$^1$ ma$^9$ / [?a$^{45}$ ma$^{33}$] “where?”
/ se$^3$ na$^3$ / [se$^{21}$ na$^{33}$] “understand”
/ ja$^3$ du$^3$ / [ja$^{33}$ du$^{33}$] “muscle”
/ ra$^{i2}$ sa$^{2}$ / [ra$^{i42}$ sa$^{42}$] “farmer”

**Pattern III : $C_1C_2V_1^T$**

Examples:

/ rja$^2$ k$^b$ja$^3$ / [rja$^{42}$ k$^{b:ja:33}$] “summer”
/ ta$^8$ k$^b$ja$^3$ t$^h$a$^3$ / [ta$^{k:ja:33}$ t$^{h:a:33}$] “sneeze”
/ c$^b$ja$^4$ ma$^1$ / [c$^{b:ja:21}$ ma$^{45}$] “hen”
/ c$^b$ja$^4$ ti$^3$ / [c$^{b:ja:21}$ ti$^{h:42}$] “rooster”
/ pan$^4$ pja$^3$ t$^h$i$^4$ / [pan$^{21}$ pja$^{33}$ t$^h:i:21$] “fish soy”
/ pja$^{u:4}$ ?a$^1$ / [pja$^{u:21}$ ?a$^{45}$] “lightning”
/ bwa$^{i}$ can$^3$ / [bwa$^{i45}$ ca$^{33}$] “monk”
/ kwa$^{i}$ sa$^3$ / [kwa$^{21}$ sa$^{33}$] “rabbit”
6.3.3.2 Closed minor syllable

Pattern I : $C_1V_1^T C_2$

Examples:

\[
\begin{align*}
&/\text{pʰit}^1 \text{tʰu}^3/ \quad [\text{pʰit}^{45} i \text{tʰu}^{33}] \\
&/\text{cʰut}^1 \text{re}^3/ \quad [\text{cʰut}^{45} i \text{re}^{33}] \\
&/\text{kik}^1 \text{pai}^3/ \quad [\text{kik}^{21} \text{pai}^{33}] \\
&/\text{weʔ}^4 \text{tʰu}^3/ \quad [\text{weʔ}^{21} i \text{tʰu}^{33}] \\
&/\text{doʔ}^4 \text{kja}^2/ \quad [\text{doʔ}^{21} i \text{kja}^{42}] \\
&/\text{moʔ}^1 \text{re}^2/ \quad [\text{moʔ}^{45} i \text{re}^{33}] \\
&/\text{cam}^3 \text{pʰeŋ}^3/ \quad [\text{cam}^{33} i \text{pʰeŋ}^{33}] \\
&/\text{lam}^2 \text{naŋ}^2/ \quad [\text{lam}^{42} i \text{naŋ}^{42}] \\
&/\text{kʰam}^2 \text{kʰeŋ}^5/ \quad [\text{kʰam}^{42} i \text{kʰeŋ}^{33}] \\
&/\text{naŋ}^4 \text{pja}^3 \text{tʰi}^4/ \quad [\text{naŋ}^{21} \text{pja}^{33} i \text{tʰi}^{21}] \\
&/\text{kʰaj}^1 \text{loŋ}^4 \text{pʰoŋ}^3/ \quad [\text{kʰaj}^{33} i \text{loŋ}^{21} \text{pʰoŋ}^{33} i \text{ˈcalf'}] \\
&/\text{beŋ}^1 \text{maŋ}^2/ \quad [\text{beŋ}^{33} i \text{maŋ}^{42}] \\
&/\text{ʔeŋ}^3 \text{ceŋ}^3/ \quad [\text{ʔeŋ}^{33} i \text{ceŋ}^{33}] \\
&/\text{məŋ}^1 \text{kleŋ}^1/ \quad [\text{məŋ}^{45} i \text{kleŋ}^{45}] \\
\end{align*}
\]

“housefly”
“rib”
“big cricket”
“fly”
“answer”
“cloud”
“butterfly”
“roof”
“thunder”
“fish soy”
“calf’”
“dream”
“galanga”
“hat”

Pattern II : $C_1C_2V_1^T C_2$

Examples:

\[
\begin{align*}
&/\text{pleŋ}^4 \text{ʔo}^1/ \quad [\text{pleŋ}^{21} i \text{ʔo}^{45}] \\
&/\text{pʰleŋ}^1 \text{sin}^2/ \quad [\text{pʰleŋ}^{45} i \text{sin}^{42}] \\
&/\text{pʰoŋ}^2 \text{teŋ}^4/ \quad [\text{pʰoŋ}^{42} i \text{teŋ}^{21}] \\
&/\text{kʰaj}^1 \text{raŋ}^4/ \quad [\text{kʰaj}^{45} i \text{raŋ}^{21}] \\
&/\text{kʰwaʔ}^1 \text{kʰiŋ}^3/ \quad [\text{kʰwaʔ}^{45} i \text{kʰiŋ}^{33}] \\
&/\text{lwai}^1 \text{tʰi}^1/ \quad [\text{lwai}^{21} i \text{tʰi}^{45}] \\
&/\text{lwai}^1 \text{na}^3/ \quad [\text{lwai}^{45} i \text{na}^{33}] \\
\end{align*}
\]

“armpit”
“water lettuce”
“pen”
“basket”
“winter”
“ugly”
“lazy”

6.4 Stress in Syllable

Stress is defined in terms of intensity (volume) and duration of vowel length. It functions in syllable rank. In Pa-O language stress is predictable by the types of syllables and its position in phonological word. Therefore, the syllable stress needs not to be marked overtly at the phonemic level.
6.4.1 Types of Stress and Syllable Stress Symbols

Stress can be divided into two groups. They are stress and non-stress.

6.4.1.1 Stress: strong stress and weak stress

A stressed syllable is the syllable whose stress is heavier and has greater length (in the volume) than an unstressed one. The stress in Huay Salop Pa-O dialect can be predicted from the syllable structure. Therefore, the word stress is non-phonemic. There are three phonetic levels of stress: strong stress, weak stress, and unstress.

I). Strong stress (Primary Stress)

A strong stress syllable is the syllable that has more volume and greater length (usually on the vowel) than the weak stress syllable. It is the only stress that occurs on the peak of the major syllable. This strong stress is obligatory in a phonological word (a stress group) and [\textprime \_ \textprime] is used to represent it.

Examples:

\begin{tabular}{ll}
/doŋ\textprime 3 & [\textquoteleft doŋ\textprime 33 ] \textquoteright \\
/cu\textprime 4 & [\textquoteleft cu\textprime 21 ] \textquoteright \\
/c\textquoteleft ut\ 1 & [\textquoteleft c\textprime ut\textquoteleft 45 ] \textquoteright \\
/kim\textprime 1 & [\textquoteleft kim\textprime 45 ] \textquoteright \\
/k\textquoteleft aj\ 3 & [\textquoteleft kaŋ\textprime 33 ] \textquoteright \\
/?en\textprime 3 & [\textquoteright ?eŋ33 ] \textquoteright \\
/ti\textprime 3 pong\textprime 3 & [\textquoteright ti\textprime 33 pong\textprime 33 ] \textquoteright \\
/ja\textprime 3 du\textprime 3 & [\textquoteright ja\textprime 33 du\textprime 33 ] \textquoteright \\
/ras\textprime 2 & [\textquoteright ra\textprime 42 sa\textprime 42 ] \textquoteright \\
/mo\textprime 1 ?e\textprime 3 & [\textquoteright moŋ\textprime 45 ?e\textprime 33 ] \textquoteright \\
/cam\textprime 3 p\textquoteright en\ 3 & [\textquoteright ca\textprime m3 p\textquoteright eŋ33 ] \textquoteright \\
/p\textquoteright raŋ\ 2 teng\textprime 4 & [\textquoteright paŋ\textprime 42 teng\textprime 21 ] \textquoteright \\
/k\textquoteright jan\ 1 raŋ\ 4 & [\textquoteright k\textquoteright jaŋ\textprime 45 raŋ\textprime 21 ] \textquoteright \\
/?en\textprime 3 ceŋ\textprime 3 & [\textquoteright ?eŋ33 ceŋ\textprime 33 ] \textquoteright \\
/moŋ\textprime 1 kleŋ\ 1 & [\textquoteright moŋ\textprime 45 kleŋ\textprime 45 ] \textquoteright \\
\end{tabular}

\textquoteleft hit by hand\textquoteright \\
\textquoteleft hand\textquoteright \\
\textquoteleft bone\textquoteright \\
\textquoteleft like\textquoteright \\
\textquoteleft foot\textquoteright \\
\textquoteleft narrow\textquoteright \\
\textquoteleft penis\textquoteright \\
\textquoteleft muscle\textquoteright \\
\textquoteleft farmer\textquoteright \\
\textquoteleft cloud\textquoteright \\
\textquoteleft butterfly\textquoteright \\
\textquoteleft pen\textquoteright \\
\textquoteleft basket\textquoteright \\
\textquoteleft galanga\textquoteright \\
\textquoteleft hat\textquoteright
II. Weak Stress (Secondary Stress)

A weak stress syllable is the syllable that has less volume and length than the strong stress syllable. It occurs on any minor syllable and is marked by [ˌ].

Examples:

/ ɓaː 45 jɔːn 21 / [ɓaː 45 ; jɔːn 21 ] “cow pea”
/ deː 33 suː 33 / [deː 33 ; suː 33 ] “toad”
/ kiː 33 leŋ 42 / [kiː 33 ; leŋ 42 ] “knee”
/ e:i 4 maː 45 / [e:i 4 ; maː 45 ] “hen”
/ bwaː 45 can 33 / [bwaː 45 ; caŋ 33 ] “monk”
/ kwaː 41 saː 33 / [kwaː 41 ; saː 33 ] “rabbit”
/ pʰit 45 tʰuː 33 / [pʰit 45 ; tʰuː 33 ] “housefly”
/ cʰut 45 reː 33 / [cʰut 45 ; reː 33 ] “rib”
/ kik 4 paː 33 / [kik 21 ; paː 33 ] “big cricket”
/ lwaː 45 qaː 33 / [lwaː 45 ; qaː 33 ] “lazy”

B). Unstress

An unstressed syllable is the syllable that has no stress at all. It has less volume and length than the weak stress syllable. It occurs on only presyllable [Ca] and it is marked by [ _ ].

Examples:

/ po jɔː 42 / [po 33 ; jɔː 42 ] “smile”
/ to kɔː 21 / [to 33 ; kɔː 21 ] “hill”
/ to neː 33 / [to 33 ; neː 33 ] “tooth”
/ to saː 33 / [to 33 ; saː 33 ] “salt”
/ to waː 3 / [to 33 ; waː 43 ] “land leech”
/ tʰə kɔː 42 / [tʰə 33 ; kɔː 42 ] “bed”
/ tʰə saː 42 / [tʰə 33 ; saː 42 ] “animal”
/ kə tuː 33 / [kə 33 ; tuː 33 ] “head”
/ to pat 21 / [to 33 ; pat 21 ] “week”
/ to beː 21 / [to 33 ; beː 21 ] “fat”
/ to cwaː 42 / [to 33 ; cwaː 42 ] “fang”
/ so lɔp 21 / [so 33 ; lɔp 21 ] “public rest-house”

The syllable structure can be predicted and it is non-phonemic, therefore, it is unnecessary to write any stress mark on the syllable in phonemic writing.
6.5 Function

The syllables function in the phonological word. They have two main functions in the phonological word: as Nucleus and Periphery.

6.5.1 Nuclear Syllable

The nuclear syllable is a major syllable and always takes strong (primary) stress. It always occupies on monosyllabic word or on the last position in the word. It is marked by [ ' ].

Examples:

\[
\begin{align*}
/\text{cu}^4/ & \quad [\text{c}^4 \text{u}^\text{21}] \quad \text{"hand"} \\
/\text{kim}^1/ & \quad [\text{k}^\text{1i} \text{m}^\text{45}] \quad \text{"like"} \\
/k^\text{b} \text{a}^\text{n}^3/ & \quad [\text{k}^\text{b} \text{a}^\text{33}] \quad \text{"foot"}
\end{align*}
\]

\[
\begin{align*}
/\text{t}^\text{a} \text{ko}^\text{n}^4/ & \quad [\text{t}^\text{33} \text{k}^\text{21} \text{o}^\text{42}] \quad \text{"hill"} \\
/\text{t}^\text{b} \text{o} \text{sa}^2/ & \quad [\text{t}^\text{b} \text{33} \text{s}^\text{42}] \quad \text{"animal"} \\
/\text{k} \text{a} \text{tu}^3/ & \quad [\text{k}^\text{33} \text{t}^\text{33}] \quad \text{"head"}
\end{align*}
\]

\[
\begin{align*}
/\text{ki}^3 \text{len}^2/ & \quad [\text{k}^\text{33} \text{l}^\text{42}] \quad \text{"knee"} \\
/\text{c}^\text{b} \text{ja}^4 \text{ma}^1/ & \quad [\text{c}^\text{b} \text{33} \text{m}^\text{45}] \quad \text{"hen"} \\
/\text{c}^\text{bu}^1 \text{re}^3/ & \quad [\text{c}^\text{33} \text{r}^\text{33}] \quad \text{"rib"}
\end{align*}
\]

\[
\begin{align*}
/\text{ta} \text{ka} \text{li}^4/ & \quad [\text{t}^\text{33} \text{k}^\text{33} \text{l}^\text{21}] \quad \text{"tick"} \\
/\text{ta} \text{to} \text{ne}^2/ & \quad [\text{t}^\text{33} \text{t}^\text{33} \text{n}^\text{42}] \quad \text{"sob"}
\end{align*}
\]

\[
\begin{align*}
/\text{t}^\text{a} \text{p}^\text{b} \text{e}^1 \text{ra}^3/ & \quad [\text{t}^\text{33} \text{p}^\text{b}^\text{45} \text{r}^\text{33}] \quad \text{"rose-apple"} \\
/\text{t}^\text{a} \text{k}^\text{b} \text{o}^1 \text{p}^\text{b} \text{un}^3/ & \quad [\text{t}^\text{33} \text{k}^\text{33} \text{p}^\text{b}^\text{45} \text{un}^\text{33}] \quad \text{"powder"}
\end{align*}
\]

\[
\begin{align*}
/\text{cj} \text{oj}^3 \text{s} \text{a} \text{ra}^3/ & \quad [\text{c}^\text{33} \text{33} \text{s}^\text{33} \text{r}^\text{33}] \quad \text{"teacher"} \\
/\text{k}^\text{b} \text{w} \text{a}^4 \text{to} \text{n}^\text{a}^1/ & \quad [\text{k}^\text{b} \text{33} \text{t}^\text{33} \text{n}^\text{45}] \quad \text{"chill"}
\end{align*}
\]

\[
\begin{align*}
/\text{ka}^3 \text{ne}^\text{1} \text{si}^4/ & \quad [\text{k}^\text{33} \text{33} \text{n}^\text{45} \text{s}^\text{42}] \quad \text{"rose"} \\
/\text{k}^\text{b} \text{a}^3 \text{m}^3 \text{p}^\text{a}^3 \text{ham}^3/ & \quad [\text{k}^\text{33} \text{33} \text{a}^\text{33} \text{h}^\text{45} \text{m}^\text{33}] \quad \text{"earth"}
\end{align*}
\]
6.5.2 Peripheral Syllable

The syllables in this class function as the periphery of the phonological word. Every peripheral syllable can occur in any position, except the final one, of a phonological word. It can be divided into two sub-classes: weakly stressed peripheral syllable and unstressed peripheral syllable.

6.5.2.1 Weakly Stressed Peripheral Syllable

A weakly stressed peripheral syllable has a weak stress and it is defined as a minor syllable, which always takes a secondary stress. It usually occupies on the first position of disyllabic word or on any position except the last one of polysyllabic word. It is marked by [ _ _ ].

Examples:

/ bɔŋ² kʰaŋ⁴ /  
/ pʰrɔŋ² bi³ /  
/ cʰut¹ re³ /  
/ pʰi⁴ bwa⁴ /  
/ pleŋ⁴ ¿ə¹ /

[ bɔŋ⁴ kʰaŋ² ]
[ pʰrɔŋ⁴ bi³ ]
[ cʰut⁴ re³ ]
[ pʰi⁴ bwa² ]
[ pleŋ² ¿ə⁴ ]

"knee"
"hen"
"rib"
"nun"
"rib"

6.5.2.2 Unstressed Peripheral Syllable

An unstressed peripheral syllable has a non-stress and it is defined as a presyllable, which always takes a zero stress. This kind of syllable has phonemic /ə/ with phonetic realisation [ə] as the vowel of the syllable and it carries the neutral tone. It usually occupies on the first position of disyllabic word or on any position except the last one of polysyllabic word. It is marked by [ _ ].

Examples:

/ pə si⁴ /
/ tʰə kɔn² /
/ kə lu³ /
/ kə loŋ⁴ /
/ ¿ə sak¹ /
/ tə pʰe¹ ra³ /
/ kʰwa¹ tə noʔ¹ /
/ tʰə ¿ə tʰə cʰa⁴ /

[ pə ³³ : si²¹ ]
[ tʰə ³³ : kɔn⁴² ]
[ kə ³³ : lu³³ ]
[ kə ³³ : loŋ²¹ ]
[ ¿ə ³³ : sak⁴⁵ ]
[ tə ³³ : pʰe : ⁴⁵ : ra : ³³ ]
[ kʰwa⁴⁵ tə ³³ : noʔ⁴⁵ ]
[ tʰə ¿ə ⁴⁵ tʰə ³³ : cʰa²¹ ]

"to wash"
"bed"
"hair"
"pen"
"age"
"rose-apple"
"chill"
"sick"
6.6 Syllable Boundary and Syllable Break

6.6.1 In Phonetic Transcription

Stress shows the beginning of a syllable. That is, the strong stressed sign [\(\text{\textacuten}}\)] shows the beginning of a major syllable, the weakly stressed sign [\(\text{\texttilde}\)] shows the beginning of a minor syllable. As of the zero stress, there is no sign to show the beginning of the unstressed syllable, the presyllable, but the initial consonant of the syllable does. Since all Pa-O dialect syllables end with a vowel or a final consonant, if a vowel or a final consonant (together with any tone) appears, it shows that the preceding syllable ends, and that a following consonant or a consonant cluster mark the beginning of the next syllable; for example:

- Major Syllable: \text{\textacuten} : C \quad [\text{c\textsuperscript{\textacuten}ut}\textsuperscript{45} \text{\texttilde} \text{\textacuten} \text{\textacuten} \textsuperscript{33}] \quad \text{"rib"}
- Minor Syllable: \text{\textacuten} : C \quad [\text{c\textacuten} \text{\textacuten} \text{\textacuten} \textsuperscript{33} \text{\texttilde} \text{\textacuten} \textsuperscript{33}] \quad \text{"teacher"}
- Presyllable: \text{\textacuten} \text{\texttilde} C \quad [\text{\textacuten} \text{\textacuten} \text{\textacuten} \textsuperscript{33} \text{\textacuten} \textsuperscript{33}] \quad \text{"hair"}

6.6.2 In Phonemic Transcription

Stress is predictable by the syllable position in the phonological word and by the syllable structure: the final syllable in a phonological word is the major syllable, the non-final syllable in /C\text{\textacuten}/ structure is the presyllable, and the non-final syllable in a phonological word is the minor syllable. Therefore, stress needs not to be marked in the phonemic transcription. The vowel together with any tone still shows the end of the preceding syllable and the consonant following shows the beginning of the next syllable as well.
CHAPTER VII

THE PHONEMES

7.1 Definition

A phoneme is defined as the rank whose unit functions in the syllable. It is the lowest rank of the hierarchy, which is capable of differentiating one word from another. The phoneme has no stable structure, because it is an actual-sound unit of language so it varies in particular dialect or any person, but the phonetic forms of phoneme may be described.

7.2 Function

There are both segmental and suprasegmental phonemes in the Huay Salop Pa-O language. In this study, a segmental phoneme is stated in terms of consonant and vowel and a suprasegmental phoneme is stated in terms of tone. Therefore, on the basis of their function in the syllable, there are 3 classes of phonemes: consonants, vowels and tones.

7.3 Consonants

Consonants are sound made by a closure or narrowing in the vocal tract so that the airflow is either completely blocked, or so restricted that audible friction is produced. Consonant articulations are relatively easy to feel, and as a result are most conveniently described in term of place and manner of articulation. In addition, a routine phonetic description of consonants would involve information about the mode of vibration of the vocal cords, and it is often necessary to specify the duration of the sound, the airstream mechanism involved and the direction of airflow. From a phonological point of view, consonant are those units, which function at the margin of syllables, either singly or in clusters (Crystal 1991:74).

There are 20 consonant phonemes in the Pa-O language as spoken in the village of Huay Salop: / p, pʰ, b, t, tʰ, d, c, cʰ, k, kʰ, ?, m, n, η, s, j, h, l, r, w /. All of
They can occur in the initial position. The phonemes / p, t, k, ?, m, n, η/ can also occur in the final position. The phonemes / l, r, w, j/ can also occur in the second element of cluster, and only the phoneme / w/ can occur in the third element of cluster.

In the following chart, each of the consonants will be grouped according to their manners and points of articulation. They are divided into six groups: plosive, fricative, nasal, lateral, trill, and semi-vowel as shown in the following chart.

<table>
<thead>
<tr>
<th>Manners of articulation</th>
<th>Points of articulation</th>
<th>Bilabial</th>
<th>Alveolar</th>
<th>Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td>unasp.vl.</td>
<td>p</td>
<td>t</td>
<td>c</td>
<td>k</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>asp.vl.vd</td>
<td>p&lt;sup&gt;b&lt;/sup&gt;</td>
<td>t&lt;sup&gt;b&lt;/sup&gt;</td>
<td>c&lt;sup&gt;b&lt;/sup&gt;</td>
<td>k&lt;sup&gt;b&lt;/sup&gt;</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fricative</td>
<td>unasp.vl.</td>
<td></td>
<td>s</td>
<td></td>
<td></td>
<td>h</td>
</tr>
<tr>
<td>Nasal</td>
<td>vd.</td>
<td>m</td>
<td>n</td>
<td>η</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral</td>
<td>vd.</td>
<td></td>
<td>l</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trill</td>
<td>vd.</td>
<td></td>
<td>r</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-vowel</td>
<td>vd.</td>
<td>w</td>
<td></td>
<td>j</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7: Consonant Phoneme Chart
7.3.1 Classification of Consonants

In Huay Salop Pa-O dialect, consonants can be classified according to their function in the syllables into four sub-classes: initial consonants, final consonants, second member and third member of consonant clusters.

7.3.1.1 Initial Consonants

Initial consonants are the consonant that can occur in the initial position of the syllable. They are all of 20 consonant phonemes found in this language: /p, p^b, b, t, t^b, d, c, c^b, k, k^b, ?, m, n, η, s, j, h, l, r, w/.

Examples:

<table>
<thead>
<tr>
<th>Consonant</th>
<th>Sound</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-</td>
<td>/pɔk^1/</td>
<td>&quot;dull&quot;</td>
</tr>
<tr>
<td>p^b-</td>
<td>/p^bɔŋ^3/</td>
<td>&quot;pot&quot;</td>
</tr>
<tr>
<td>b-</td>
<td>/bɔŋ^1/</td>
<td>&quot;chop&quot;</td>
</tr>
<tr>
<td>t-</td>
<td>/tɛm^2/</td>
<td>&quot;write&quot;</td>
</tr>
<tr>
<td>t^b-</td>
<td>/tʰi^4/</td>
<td>&quot;water&quot;</td>
</tr>
<tr>
<td>d-</td>
<td>/dɔŋ^4/</td>
<td>&quot;thick&quot;</td>
</tr>
<tr>
<td>c-</td>
<td>/cʰi^4/</td>
<td>&quot;hand&quot;</td>
</tr>
<tr>
<td>c^b-</td>
<td>/cʰɔŋ^3/</td>
<td>&quot;coat&quot;</td>
</tr>
<tr>
<td>k-</td>
<td>/kɔŋ^1/</td>
<td>&quot;mountain&quot;</td>
</tr>
<tr>
<td>k^b-</td>
<td>/kʰɔŋ^1/</td>
<td>&quot;over flow&quot;</td>
</tr>
<tr>
<td>?-</td>
<td>/ʔɔŋ^3/</td>
<td>&quot;bite&quot;</td>
</tr>
<tr>
<td>m-</td>
<td>/me^3/</td>
<td>&quot;fire&quot;</td>
</tr>
<tr>
<td>n-</td>
<td>/nɛn^2/</td>
<td>&quot;breast?&quot;</td>
</tr>
<tr>
<td>η-</td>
<td>/ŋəŋ^1/</td>
<td>&quot;narrow&quot;</td>
</tr>
<tr>
<td>s-</td>
<td>/səŋ^3/</td>
<td>&quot;liver&quot;</td>
</tr>
<tr>
<td>j-</td>
<td>/jʊ^2/</td>
<td>&quot;rat&quot;</td>
</tr>
<tr>
<td>h-</td>
<td>/hɔŋ^4/</td>
<td>&quot;hear&quot;</td>
</tr>
<tr>
<td>l-</td>
<td>/lɛm^2/</td>
<td>&quot;house&quot;</td>
</tr>
<tr>
<td>r-</td>
<td>/ʁəŋ^1/</td>
<td>&quot;sing&quot;</td>
</tr>
<tr>
<td>w-</td>
<td>/wa^1/</td>
<td>&quot;bamboo&quot;</td>
</tr>
<tr>
<td></td>
<td>i</td>
<td>e</td>
</tr>
<tr>
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<td>----</td>
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<tr>
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<td>+</td>
<td>+</td>
</tr>
<tr>
<td>p^h</td>
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<td>+</td>
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<tr>
<td>b</td>
<td>+</td>
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<tr>
<td>t</td>
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<tr>
<td>t^h</td>
<td>+</td>
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<tr>
<td>d</td>
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<td>+</td>
</tr>
<tr>
<td>c</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>c^h</td>
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</tr>
<tr>
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<td>+</td>
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</tr>
<tr>
<td>k^h</td>
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<td>+</td>
</tr>
<tr>
<td>?</td>
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<td>+</td>
</tr>
<tr>
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<td>+</td>
</tr>
<tr>
<td>n</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>ñ</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>s</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>j</td>
<td>+</td>
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<tr>
<td>h</td>
<td>+</td>
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<td>l</td>
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<td>+</td>
</tr>
<tr>
<td>r</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>w</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

**Table 8: The co-occurrence of single initial consonants and vowels in syllables.**

+ : occurrence  
(blank) : non-occurrence
The co-occurrence of single initial consonants and vowels of the syllable in Table 8 shows that:

1. All consonant phonemes can be the initial consonants.
2. All vowel phonemes can occur in syllables.
3. /ə, a/ are the vowel phonemes that has the widest distribution in syllables.
4. /au/ is the vowel phonemes that has the narrowest distribution in syllables.
5. /t, n/ are the consonant phonemes that has the widest distribution in syllables.
6. /w/ is the consonant phonemes that has the narrowest distribution in syllables. It only occurs with /e, ə, a/
<table>
<thead>
<tr>
<th>Initial Consonant</th>
<th>Open Syllable</th>
<th>Closed Syllable</th>
<th>Final Stops /p, t, k, ?/</th>
<th>Final Nasals /m, n, η/</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>p</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>pʰ</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>b</td>
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<td>+</td>
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<tr>
<td>t</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>tʰ</td>
<td>+</td>
<td>+</td>
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<tr>
<td>d</td>
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<tr>
<td>c</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>cʰ</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>k</td>
<td>+</td>
<td>+</td>
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<td>+</td>
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<tr>
<td>kʰ</td>
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<td>ɾ</td>
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<td>m</td>
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<tr>
<td>l</td>
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<tr>
<td>r</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>w</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Table 9: The co-occurrence of single initial consonants and tones in open syllables and closed syllables.

+ : occurrence

(blank) : non-occurrence
The co-occurrence of single initial consonants and in syllables in Table 9 shows that.

4. All single initial consonant phonemes can occur in open syllables and closed syllables.
5. All single initial consonant phonemes can occur with all tones in open syllables and closed syllables with final nasals /m, n, ŋ/.
3. Closed syllables with final stops /p, t, k, ?/ never occur with tone /2, 3/.
7.3.1.2 Final Consonants

Final consonants are the consonants that can occur in the final position of the syllable. They are /p, t, k, ?, m, n, η/. 

Examples:

- p /cop⁴/ “to play”
- t /pot⁴/ “to brush”
- k /pok⁴/ “dull”
- ? /meθ⁴/ “eye”
- m /lam⁵/ “house”
- n /næn²/ “breast”
- η /ηaŋ²/ “back”

7.3.1.3 Second Member of the Consonant Cluster

The second member of consonant clusters occupies the second position of syllable-initial cluster. They are /l, r, w, j/.

The co-occurrence of them is restricted to four patterns of consonant cluster as follows:

**Pattern I**: -l-cluster (C₁l)
C₁ are /p, pʰ, k, kʰ /
C₃ is /l/
They make 4 -l- clusters /pl, pʰl, kl, kʰl/.

Examples:
- pl- /plen⁴/ “shoulder”
- pʰl- /pʰλeŋ⁴/ “to vomit”
- kl- /kleŋ⁴/ “turtle”
- kʰl /kʰλaŋ⁴/ “to roast”

**Pattern II**: -r- cluster (C₁ r)
C₁ are /p, pʰ, k, kʰ /
C₃ is /r/
They make 4 -r- clusters /pr, pʰr, kr, kʰr/.

Examples:
- pr- /pra⁴/ “arrow”
- pʰr- /pʰrə⁴/ “tongue”
- kr- /kroŋ⁴/ “shave”
- kʰr- /kʰroŋ⁴/ “to scrape”
Pattern III -w- cluster ((C₁w)
C₁ are /pʰ, b, t, tʰ, c, cʰ, k, kʰ, ?, m, n, s, l, r, /
C₃ is /w/
They make 15 -w- clusters /pʰw, bw, tw, tʰw, cw, cʰw, kw, kʰw, ?w, mw, ηw, sw, jw, lw, rw, /

Examples:

pʰw- /pʰwi⁴/ "light (adj)"
bw- /bwa⁴/ "white"
tw- /twak¹/ "count"
tʰw- /tʰwi³/ "dog"
cw- /cwaŋ³/ "float"
cʰw- /cʰwa³/ "long"
kw- /kwi³/ "chameleon"
kʰw- /kʰwa³¹/ "cold"
?w- /?waŋ³¹/ "drink"
mw- /mwi² caŋ³ tʰa³/ "very much"
?w- /?wi³/ "shell"
sw- /swi³/ "blood"
jw- /jwa³⁴/ "wait"
lw- /lwaŋ³²/ "run"
rw- /rwi³²/ "root"

Pattern IV -j- cluster (C₁j)
C₁ are /p, b, d, c, cʰ, k, kʰ, n, η, s, l, r/
C₃ is /j/
They make 12 -j- clusters /pj, bj, dj, cj, cʰj, kj, kʰj, nj, ηj, sj, lj, rj/.

Examples:

pj- /pjau³¹/ "fun"
bj- /bjak³¹/ "wet"
dj- /dje³¹/ "wing"
cj- /cjəŋ³¹/ "fly"
cʰj- /cʰja³¹/ "sour"
kj- /kja³³/ "fasten"
kʰj- /kʰje³²/ "gibbon"
nj- /njə³¹/ "to press down"
uj- /uŋ³³/ "far"
sj- /sje³¹/ "insects"
lj- /lja²³/ "to rip out"
rj- /rja²³/ "hot"
7.3.1.4 Third Member of the Consonant Cluster

The third member of consonant cluster occupies the third position of syllable-initial cluster. It is / w / . It occurs only with the second member of consonant cluster / r / and only with the syllable-initial consonants / pʰ / and / kʰ / in this language as follows:

**Pattern I**: -rw- cluster (C₁ rw)

- C₁ are / pʰ, kʰ / 
- C₃ is / r / 
- C₄ is / w / 

They make 2 -rw- cluster / pʰrw, kʰrw /.

Examples:

- pʰrw- / pʰrwᵢ /  “to plane”
- kʰrw- / kʰrwᵢ /  “rich”
- kʰrw- / kʰrwaᵢ /  “saw”
<table>
<thead>
<tr>
<th></th>
<th>-p</th>
<th>-t</th>
<th>-k</th>
<th>-ʔ</th>
<th>-m</th>
<th>-n</th>
<th>-ŋ</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

Table 10: The co-occurrence of final consonants and vowels of the closed syllable.

+ : occurrence
.(blank) : non-occurrence

The co-occurrence of final consonants and vowels of the closed syllable in Table 10 shows that:

1. The consonant phonemes /p, t, k, ?, m, n, ŋ/ can occur finally.
2. /ʔ, ŋ/ are the final consonant phonemes that have the widest distribution.
3. /p/ is the final consonant phoneme that has the narrowest distribution and only occurs with vowel phonemes /i, a, u, o/ and /ɔ/.
4. All single vowel phonemes /i, e, ɛ, u, ə, a, u, o, ɔ/ can occur with final consonants in the closed major syllable.
5. Only glided vowel /a'/: never occur with final consonants in the closed syllable.
6. /i, a/: are the vowel phonemes that have the widest distribution.
7. /a'/: is the vowel phoneme that has the narrowest distribution.
<table>
<thead>
<tr>
<th>$C_1$</th>
<th>$C_2(C_4)$</th>
<th>-j- (C\textsubscript{j})</th>
<th>-l- (C\textsubscript{l})</th>
<th>-r- (C\textsubscript{r})</th>
<th>-w- (C\textsubscript{w})</th>
<th>-rw- (C\textsubscript{rw})</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>p\textsuperscript{h}</td>
<td>pj</td>
<td>pl</td>
<td>pr</td>
<td>p\textsuperscript{h}w</td>
<td>p\textsuperscript{h}rw</td>
</tr>
<tr>
<td>b</td>
<td>t\textsuperscript{h}</td>
<td>bj</td>
<td>p\textsuperscript{h}l</td>
<td>p\textsuperscript{h}r</td>
<td>bw</td>
<td>tw</td>
</tr>
<tr>
<td>t\textsuperscript{h}</td>
<td>d</td>
<td>cj</td>
<td>k\textsuperscript{h}j</td>
<td>k\textsuperscript{h}l</td>
<td>c\textsuperscript{h}w</td>
<td>c\textsuperscript{h}rw</td>
</tr>
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<td>c\textsuperscript{h}</td>
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</tr>
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<td>k\textsuperscript{h}j</td>
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<td>?w</td>
<td>mw</td>
</tr>
<tr>
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</tbody>
</table>

Table 11: The co-occurrence of the first consonants ($C_1$), the second consonants ($C_3$) and the third consonant ($C_4$) in consonant clusters.

The co-occurrence of the first consonants ($C_1$), the second consonants ($C_3$) and the third consonant ($C_4$) in Table 11 shows that:

1) There are 4 consonant phonemes / j, l, r, w / that occur as the second member of consonant clusters and only consonant phoneme / w / can occur as the third member of consonant clusters.

2) The consonant phonemes / l, r, j / can be both the first member of the cluster ($C_1$) and as the second member of the consonant cluster ($C_2$).

3) The first and the second members of the cluster cannot be the same phonemes, there is no /jj, ll, rr, lll, llw / cluster in this study.

4) In -l- and -r- clusters, only bilabial plosives and velar plosives / p, p\textsuperscript{h}, k, k\textsuperscript{h} / occur as the first member of the cluster of this kind.

5) Only / k, k\textsuperscript{h} / occurs with all of the consonant clusters / j, l, r, w /.

6) Only / p\textsuperscript{h}, k\textsuperscript{h} / occur with third member of consonant cluster / w /.

7) In -w- clusters, almost consonant phonemes, except / p, d, n, h, w / occur as the first member of the consonant clusters.
<table>
<thead>
<tr>
<th></th>
<th>i</th>
<th>e</th>
<th>ə</th>
<th>u</th>
<th>o</th>
<th>u</th>
<th>o</th>
<th>ə</th>
<th>a'</th>
<th>a'</th>
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Table 12: The co-occurrence of initial consonant clusters and vowels of the syllable.

+ : occurrence

(blank) : non-occurrence
The co-occurrence of initial consonant clusters and vowels of the syllable in Table 12 shows that

1. There are 7 vowel phonemes /i, e, a, u, ɔ, ɔ', aʊ/ that occur after consonant clusters.
2. The vowel phonemes, which never occur with consonant clusters, are /e, u, ɔ, ɔ'/.
3. The vowel phoneme, which has the widest distribution with consonant clusters in the syllable, is /i/.
4. The vowel phoneme which has the narrowest distribution with consonant clusters in the syllable is /aʊ/. It only occurs with consonant clusters /pj, klw/.
5. There are 33 initial consonant clusters /pj, dj, cj, cʃ, kj, kʃ, nj, rj, pl, pʃ, kl, kʃ, pr, pʃ, kr, kʃ, bw, tw, tʃ, cʃ, kw, kʃ, ʃw, mw, njw, sw, jw, lw, rw, pʃw, kʃw/ that occur with the vowel phonemes.
6. The consonant cluster, which has the widest distribution with vowel phoneme in major syllable, is /pʃ/. 
7. The consonant clusters which have the narrowest distribution with vowel phoneme in major syllable are /pj, dj, cj, nj, kl, kr, tw, ʃw, sw, jw, pʃw/.
8. Only two consonant phonemes /pʃ, kʃ/ can occur with the second member of consonant clusters /rw/.
9. /kʃw/ can occur with vowel phoneme /i, a/ whereas /pʃw/ can occur with only vowel phoneme /i/.
7.3.2 Consonant Formational Statement

All consonant phonemes in the Huay Salop Pa-O language are produced with egressive airstream mechanism.

7.3.2.1 Plosives

Plosive is a term used in phonetic classification of consonant sounds on the basis of their manner of articulation. It refers to a sound made when a complete closure in the vocal tract is suddenly released, the air pressure which has built up behind the closure rushes out with an explosive sound (Crystal 1991:266).

/p/ is a voiceless unaspirated bilabial plosive phoneme which is realized as follows:

[p] a voiceless unaspirated bilabial plosive. It occurs in the initial and final position of the syllable and occurs as the first element of the consonant cluster.

Examples:

\[
\begin{align*}
\text{/pʰ/} & \quad [\text{pʰ}] \\
\text{/pʰa₁/} & \quad \left[\text{pʰa}_1^{45}\right] \\
\text{/pʰat₁/} & \quad \left[\text{pʰat}^{45}_1\right] \\
\text{/pʰu₁/} & \quad \left[\text{pʰu}_1^{42}\right] \\
\text{/pʰøŋ₃/} & \quad \left[\text{pʰøŋ}^{33}_3\right] \\
\text{/pʰtʰi⁴/} & \quad \left[\text{pʰtʰi}^{21}_3\right] \\
\text{/pʰri³/} & \quad \left[\text{pʰri}^{33}_3\right]
\end{align*}
\]

“low”

“read”

“younger sibling”

“pot”

“gondola”

“tongue”
/pʰlain/   [pʰlain]  “to wash”  /pʰrwi/   [pʰrwi]  “to plane”

/tʰ/ is a voiced unaspirated bilabial plosive phoneme which is realized as follows:
[b] a voiced unaspirated bilabial plosive. It occurs in the initial position of the syllable and occurs as the first element of the consonant cluster.

Examples:

/t/ is a voiceless unaspirated alveolar plosive phoneme which is realized as follows
[t] a voiceless unaspirated alveolar plosive. It occurs in the initial and final position of the syllable and occurs as the first element of the consonant cluster.

Examples:

/tʰ/ is a voiceless aspirated alveolar plosive phoneme which is realized as follows:
[tʰ] a voiceless aspirated alveolar plosive. It occurs in the initial position of the syllable and occurs as the first element of the consonant cluster.

Examples:
/tʰut/   [tʰut]  “flow”  /tʰɛŋ/   [tʰɛŋ]  “to blink”
/tʰiː/  [tʰiː:]  “to see”
/ɬʰoʔ/  [ɬʰoʔ:]  “pig”
/tʰoŋ/  [tʰoŋ]  “walk”
/tʰwiː/  [tʰwiː:]  “dog”
/kiː tʰjáʔ/  [kiː tʰjáʔ]  “thigh”

/d/ is a voiced unaspirated alveolar plosive phoneme which is realized as follows:
[d] a voiced unaspirated alveolar plosive. It occurs in the initial position of the syllable and occurs as the first element of the consonant cluster.

Examples:
/dut/  [dut]  “to wipe”
/dau/  [dau]  “liquor”
/diː/  [diː]  “egg”
/doʔ/  [doʔ]  “say”
/dan/  [dan]  “thick”
/djeʔ/  [djeʔ]  “wing”
/djaʔ/  [djaʔ]  “floor”

/c/ is a voiceless unaspirated palatal plosive phoneme which is realized as follows:
[c] a voiceless unaspirated palatal plosive. It occurs in the initial position of the syllable and occurs as the first element of the consonant cluster.

Examples:
/cok/  [cok]  “suck”
/cɔʔ/  [cɔʔ]  “spoon”
/coon/  [coon]  “straight”
/cuʔ/  [cuʔ]  “hand”
/caʔ/  [caʔ]  “chew”
/cwiʔ/  [cwiʔ]  “to hook”
/cjaʔ/  [cjaʔ]  “to pare”
/cwaʔ/  [cwaʔ]  “fang”
/cjoŋ/  [cjoŋ]  “temple”

/cʰ/ is a voiceless aspirated palatal plosive phoneme which is realized as follows:
[cʰ] a voiceless aspirated palatal plosive. It occurs in the initial position of the syllable and occurs as the first element of the consonant cluster.

Examples:  /cʰet/  [cʰet]  “to spray”
/cʰemʔ/  [cʰemʔ]  “to stamp foot”
/cʰaʔ/  [cʰaʔ]  “star”
/cʰoʔ/  [cʰoʔ]  “hard”
/ k/ is a voiceless unaspirated velar plosive phoneme which is realized as follows:

[k] a voiceless unaspirated velar plosive. It occurs in the initial and final position of the syllable and occurs as the first element of the consonant cluster.

Examples:

/ ka?/ [ ka? ] “full”
/ ka?/ [ ka? ] “to step across”
/ kɔ/ [ kɔ ] “trousers”
/ kɔʔ/ [ kɔʔ ] “piece (cN)”
/ keʔ/ [ keʔ ] “tiger”
/ pok/ [ pok ] “dull”
/ kak/ [ kak ] “jaw”
/ lak/ [ lak ] “sharp”
/ kleʔ/ [ kleʔ ] “turtle”
/ krɔʔ/ [ krɔʔ ] “to shave”
/ kwʔ/ [ kwʔ ] “chameleon”
/ kjaʔ/ [ kjaʔ ] “skilful”

/ kʰ/ is a voiceless aspirated velar plosive phoneme which is realized as follows:

[kʰ] a voiceless aspirated velar plosive. It occurs in the initial position of the syllable and occurs as the first element of the consonant cluster.

Examples:

/ kʰaʔ/ [ kʰaʔ ] “shoot”
/ kʰam/ [ kʰam ] “rain”
/ kʰɛn/ [ kʰɛn ] “chili”
/ kʰaʔ/ [ kʰaʔ ] “direction”
/ kʰum/ [ kʰum ] “hold”
/ kʰlen/ [ kʰlen ] “to hunt”
/ kʰroŋ/ [ kʰroŋ ] “purple”
/ kʰwaʔ/ [ kʰwaʔ ] “cold”
/ kʰjeʔ/ [ kʰjeʔ ] “gibbon”

/ʔ/ is a voiceless glottal plosive phoneme which is realized as follows:

[ʔ] a voiceless glottal plosive. It occurs in the initial and final position of the syllable and occurs as the first element of the consonant cluster.
Examples:

/ʔ?e?/ \quad [ h^4 ] \quad “tear”
/ʔ?u? hu4/ \quad [ h^4 ] \quad “stupid”
/ʔu?/ \quad [ h^3 ] \quad “to bark”
/ʔop/ \quad [ h^3 ] \quad “squat”
/ʔe?/ \quad [ h^3 ] \quad “ginger”
/ʔa?/ \quad [ h^3 ] \quad “to break”
/ʔa?/ \quad [ h^3 ] \quad “to fall”
/ʔe?/ \quad [ h^3 ] \quad “to chop”
/ʔu?/ \quad [ h^3 ] \quad “to cut”
/ʔu?/ \quad [ h^3 ] \quad “to call”
/ʔwi3/ \quad [ h^3 ] \quad “delicious”
/ʔwar/ \quad [ h^3 ] \quad “to drink”

7.3.2.2 Fricatives

Fricative is a term used in the phonetic classification of consonant sounds on the basis of manner of articulation: also sometimes called spirant, it refers to sounds made when two organs come so close together that the air moving between them produces audible friction. There is no complete closure between the organs (in which case a plosive articulation would be produced): there is simply a stricture (Crystal 1991:143)

/s/ is a voiceless unaspirated alveolar fricative phoneme which is realized as follows:

[ s ] a voiceless unaspirated alveolar fricative. It occurs in the initial position of the syllable and occurs as the first element of the consonant cluster.

Examples:

/su?/ \quad [ h^3 ] \quad “cut”
/se2/ \quad [ h^3 ] \quad “horse”
/sun/ \quad [ h^3 ] \quad “liver”
/sa4/ \quad [ h^3 ] \quad “plantation”
/se4/ \quad [ h^3 ] \quad “dry”
/swi3/ \quad [ h^3 ] \quad “blood”
/sje?/ \quad [ h^3 ] \quad “insect”

/h/ is a glottal fricative phoneme which is realized as follows:

[h] a glottal fricative. It occurs in the initial position of the syllable.

Examples:

/he?/ \quad [ h^4 ] \quad “call”
/ha?/ \quad [ h^4 ] \quad “collide with”
/ho3/ \quad [ h^3 ] \quad “read”
7.3.2.3 Nasals

Nasal is a term used in the phonetic classification of speech sounds on the basis of manner of articulation: it refers to sounds produced while the soft palate is lowered to allow an audible escape of air through the nose. Both consonants and vowels may be articulated in this way. Nasal consonants occur when there is a complete closure in the mouth, and all the air thus escapes through the nose (Crystal 1991: 229)

/m/ is a voiced bilabial nasal phoneme which is realized as follows: 

[ṃ] a voiced bilabial nasal. It occurs in the initial and final position of the syllable and occurs as the first element of the consonant cluster.

Examples:
/ma1/  
/me2/  
/me3/  
/meʔ4/  
/məŋ/  
/kim/  
/pʰom/  
/cʰom/  
/tom/  
/mwa1/  

/n/ is a voiced alveolar nasal phoneme which is realized as follows:

[n] a voiced alveolar nasal. It occurs in the initial and final position of the syllable and occurs as the first element of the consonant cluster.

Examples: /naʔ/  
/nən/  
/ni/  
/naʔ/  
/ni/  
/tʰan/  
/pen/  
/ŋan/  
/pʰan/  
/njeʔ/
/ŋ/ is a voiced velar nasal phoneme which is realized as follows:

[ŋ] a voiced velar nasal. It occurs in the initial and final position of the syllable and occurs as the first element of the consonant cluster.

Examples:

/ŋɔk/ /ŋɔk\textsuperscript{45} / “nod”
/ŋɔ/ /ŋɔ\textsuperscript{42} / “fry”
/ŋɔŋ/ /ŋɔŋ\textsuperscript{33} / “neck”
/ŋaŋ/ /ŋaŋ\textsuperscript{21} / “laugh”
/ŋaŋ/ /ŋaŋ\textsuperscript{21} / “yawn”
/ŋɔŋ/ /ŋɔŋ\textsuperscript{45} / “short”
/ŋaŋ/ /ŋaŋ\textsuperscript{42} / “sit”
/ŋɔŋ/ /ŋɔŋ\textsuperscript{33} / “color”
/ŋaŋ/ /ŋaŋ\textsuperscript{21} / “walk”
/ŋaŋ/ /ŋaŋ\textsuperscript{42} / “shell”
/ŋaŋ/ /ŋaŋ\textsuperscript{33} / “far”

7.3.2.4 Lateral

Lateral is a term used in the phonetic classification of consonant sounds on the basis of manner of articulation: it refers to any sound where the air escapes around one or both sides of a closure made in the mouth, as in the various types of “l” sound in English. Air released around only one side of the tongue produces unilateral sounds; around both sides bilateral sounds (Crystal 1991:195)

/l/ is a voiced alveolar lateral phoneme which is realized as follows:

[l] a voiced alveolar lateral. It occurs in the initial position and as the second element of the consonant cluster.

Examples:

/leŋ/ /leŋ\textsuperscript{45} / “burn”
/leŋ/ /leŋ\textsuperscript{42} / “home”
/leŋ/ /leŋ\textsuperscript{33} / “flow”
/leŋ/ /leŋ\textsuperscript{21} / “clever”
/leŋ/ /leŋ\textsuperscript{21} / “to scare”
/leŋ/ /leŋ\textsuperscript{45} / “to rip out”
/leŋ/ /leŋ\textsuperscript{45} / “turtle”
/leŋ/ /leŋ\textsuperscript{42} / “to wash”
/leŋ/ /leŋ\textsuperscript{33} / “wheat”
/leŋ/ /leŋ\textsuperscript{21} / “to roast”
7.3.2.5 Trill

Trill is a term used in the phonetic classification of consonant sounds on the basis of their manner of articulation: also known as a "trilled" consonant or a roll, "trill" refers to any sound made by rapid tapping of one organ of articulation against another (Crystal 1991:361).

/τ/ is a voiced alveolar trill phoneme which is realized as follows:

[r] a voiced alveolar trill. It occurs in the initial position and as the second element of the consonant cluster.

Examples:

\[
\begin{array}{lll}
/ ræ^1/ & [\text{ræ}^{42}] & \text{"sing"} \\
/ re^2/ & [\text{re}^{42}] & \text{"rattan"} \\
/ ra^3/ & [\text{ra}^{33}] & \text{"cut"} \\
/ ro^4/ & [\text{ro}^{21}] & \text{"stab"} \\
/ rɔn^4/ & [\text{rɔn}^{21}] & \text{"silver"} \\
/ rju^1/ & [\text{rju}^{45}] & \text{"cool"} \\
/ rwi^2/ & [\text{rwi}^{42}] & \text{"root"} \\
/ kɾo^3/ & [\text{kɾo}^{45}] & \text{"to shave"} \\
/ pʰra^2/ & [\text{pʰra}^{42}] & \text{"old-age"} \\
/ pra^3/ & [\text{pra}^{33}] & \text{"arrow"} \\
/ pʰran^4/ & [\text{pʰra}^{21}] & \text{"poor"} \\
\end{array}
\]

7.3.2.6 Semi-Vowels

Semi-vowels is a term used in the classification of consonant sounds on the basis of their manner of articulation. It refers to a sound functioning as a consonant but lacking the phonetic characteristics normally associated with consonants (such as friction or closure); instead, its phonetically that of a vowel; though, occurring as it dose at the margin of a syllable, its duration is much less than that typical of vowel (Crystal 1992:313).

/w/ is a voiced bilabial semi-vowels phoneme which is realized as follows:

[w] a voiced bilabial semi-vowels. It occurs in the initial position and as the second or third element of the consonant cluster.

Examples:
/ waʔ/ [ waʔ̊45 ] “fell down”
/ waŋ/ [ waŋ ə42 ] “blow”
/ wa/ [ wa:33 ] “husband”
/ waʔ/ [ waʔ̊21 ] “snow”
/ waŋ/ [ waŋ ə31 ] “strike by rod”
/ twak/ [ twak 45 ] “to count”
/ cwa/ [ cwa:32 ] “fang”
/ tʰwi/ [ tʰwi:33 ] “dog”
/ bwa/ [ bwa:21 ] “full”
/ pʰrwi/ [ pʰrwi:33 ] “to plane”

/j/ is a voiced palatal semi-vowels phoneme which is realized as follows:

[j] a voiced palatal semi-vowels. It occurs in the initial position and as the second element of the consonant cluster.

Examples.
/ jəŋ/ [ jəŋ̊45 ] “to wave”
/ ju/ [ ju:32 ] “rat”
/ ja/ [ ja:33 ] “flesh”
/ jəʔ/ [ jəʔ̊21 ] “to pant”
/ jən/ [ jən̊21 ] “quiet”
/ bjək/ [ bjək̊45 ] “wet”
/ rjə/ [ rjə:32 ] “hot”
/ dja/ [ dja:33 ] “floor”
/ kjaʔ/ [ kjaʔ̊21 ] “to fasten”
7.3.3 Consonant Phoneme Contrast

All consonants described above are phonemically contrastive in Pa-O. The suspect pairs of consonants, which are contrastive in identical environments (IE), are shown below together with some examples:

7.3.3.1 Initial Consonants

Examples:

/p/ - /pʰ/  
/pot¹/  
/pʰot¹/  
“brush”  
“sweep”

/p/ - /b/  
/paŋ⁴/  
/baŋ⁴/  
“branch”  
“spear”

/b/ - /pʰ/  
/ba³/  
/pʰa³/  
“cut by knife”  
“ashes”

/b/ - /m/  
/bogo⁴/  
/moŋ⁴/  
“add fuel”  
“raw”

/b/ - /w/  
/ba¹/  
/wa³/  
“bean”  
“bamboo”

/t/ - /tʰ/  
/teŋ²/  
/tʰεŋ²/  
“province”  
“blink”

/t/ - /d/  
/tau²/  
/dau²/  
“no, not”  
“liquor”

/d/ - /tʰ/  
/dɔʔ⁴/  
/tʰɔʔ⁴/  
“say”  
“pig”

/d/ - /n/  
/di³/  
/ni³/  
“egg”  
“day”

/d/ - /l/  
/dɛn⁴/  
/len⁴/  
“cooked rice”  
“to scare”

/d/ - /ɾ/  
/dɔʔ⁴/  
/rɔʔ⁴/  
“say”  
“stab”
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<tr>
<th>Consonant(s)</th>
<th>Example(s)</th>
<th>Meaning</th>
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<td>&quot;tie, buckle&quot;</td>
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<td>/caŋ¹⁴/</td>
<td>&quot;trunk (cN)&quot;</td>
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<td>&quot;chin&quot;</td>
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<td></td>
<td>/ka¹⁴/</td>
<td>&quot;bitter&quot;</td>
</tr>
<tr>
<td>/k/-/ʔ/</td>
<td>/kən³/</td>
<td>&quot;trousers&quot;</td>
</tr>
<tr>
<td></td>
<td>/kən³⁴/</td>
<td>&quot;expose to the sun&quot;</td>
</tr>
<tr>
<td>/kʰ/-/ʔ/</td>
<td>/kʰwi³/</td>
<td>&quot;seed&quot;</td>
</tr>
<tr>
<td></td>
<td>/kʰwi³⁴/</td>
<td>&quot;delicious&quot;</td>
</tr>
<tr>
<td>/kʰ/-/h/</td>
<td>/kʰam³/</td>
<td>&quot;gold&quot;</td>
</tr>
<tr>
<td></td>
<td>/kʰam³⁴/</td>
<td>&quot;ground&quot;</td>
</tr>
<tr>
<td>/m/-/n/</td>
<td>/mun³/</td>
<td>&quot;drunk&quot;</td>
</tr>
<tr>
<td></td>
<td>/nun³⁴/</td>
<td>&quot;push&quot;</td>
</tr>
<tr>
<td>/m/-/ŋ/</td>
<td>/ma³/</td>
<td>&quot;mother&quot;</td>
</tr>
<tr>
<td></td>
<td>/mə¹⁴/</td>
<td>&quot;cry&quot;</td>
</tr>
<tr>
<td>/m/-/w/</td>
<td>/ma⁴/</td>
<td>&quot;false&quot;</td>
</tr>
<tr>
<td></td>
<td>/wa⁴⁴/</td>
<td>&quot;bee-hive&quot;</td>
</tr>
<tr>
<td>/n/-/ŋ/</td>
<td>/naŋ⁴/</td>
<td>&quot;knife&quot;</td>
</tr>
<tr>
<td></td>
<td>/naŋ⁴⁴/</td>
<td>&quot;laugh&quot;</td>
</tr>
<tr>
<td>/n/-/j/</td>
<td>/naŋ⁴/</td>
<td>&quot;knife&quot;</td>
</tr>
<tr>
<td></td>
<td>/jaŋ⁴⁴/</td>
<td>&quot;old and out of use&quot;</td>
</tr>
<tr>
<td>/s/-/tʰ/</td>
<td>/səŋ⁴/</td>
<td>&quot;side&quot;</td>
</tr>
<tr>
<td></td>
<td>/təŋ⁴⁴/</td>
<td>&quot;walk&quot;</td>
</tr>
<tr>
<td>/s/-/h/</td>
<td>/son⁴/</td>
<td>&quot;strengthen&quot;</td>
</tr>
<tr>
<td></td>
<td>/hən⁴⁴/</td>
<td>&quot;hear&quot;</td>
</tr>
<tr>
<td>/h/-/l/</td>
<td>/ho³¹/</td>
<td>&quot;belly&quot;</td>
</tr>
<tr>
<td></td>
<td>/lo³¹⁴/</td>
<td>&quot;bury&quot;</td>
</tr>
<tr>
<td>/r/-/l/</td>
<td>/ru¹/</td>
<td>&quot;snake&quot;</td>
</tr>
<tr>
<td></td>
<td>/lu¹⁴/</td>
<td>&quot;ghost&quot;</td>
</tr>
</tbody>
</table>
7.3.3.2 Final Consonants

Examples:

/s/ - /p/  
/ ʔɔʔ/  
/ ʔɔp/  
"vomit"

/s/ - /t/  
/ ʔoʔ/  
/ ʔot/  
"to plant"

/s/ - /k/  
/ ʔoʔ/  
/ ʔok/  
"to break"

/t/ - /k/  
/ kuʔ/  
/ kuko/  
"nine"

/m/ - /n/  
/ ʔam/  
/ ʔan/  
"fear"

/m/ - /ŋ/  
/ ʔoŋ/  
/ ʔoŋ/  
"narrow"

/m/ - /ŋ/  
/ ʔoŋ/  
/ ʔoŋ/  
"mortar"

/n/ - /ŋ/  
/ man/  
/ man/  
"same"

/ŋ/ - /ŋ/  
/ man/  
/ man/  
"bad"

7.4 Vowels

Vowels can be defined in terms of both phonetics and phonology. Phonetically, they are sounds articulated without a complete closure in the mouth or a degree of narrowing which would produce audible friction; the air escapes evenly over the center of the tongue. If air escapes solely through the mouth, the vowels are said to be oral; if some air simultaneously released through the nose, the vowels are nasals. In addition to this, in a phonetic classification of vowels, reference would generally be made to two variables; the first in which easily describable, the second much less so: (a) the position of the lips—whether rounded, spread, or neutral; (b) the part of the tongue raised, and the height to which it moves. From a phonological point of view, vowels are those units, which function at the center of the syllables (Crystal 1992:376)

In Huay Salop Pa-O language, there is no contrast between short and long vowels, therefore, the length of vowels is not phonemic.
The length of vowels in this language is predictable by syllable types. The closed syllable with final voiceless stops / p, t, k, ? / bears the shortest nuclei. It is the voiceless final consonant that conditions the vowel immediately preceding it to be shorter. Respectively, it is the voiced final consonant that conditions the vowel immediately preceding it to be longer. Therefore, the closed syllable with final voiced nasals / m, n, ŋ / bears longer nuclei than the closed syllable with final stops, but shorter than the open one.

There are 9 single vowels and two glided vowels function as the syllable nucleus. The vowels are / i, e, ə, a, u, o, o, a¹, a” / as follows:

<table>
<thead>
<tr>
<th>Tongue position</th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tongue height</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half-closed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half-open</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glided Vowel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i</td>
<td>u</td>
<td>u</td>
</tr>
<tr>
<td></td>
<td>e</td>
<td>ə</td>
<td>o</td>
</tr>
<tr>
<td></td>
<td>ə</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a¹</td>
<td></td>
<td>a”</td>
</tr>
</tbody>
</table>

Table 13: Pa-O vowel phonemes
7.4.1 Classification by Movement of the Tongue

The vowel phonemes can be divided into two sub-classes: single vowel and glide.

7.4.1.1 Single Vowel

All 9 single vowels are oral vowels, which occur as syllable nucleus. They are / i, e, ε, u, ø, a, u, o, Ω /.

Examples:

\[
\begin{align*}
  i- & /\text{di}^3/ \quad [\text{di}^{33}] \quad \text{"egg"} \\
  e- & /\text{me}^2/ \quad [\text{me}^{42}] \quad \text{"tail"} \\
  ε- & /\text{cεẹŋ}^3/ \quad [\text{cɛẹŋ}^{33}] \quad \text{"coat"} \\
  u- & /\text{kʰum}^4/ \quad [\text{kʰu}^{21}] \quad \text{"hold"} \\
  ø- & /\text{nøm}^3/ \quad [\text{nøm}^{33}] \quad \text{"smell"} \\
  a- & /\text{kak}^5/ \quad [\text{kak}^{45}] \quad \text{"jaw"} \\
  u- & /\text{ʔu}^3/ \quad [\text{ʔu}^{33}] \quad \text{"bark"} \\
  o- & /\text{pʰɔ}^2/ \quad [\text{pʰɔ}^{42}] \quad \text{"cow"} \\
  ø- & /\text{kɔŋ}^4/ \quad [\text{kɔŋ}^{21}] \quad \text{"mountain"}
\end{align*}
\]

7.4.1.2 Glided Vowels

There are 2 glides. / a¹, a² /.

Examples:

\[
\begin{align*}
  a^1- & /\text{ka}^{11}/ \quad [\text{ka}^{145}] \quad \text{"diligent"} \\
  a^2- & /\text{ka}^{u3}/ \quad [\text{ka}^{u33}] \quad \text{"flower"}
\end{align*}
\]
7.4.2 Formational Statement of Main vowels

7.4.2.1 Single Vowels

Single vowels or monophthong is a term used in the phonetic classification of vowel sound on the basis of their manner of articulation. It refers to a vowel where there is no qualitative change in quality during a syllable (Crystal 1992: 105).

In Huay Salop Pa-O language, all vowels are basically pronounced with medium length. There is no contrast between short and long vowels, therefore, the length of vowels is not phonemic. Single vowels will be discussed together as follows:

/\i/ is a closed front unrounded vowel phoneme which is realized as follows:

[i] a closed front unrounded vowel. It occurs in syllables with all tones.

Examples:
/ cʰi\i^1 /  [ cʰi\i^45 ]  “squeeze”
/ pi\i^2 /  [ pi\i^42 ]  “bake”
/ di^3 /  [ di^33 ]  “egg”
/ kʰa\ʲi^3 /  [ kʰa\ʲi^33 ]  “foot”
/kip^4 /  [ kip^21 ]  “pinch”
/tʰi^4 /  [ tʰi^21 ]  “water”

/\e/ is a half-closed front unrounded vowel phoneme which is realized as follows:

[e] a half-closed front unrounded vowel. It occurs in syllables with all tones.

Examples:
/ be\e^1 /  [ be\e^45 ]  “fat”
/ ne\e^1 /  [ ne\e^45 ]  “tea”
/me^2 /  [ me^42 ]  “tail”
/de^3 /  [ de^33 ]  “frog”
/cʰe\e^4 /  [ cʰe\e^21 ]  “few”
/ce^4 /  [ ce^21 ]  “unloose”

/\e/ is a half-open front unrounded vowel phoneme which is realized as follows:

[e] a half-open front unrounded vowel. It occurs in syllables with all tones.

Examples:
/pʰe\e^1 /  [ pʰe\e^45 ]  “page (cN)”
/be\e^2 /  [ be\e^42 ]  “spend”
/cʰe\e^3 /  [ cʰe\e^33 ]  “coat”
/me\e^4 /  [ me\e^21 ]  “eye”
/dɛn^4 /  [ dɛn^21 ]  “cooked rice”
/u/ is a closed central rounded vowel phoneme which is realized as follows:

[ʊ] a closed central rounded vowel. It occurs in syllables with all tones.

Examples:

/ tʰûːl/  [tʰûːl⁴⁵]  “pull up”
/ hûː /  [hûː⁴⁵]  “collide with”
/ bûː /  [bûː³₃]  “to dip up”
/ tuk⁴ /  [tuk²¹]  “fight in war”
/ kʰum⁴ /  [kʰum²¹]  “hold”

/ə/ is a mid central unrounded vowel phoneme which is realized as follows:

[a] a mid central unrounded vowel. It occurs in syllables with all tones.

Examples:

/ rət¹ /  [rət⁴⁵]  “sing”
/ do¹ /  [daː⁴⁵]  “to cook”
/ məŋ² /  [məŋ⁴²]  “gong”
/ nom³ /  [nəm³₃]  “smell”
/ cʰəŋ⁴ /  [cʰəŋ²¹]  “hard”
/ bən⁴ /  [bən²¹]  “same”

/a/ is an open central unrounded vowel phoneme which is realized as follows:

[a] an open central unrounded vowel. It occurs in syllables with all tones.

Examples:

/ kak¹ /  [kak⁴⁵]  “jaw”
/ cʰan² /  [cʰaː̂n⁴²]  “cup”
/ ma³ /  [maː³₃]  “do”
/ pat⁴ /  [pat²¹]  “kick”
/ bəŋ⁴ /  [bəŋ²¹]  “spear”

/u/ is a closed back rounded vowel phoneme which is realized as follows:

[ʊ] a closed back rounded vowel. It occurs in syllables with all tones.

Examples:

/ tʰut¹ /  [tʰut⁴⁵]  “flow”
/ pʰu² /  [pʰu:⁴²]  “younger sibling”
/ ?u³ /  [ʔuː³₃]  “bark”
/ munt⁴ /  [mʊn²¹]  “drunk”
/ cu⁴ /  [cu:²¹]  “hand”

/o/ is a half-closed back rounded vowel phoneme which is realized as follows:

[o] a half-closed back rounded vowel. It occurs in syllables with all tones.

Examples:

/ pok¹ /  [pok⁴⁵]  “dull”
/ pʰo² /  [pʰo:²⁵]  “cow”
/ doŋ³ /  [doŋ³₃]  “hit by hand”
/ cop⁴ /  [cop²¹]  “play”
/ boŋ¹ /  [boŋ²¹]  “add fuel”
/ə/ is a half-open back rounded vowel phoneme which is realized as follows:

[ə] a half-open back rounded vowel. It occurs in syllables with all tones.

Examples:
/ət/ [ ʰət ʰət ] "brush"
/ə̰n̩/ [ ʰə̰n̩ ʰə̰n̩ ] "pound with pestle"
/ə/ [ ʰə ʰə ] "read"
/pə/ [ ʰpə ʰpə ] "vomit"

7.4.2.2 Glided Vowels

There are two glides in Huay Salop Pa-O language. They are /a/, a"/ as follows:

/a/ is a low open central vowel gliding off to a high front unrounded vowel phoneme which is realized as follows:

[a] a low open central vowel gliding off to a high front unrounded vowel.

It occurs in syllables with all tones

Examples:
/ka/ [ ʰka ʰka ] "diligent"
/cwa/ [ ʰcwa ʰcwa ] "fang"
/kwa/ [ ʰkwa ʰkwa ] "turn"
/ka/ [ ʰka ʰka ] "fluid"
/bwa/ [ ʰbwa ʰbwa ] "full"

/a/ is a low open central vowel gliding off to a high back rounded vowel phoneme which is realized as follows:

[a] a low open central vowel gliding off to a high back rounded vowel. It occurs in syllables with all tones.

Examples:
/ʔa/ [ ʰʔa ʰʔa ] "to be"
/pja/ [ ʰpja ʰpja ] "fun"
/ta/ [ ʰta ʰta ] "not"
/ka/ [ ʰka ʰka ] "flower"
/ha/ [ ʰha ʰha ] "good"
7.4.3 Vowel Phoneme Contrast

All vowels described above are phonemically contrastive in Pa-O. The suspect pairs of vowels, which are contrastive in identical environments (IE), are shown below together with some examples:

Examples:

/i/ - /e/       / di³ /          “egg”
               / de³ /          “frog”
/i/ - /u/       / tʰi¹ /        “umbrella”
               / tʰu¹ /        “heavy”
/e/ - /ɛ/       / meʔ⁴ /        “turmeric”
               / meʔ⁴ /        “eye”
/e/ - /ə/       / beŋ³ /        “lie down”
               / bəŋ³ /        “take off”
/u/- /ʊ/        / ru¹ /         “born”
               / ru¹ /         “snake”
/u/ - /ə/ - /a/ / mu¹ /         “sun”
               / ma¹ /         “mother”
               / ma¹ /         “for wind to blow”
/a/- /ɛ/        / nan³ /        “suck”
               / nen³ /        “breast”
/a/- /ɔ/        / saʔ¹ /        “mind”
               / soʔ¹ /        “add”
/u/- /o/        / kʰu³ /        “dig”
               / kʰɔ³ /        “couple of shoes (cN)”
/o/- /ɔ/        / kʰɔŋ³ /        “egg-plant”
               / kʰɔŋ³ /        “prawn”
/a³/- /a⁴/     / ka³ /         “fluid (adj)”
               / ka⁴³ /        “flower”
7.5 Tonemes

There are four contrastive tonemes in Pa-O language spoken at Huay Salop village, three contour tones: high rising, high falling, and low falling, and one level tone: mid level. The open syllables and closed syllables with final nasals / m, n, ŋ / can bear all four of them while the closed syllables with final stops / p, t, k, ? / occur only with the high rising and the low falling tones. Pa-O tones function, together with vowels, as the syllable-nucleus.

<table>
<thead>
<tr>
<th>Phonemic Notation</th>
<th>Description</th>
<th>Tone Stick</th>
<th>Phonetic Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>/1/</td>
<td>high-rising</td>
<td>[]</td>
<td>[ 45 ]</td>
</tr>
<tr>
<td>/2/</td>
<td>high-falling</td>
<td>[]</td>
<td>[ 42 ]</td>
</tr>
<tr>
<td>/3/</td>
<td>mid-level</td>
<td>[]</td>
<td>[ 33 ]</td>
</tr>
<tr>
<td>/4/</td>
<td>low-falling</td>
<td>[]</td>
<td>[ 21 ]</td>
</tr>
</tbody>
</table>

Table 14: Pa-O Tonemes
7.5.1 Formational Statement of Tone

/1/ [45], a high-rising tone. Its tonal figure starts below high-level and then moves up quickly to high-level. It occurs with the open syllable and the closed syllable.

Examples:

/ doʔ1/ [dɔʔ 45] “cover”
/pɔt1/ [pɔt 45] “brush”
/ʔam1/ [ʔә m 45] “eat”
/kʰrɔŋ1/ [kʰrɔŋ 45] “purple”
/tʰuŋ1/ [tʰuŋ 42] “heavy”
/maŋ1/ [maŋ 4] “mother”

/2/ [42], a high-falling tone. Its tonal figure starts from high-level and then moves down quickly to low-level. It occurs only with the open syllable and the closed syllable with final nasals /m, n, ŋ/

Examples:

/kʰam2/ [kʰam 42] “rain”
/nan2/ [naŋ 42] “breast”
/mañ2/ [maŋ 42] “gong”
/ciŋ2/ [ciŋ 42] “permeate”
/meŋ2/ [meŋ 42] “tail”
/daŋ2/ [daŋ 42] “liquor”

/3/ [33], a mid-level tone. Its tonal figure starts from mid-level, and continues and ends at the same range. It occurs only with the presyllable, open syllable and the closed syllable with final nasals /m, n, ŋ/.

Examples:

/ham3/ [ha’m 33] “ground”
/min3/ [mi’n 33] “name”
/beŋ3/ [beŋ 33] “lie down”
/diŋ/ [diŋ 33] “egg”
/loŋ3/ [loŋ 33] “person”
/tʰwil3/ [tʰwil 33] “dog”
/pɔ cʰu / [pɔ ci:u:] “laundar”
/pɔ si/ [pɔ si:] “wash”
/pɔ ra/ [pɔ ra:] “monk”
/4/  [ 21 ], a low-falling tone. Its tonal figure starts slightly below mid-level and then moves down softly to low-level. It occurs with the open syllable and the closed syllable.

Examples:

| /cop^4/ | [ ^cop_21 ] | “play” |
| /tʰɔŋ^4/ | [ tʰɔŋ_21 ] | “pig” |
| /lɔn^4/ | [ lɔn_21 ] | “came” |
| /kɔŋ^4/ | [ kɔŋ_21 ] | “mountain” |
| /se^4/ | [ se:21 ] | “know” |

7.5.2 Toneme Contrast

All four tonemes are contrastive in identical environment (IE) as shown bellows.

Examples

/1/ - /2/  /ju^1/  “think” /ju^2/  “rat”


/1/ - /4/  /waʔ^1/  “fell down” /waʔ^4/  “snow”

/2/ - /3/  /pʰra^2/  “old-age” /pʰra^3/  “man (cN)”

/2/ - /4/  /pʰu^2/  “younger sibling” /pʰu^4/  “rinse”


CHAPTER VIII

CONCLUSIONS AND SUGGESTIONS

FOR FURTHER STUDIES

8.1 Conclusions of Huay Salop Pa-O dialect.

Pa-O language phonology has the following characteristics:

8.1.1 Intonation

There are two types of intonation contour in Huay Salop Pa-O dialect: falling contour and rising contour. The pitch on the last syllable of the utterance characterizes them. There is no significant particular intonation pattern because tones of final particles seem to cause falling and rising of the intonation.

8.1.2 Phonological Word

The phonological word consists of one to three syllables. The main structure is monosyllabic word. Only few disyllabic words are founded while trisyllabic words are rare in this language. There are three types of the phonological word: strong stressed [s], weak stressed [w] and zero-stressed or unstressed [u]. The strong stressed syllable has more volume and greater length than the weak stressed syllable while the unstressed syllable has less volume and length than any other types. The strong stressed syllable occurs in monosyllabic word and in the last syllable of disyllabic and trisyllabic word while the weak stressed and the unstressed syllables can occur everywhere except at the end of the word.
8.1.3 Syllable

Syllable structure of this Pa-O dialect is \( C_1(C_3)(C_4)V_1^\gamma(C_2) \).

According to their structures, there are two types of structures: open syllable and closed syllable. Types of syllables are presyllable, major syllable and minor syllable. Presyllable and minor syllable occurs only in disyllabic and polysyllabic word. The presyllable consists of only /a/ and has a neutral tone. The major and minor syllables consist of all vowel phonemes and also all tonemes.

There are two classes of syllables in terms of their function: nuclear syllable and peripheral syllable. The nuclear syllable is defined as major syllable, which occurs in monosyllabic word and occurs in the last position of disyllabic and polysyllabic words. The peripheral syllable is defined as presyllable and minor syllable, which never occur in monosyllabic word and in the last position of disyllabic and polysyllabic words.

8.1.4 Phonemes

As for the phonemes, according to their function, there are three classes of phonemes in syllables: consonants, vowels, and tones.

There are 20 consonant phonemes: /p, pʰ, b, t, tʰ, d, c, cʰ, k, kʰ, ?, m, n, ɲ, s, j, h, l, r, w/, which occur in the initial position. The phonemes: /j, r, l, w/, which are the second elements of consonant clusters, the phonemes /w/, which is the third element of consonant clusters, and the phonemes /p, t, k, ?, m, n, ɲ/, which occur in the final position. The final stops: /p, t, k, ?, m, n, ɲ/ occur with only high- rising and low- falling-tones, while the final nasals: /m, n, ɲ/ occur with all tones.

There are 9 single vowel phonemes: /i, e, ē, a, ə, u, ɔ, o, ɔ/, and two glides: /a', a"/. In Huay Salop Pa-O language, there is no contrast between short and long vowels. The length of vowels in this language is predictable conditioned by the syllable structure by syllable types, therefore, the length of vowels is non-phonemic. The closed syllable with final voiceless stops /p, t, k, ?/ bears the shortest nuclei. It is the voiceless final consonant that conditions the vowel immediately preceding it to be shorter. Respectively, It is the voiced final consonant that conditions the vowel immediately preceding it to be longer. Therefore, the closed syllable with final voiced nasals /m, n, ɲ/ bears longer nuclei than the closed syllable with final stops, but shorter than the open one.

There are four tonemes: high rising [\(^{15}\)], high falling [\(^{12}\)], mid-level [\(^{33}\)], and low falling [\(^{21}\)], which occur in the Huay Salop Pa-O language. The open syllable and the closed syllable with final nasals can bear all tones of these while the closed syllable with final stops occur with only high- rising and low-falling tones.
8.2 Remarks on Pa-O Language at Huay Salop Village.

Because of having their old settlement near Shan State in Burma, there are many loan words from Shan.

With comparison to their Proto-Karen, Huay Salop Pa-O dialect is an older, purer tongue than other Karenic groups. It retains their Proto-Karen consonant phonemes, especially the final stops / p, t, k, ? / the final nasals /m, n, ŋ/ while in other Karen languages, they have been lost of final consonants and developed to be glottal vowels and nasal vowels. However, it lost of some of final stops, / th, kh, d, dh, q, g/ h/, and all of final laryngeals /?, h, q/, likes other Karen languages.

Besides, a feature of double initial consonant clusters is going to be lost in this Huay Salop Pa-O dialect. During my fieldwork, I found only four words /p²rwi³, k²rwi³, k²rwa³, ŋ² p²rwi³/, which comprise of double initial consonant clusters /rw/. And only some children can pronounce these words whereas all of the adults still can do.

Phonemically, vowels of the Karenic language are not differentiated in vowel length. In Huay Salop Pa-O language, there is no contrast between short and long vowels, therefore, the length of vowels is non phonemic. The length of vowels in this language is predictable by syllable types. The closed syllable with final voiceless stops / p, t, k, ? / bears the shortest nuclei. It is the voiceless final consonant that conditions the vowel immediately preceding it to be shorter. Respectively, It is the voiced final consonant that conditions the vowel immediately preceding it to be longer. Therefore, the closed syllable with final voiced nasals / m, n, ŋ/ bears longer nuclei than the closed syllable with final stops, but shorter than the open one. This feature can be found also in Jones’ studies.

In the Pa-O language spoken at Huay Salop Village, the high central vowel, /y/, was not founded. Notes on the data collecting at Taunggyi of R.B.Jones (1961: 116), the high central vowel, /y/, is more likely to be the high back unrounded vowel /u/, or the mid central vowel /a/, at Huay Salop Village as follows:

<table>
<thead>
<tr>
<th>Taunggyi Dialect</th>
<th>Huay Salop Dialect</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ mŋ /</td>
<td>/ mu¹ /</td>
</tr>
<tr>
<td>/ mỳ /</td>
<td>/ ma¹ /</td>
</tr>
</tbody>
</table>

“sun”

“female”

As for tonemes, there are four phonemic tones in Taunggyi dialect: high, high falling, mid, and low (R.B.Jones 1961: 72). In Huay Salop dialect, there are also four phonemic tones: high rising, high falling, mid, and low falling. The high rising and the low falling tones in Huay Salop dialect represent the high and the low tones in Taunggyi dialect. The closed syllables with final stops / p, t, k, ? / occur only with the high rising and the low falling tones. In unstressed position, final glottal is dropped, the high rising tone of closed syllables has a somewhat lower allophone. Similarly, the low falling tones has a somewhat higher allophone under the same condition.
In Proto-Karen, there are only two tones; high and low tone. Note that loss of final stops and laryngeals is frequently connected with the development of tones.

Tones in Huay Salop Pa-O dialect are analyzed by CECIL program. In the figure below, (?) represents final stops /p, t, k, ?/, (1) represents high rising tone, (2) represents high falling tone, (3) represents mid level tone, and (4) represents low falling tone.

Figure 12: The Huay Salop Pa-O tone analyzing.
8.3 Suggestions for Further Studies.

1. There are other Pa-O dialects spoken in Thailand, especially in the west. It would be interesting to study and compare them.

2. There are other Pa-O dialects spoken in Burma that have never been studied, especially the southern variety which is spoken around Thaton. It would be interesting to study and compare them with the northern variety, which is spoken around Taunggyi.

3. It would be interesting to make a comparison of the Pa-O dialects spoken in Thailand and Burma.

4. Besides a phonological study, other topics would be of interest e.g.; Pa-O Classifiers, Grammatical Studies, Sociolinguistic Study, etc.
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APPENDIX

The following Pa-O lexical items are listed with general meanings.

The entries are arranged in the following order.

1. The initial consonants are arranged according to their points of articulation, i.e. bilabial, dental, alveolar, palatal, velar, and glottal. Thus, the order of initial consonant is /p, pʰ, b, t, tʰ, d, c, cʰ, k, kʰ, ʔ, s, h, m, n, ɳ, l, r, w, j/.

2. The final consonants are arranged according to their points of articulation. Thus, the order of initial consonant is /p, t, k, ʔ, m, n, ɳ/.

3. The order of vowels is /i, ɛ, u, a, a, u, o, ə, a, a/.

4. The order of tones is /1, 2, 3, 4/.
/ p /

/pi³ /
/pi⁴ /
/peŋ² /
/pe¹ /
/pe¹ na³u³ /
/pe⁴ dan⁴ /
/pen² /
/pə teŋ³ /
/pə tʰo⁴ /
/pə cʰu¹ /
/pə kʃok⁴ /
/pə mu¹ na³u³ /
/pə ma³³ /
/pə nen¹ /
/pə si⁴ /
/pə juj² /
/pə leŋ³ /
/pə ra³ /
/pat⁴ /
/pak¹ /
/pəʔ¹ /
/pan⁴ na¹ /
/pan⁴ na¹ ja³ /
/paŋ³ ca² /
/paŋ³ le³ /
/paŋ⁴ /
/paŋ⁴ /
/pa³ pʰoŋ²/ they
/pa⁴/ it
/pok¹/ dull
/po⁴/ child
/po⁴ kʰo⁴/ son
/po⁴ mu³/ daughter
/pot¹/ brush
/pɔk¹/ low
/pɔ⁴/ float
/pleʔ⁴/ skink
/pleŋ⁴/ shoulder
/pleŋ⁴ ʔoʔ¹/ armpit
/ple³ saʔ¹/ satisfied
/pləŋ³/ wheat
/pla³/ chop
/pla⁴/ bat
/plɔŋ¹/ corn
/prə³/ arrow
/pru¹/ betel
/pjaʷu²/ . . fun.
/pjaʷi⁴ ʔaʔ¹/ lightning

/ pʰ /

/pʰit¹ tʰu³/ housefly
/pʰi⁴ bwa⁴/ nun
/pʰeʔ¹ ki³/ upside
/pʰeʔ¹ la⁴/ downside
/pʰet¹ piʔ¹/ rubber
/pʰeʔ¹/ page (cN)
/pʰen¹/ break wind
/pʰaŋ³/ pot
/pʰa¹/ low
/pʰat¹/ read
/pʰaʔ⁴/ split:
/pʰo bo³ mu¹/ union
/pʰo tʰo³/ pass away (used for monk)
/pʰaŋ³/ hemp
/pʰa¹/ stove
/pʰa³/ ashes
/pʰa⁴/ father
/pʰa⁴ pʰra²/ grandfather
/pʰa⁴ tan⁴/ parental older brother
/pʰa⁴ naŋ⁴/ father's younger brother
/pʰa⁴ naŋ⁴/ you (used with elder male)
/pʰa⁴ nau³/ elder brother sibling
/pʰu¹/ piece of clothes (cN)
/pʰu²/ younger sibling
/pʰu² po⁴ we² po⁴/ cousin
/pʰu² kʰo⁴/ younger brother
/pʰu² mu³/ younger sister
/pʰu³/ hole
/pʰu⁴/ rinse
/pʰoʔ¹/ bank up the fire
/pʰom²/ wear
/pʰon¹ su³/ those over there
/pʰo²/ cow
/pʰoʔ mi³/  bison
/pʰot¹/    sweep
/pʰot⁴/    draw
/pʰot'il⁴ / vomit
/pʰli³/    melodious
/pʰli⁴/    gondola
/pʰli⁴ tak¹/ paddle
/pʰleʔ⁴/    intestine
/pʰleʔ¹ sin²/ water lettuce
give
/pʰleʔ³/    wound by knife
/pʰlam²/    wash
/pʰloʔ¹/    animal skin
/pʰloʔ¹/    vomit
/pʰri³/    tongue
/pʰrej²/    black
/pʰre³/    buy
/pʰrau⁴/    poor
/pʰra²/    old-age
/pʰra²/    man (classifier)
/pʰrom³/    fruit (classifier)
/pʰrəj²/    mouth
/pʰrəj² bi³/ lip
/pʰrəj² tel⁴/ pen
/pʰrau²/    Shan people
/pʰwi⁴/    light
/pʰrwi³/    plane
/ b /

/bi¹/ baht
/bi³/ flat things (cN)
/beʔ¹/ fat
/βen³/ lie down
/βen³ tʰɤŋ⁳/ wake up
/βen³ tʰa³/ sleep
/βen³ maŋ²/ dream
/βen⁴/ scale
/be⁴/ spend
/βe²/ goat
/buk¹/ large
/bun³/ dip up
/bu⁴/ paddy
/bu⁴ ?en⁴/ glutinous rice
/bu⁴ ma¹/ rice
/baʔ¹/ stick
/bon³/ oily
/bon⁴/ same
/bon² kʰan⁴/ pan
/bon³/ take off
/bə⁴/ thin
/bak¹/ chop
/baʔ⁴ si³ ma¹/ hail
/ban⁴/ spear
/ba¹/ bean
/ba¹ ma³⁰/ which
/ba¹ jən⁴/ cow pea
/ba³/                  hit by knife
/ba³ ta²/               not yet
/ba⁴/                  animal (cN)
/boŋ⁴/                  add fuel
/bo³ di³/               red union
/bo⁴ ta¹⁴/              lotus
/bo²¹ le²⁴/             dirty
/bo²⁴/                  near
/ba¹³/                  cheek
/ba¹³ tu³/              zygoma
/bwa⁴/                  white
/bwa¹¹ pə ra³/          Buddha image
/bwa¹¹ bon⁴/            abbot
/bwa¹¹ caŋ³/            monk
/bwa¹¹ sjaŋ³/           novice
/bjak⁴/                 basket
/bwa¹⁴/                 full

/ti³ poŋ³/              penis
/tem²/                  write
/teŋ²/                  province
/tuh⁴/                  fight in war
/tat¹/                  rub
/tak¹/                  cupboard
/taŋ⁴/                  lap
/to ?u³/                hiccough
/tə plɛt⁴/ slide
/tə pʰe¹ ra³/ rose-apple
/tə pʰəŋ⁴/ fence
/tə pʰut¹/ worn out
/tə pʰu³/ road
/tə pʰroŋ⁴/ flutter
/tə pʰrwi³/ rope
/tə ba²¹/ hit by hand
/tə ba³/ one
/tə tʰeʔ⁴/ drop
/tə tʰeʔ⁴ laŋ³/ fall down
/tə tʰa⁴/ bridge
/tə tʰun³/ post
/tə dən⁴/ rough
/tə daʔ¹/ cut (the tree)
/tə dsk¹/ tap
/tə dəŋ⁴/ stair
/tə dwi²/ cucumber
/tə cwa¹²/ one hundred
/tə cʰi²/ ten
/tə cʰuʔ¹/ pestle
/tə cʰja⁴/ sneeze
/tə keŋ³/ winding
/tə kə de⁴/ one billion
/tə kə jaŋ³/ song
/tə kə lɪ⁴/ tick
/tə kok¹/ glass
/tə koŋ³/ bend
/tə koŋ⁴/ hill
/tə kwak⁴/ cubic
/ta ka⁴/ door
/ta ko² pʰun³/ powder
/ta ko⁴/ sweets
/ta kʰja³ tʰa³/ sneeze
/ta kʰle²/ mosquito
/ta kʰlo³/ stuff
/ta kʰraŋ⁴/ empty
/ta kʰra²/ forest
/ta kʰru⁴/ clothe
/ta kʰro²/ mango
/ta kʰra³/ scratch
/ta ?i²/ plant
/ta ?i² mu¹/ grass
/ta ?i³/ rubbish
/ta ?o²/ cloud
/ta ?o² mok⁴/ mist
/ta mak¹/ brother or sister's in law
/ta mok¹/ comb
/ta n'i³/ crush
/ta nek¹/ pungent
/ta nen²/ sob
/ta nat¹/ gun
/ta nia³/ tooth
/ta nja³/ red
/ta siŋ⁴/ one hundred thousand
/ta si²/ yellow
/ta si¹/ medicine
/ta si¹ pʰlog³/ tablet
/tə san²/
/tə sa³/
/tə sa³ nəm²/
/tə sa¹/
/tə so⁴/
/tə səŋ¹/
/tə he⁴/
/tə ham⁴/
/tə li³/
/tə li⁴/
/tə leʔ¹/
/tə reŋ⁴/
/tə reŋ⁴ suk¹ sjak¹/
/tə re³/
/tə rə¹/
/tə ra³ ni⁴/
/tə ru³ ni³/
/tə rja³/
/tə rja³ gl⁴/
/tə wən³/ — — — — — —
/tə wa³¹/
/tə jam³/
/tə ja³ cʰe³/
/tap⁴/
/tan⁴/
/tɔp¹/
/təm⁴/
/təm³/
/təŋ¹ pen²/ one million
salt
sugar
new
sweat
ten thousand
cough
yawn
wind
tasteless
to smell
one thousand
disorderly
pretty
swing
two days after tomorrow
day after tomorrow
hundred
spherical
round and flat
land leech
cauliflower fruit
streaked lightning
smooth
big
strike by hand
keep
with, and
bag
/τον^3/  copper
/τον^3 pe^4/  sachet
/τα^u^2/  not
/τωκ^1/  count
/τωα^i^3/  whip

/τ^h/

/θι^1/  umbrella
/θι^2/  masculine
/θι^3/  see
/θι^3 sa^1/  sympathize
/θι^4/  water
/θι^4 τ^h^e^3/  waterfall
/θι^4 c^h^o^1/  ice
/θι^4 k^h^o^1/  flood
/θι^4 k^l^o^4/  river
/θι^4 nον^4/  lake

/τ^e^o^1/  fall
/τ^e^o^2/  blink
/τ^u^o^1/  pull up
/τ^u^1/  heavy
/τ^e thi^3/  banana
/τ^e kοο^2/  bed
/τ^o^1 τ^e^o c^h^a^4/  sickness
/τ^o^1 oν^4 тa^4/  bench
/τ^o^ ma^3/  work
/ธำ materially
d/what
ธำ materially
d/animal
ธำ materially
d/needle
ธำ materially
d/have fever
d/fruit
ธำ materially
d/fish
ธำ materially
d/scorpion fish
ธำ materially
d/pilot fish
ธำ materially
d/cap (fish)
ธำ materially
d/serpent-head (fish)
ธำ materially
d/eel
d/come out
ธำ materially
d/hoof
ธำ materially
d/sharp
ธำ materially
d/drawing
ธำ materially
d/gold
ธำ materially
d/wall
ธำ materially
d/or not
ธำ materially
d/flow
ธำ materially
d/take
ธำ materially
d/put on (shoes)
ธำ materially
d/drum
ธำ materially
d/box (hit by fist)
ธำ materially
d/tall
ธำ materially
d/pig
ธำ materially
d/pork
ธำ materially
d/pound with pestle
ธำ materially
d/walk
ธำ materially
d/ready
ธำ materially
d/dog
\( /h\text{w}1^{4}/ \)  
right (side)

\( /h\text{wa}^{1}/ \)  
to swing

/ \text{d}  
/ \text{d}1^{1}/ 
eddy 
/ \text{d}e^{1}/ 
frog 
/ \text{d}e^{1} \text{?} \text{u}^{4} \text{?} \text{a}^{4}/ 
bull-frog 
/ \text{d}e^{1} \text{su}^{3}/ 
toad 
/ \text{d}en^{4}/ 
cooked rice 
/ \text{d}ut^{1}/ 
wipe 
/ \text{d}øn^{4}/ 
thick 
/ \text{d}øn^{1}/ 
short 
/ \text{d}ø^{1}/ 
cook 
/ \text{d}øn^{4}/ 
aluminum 
/ \text{da}^{1}/ 

can 
/ \text{d}u^{1}/ 
close 
/ \text{d}ø?^{1}/ 
open 
/ \text{d}ø?^{1}/ 
cover.

/ \text{d}ø?^{1}/ 

\( / \text{d}øn^{1}/ \) 
\( / \text{d}øn^{3}/ \) 
hit by hand

\( / \text{d}øg^{4}/ \) 
\( / \text{d}øg^{1}/ \) 
village

\( / \text{d}øg^{4} \text{e}^{b} \text{a}^{1}/ \) 
village

\( / \text{d}øg^{2}/ \) 
say

\( / \text{d}ø?^{4} \text{k}^{a} \text{j}^{2}/ \) 
answer

\( / \text{d}a^{n}^{2}/ \) 
liquor

\( / \text{d}je^{1}/ \) 
wing

\( / \text{d}ja^{1}/ \) 
floor
<table>
<thead>
<tr>
<th>/c/</th>
<th>squeeze in fist, massage</th>
</tr>
</thead>
<tbody>
<tr>
<td>/cim³/</td>
<td>permeate</td>
</tr>
<tr>
<td>/ct²/</td>
<td>soldier</td>
</tr>
<tr>
<td>/ceʔ⁴ sa²/</td>
<td>squeeze</td>
</tr>
<tr>
<td>/ceʔ¹/</td>
<td>paper</td>
</tr>
<tr>
<td>/ce³/</td>
<td>unloose</td>
</tr>
<tr>
<td>/ce⁴/</td>
<td>left</td>
</tr>
<tr>
<td>/ceŋ⁴/</td>
<td>stinging pain</td>
</tr>
<tr>
<td>/ceŋ¹/</td>
<td>corner</td>
</tr>
<tr>
<td>/ceŋ³ ca³/</td>
<td>make decision</td>
</tr>
<tr>
<td>/caŋ⁴/</td>
<td>tie, buckle</td>
</tr>
<tr>
<td>/caʔ¹/</td>
<td>new</td>
</tr>
<tr>
<td>/caʔ⁴/</td>
<td>being</td>
</tr>
<tr>
<td>/cam¹ pʰeŋ³/</td>
<td>butterfly</td>
</tr>
<tr>
<td>/cam³ ma¹ ri⁴/</td>
<td>body</td>
</tr>
<tr>
<td>/ca³/</td>
<td>sell</td>
</tr>
<tr>
<td>/cu⁴/</td>
<td>hand</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>/cu⁴ bŋ⁴/</td>
<td>upper arm</td>
</tr>
<tr>
<td>/cu⁴ tap¹/</td>
<td>fist</td>
</tr>
<tr>
<td>/cu¹ tʰom³/</td>
<td>fist</td>
</tr>
<tr>
<td>/cu⁴ deŋ⁴/</td>
<td>wrist</td>
</tr>
<tr>
<td>/cu⁴ deŋ⁴ tu³/</td>
<td>wrist bone</td>
</tr>
<tr>
<td>/cu⁴ ce³/</td>
<td>little finger</td>
</tr>
<tr>
<td>/cu⁴ coŋ⁴/</td>
<td>middle finger</td>
</tr>
<tr>
<td>/cu⁴ kæn²/</td>
<td>bracelet</td>
</tr>
<tr>
<td>/cu⁴ kʰo³/</td>
<td>back of the hand</td>
</tr>
<tr>
<td>/cu⁴ mi³/</td>
<td>finger nail</td>
</tr>
</tbody>
</table>
/cu⁴ meʔ⁴/  knuckle
/cu⁴ mo¹/  thumb
/cu⁴ neŋ³/  elbow
/cu⁴ ne³/  ring finger
/cu⁴ noŋ⁴/  index finger
/cu⁴ so³/  ring
/cu⁴ ja³/  palm
/cu⁴ loŋ³/  lower arm
/copi⁴/  play
/cok¹/  suck
/cɔn¹/  straight
/cɔŋ³/  run (used with vehicle)
/cɔ²/  spoon
/cɔ² reŋ⁴/  fork
/ca¹⁴/  chew
/ca¹⁴ ʔa⁴/  worn out
/ca³³/  wet
/cwi¹/  hook
/cwi³/  lead by the hand
/cwŋ⁳/.  float
/cwa¹²/  fang
/cjoŋ¹/  to fly
/cjoŋ³/  temple
/cjoŋ³ se ra³/  teacher
/ eʰ /

squeeze
smoke
urine (informal)
eleven
spray
prick
few
nurse
market
stamp foot
coat
freeze
vehicle (cN)
trunk (cN)
sew
hard
cup
heap (cN)
elephant
elephant trunk
elephant tusk
star
burning stinging pain
bone
ribs
to plant
pestle
/ɔ̃m³/ mortar
/ɔ̃m⁴/ salty
/ɔ̃nj³/ clump (cN)
/ɔ̃k¹/ ambiguous sex
/ɔ̃no³/ hair of body
/ɔ̃no⁴/ to smoke
/ɑ̃kʰa⁴ kʰja⁴/ later on
/ɔ̃wi¹/ crab
/ɔ̃wa³/ long
/ɔ̃ja¹/ sour
/ɔ̃ja⁴/ chicken
/ɔ̃ja⁴ tʰi²/ rooster
/ɔ̃ja⁴ ma¹/ hen

/k/

/kip⁴/ pinch, pick up
/kik⁴ pa³/ big cricket
/kik⁴ .rit¹/ small cricket
/kim¹/ like
/kim³ ra³/ scissors
/kin⁳/ pinch by nail
/ki³/ leg
/ki³ tʰja⁴/ thigh
/ki³ leŋ²/ knee
/ke⁴/ tiger
/ken⁴/ middle
/ken⁴/ piece (cN)
window
head
scap
female turban
male turban
dizziness
headache
forehead
chair
hair
pencil
jaw
beard
to full
last
chin
step across
car
step across
niŋe
fin
buttock
hat
glass
trousers
beg pardon
mountain
diligent
fluid
/ ka¹⁴ tʰo³ /  
pass away

/ kaⁿ³ /  
flower

/ kaⁿ³ pan³ tan³ /  
orchid

/ kaⁿ³ mok¹ ti⁴ tə wa³ /  
jasmine

/ kaⁿ³ neŋ¹ si⁴ /  
rose

/ kle²¹ /  
turtle

/ kro²¹ /  
shave

/ kwĩ² /  
chameleon

/ kwaŋ¹ /  
to fly

/ kwa¹³ /  
to stir

/ kwa¹⁴ sa³ /  
rabbit

/ kja³¹ /  
pare (with knife)

/ kja³⁴ /  
fasten

/ kja³ /  
skilful

/ kju¹ /  
dance

/ kjɔk¹ /  
love

/ kʰ /  

/ kʰin³ /  
season, time

/ kʰi³ /  
common barking deer

/ kʰen³ /  
chili

/ kʰɛ³ /  
Chinese

/ kʰum⁴ /  
hold

/ kʰɔ⁴ /  
pour out

/ kʰom⁴ cʰɔ¹ /  
playing game

/ kʰæŋ¹ ma¹³ /  
how many

/ kʰa⁴ min³ /  
surname
/kʰnɨt/  
/kʰnɨt/  
/kʰnɨt/ tuʔ/  
/kʰnɨt/ tan/  
/kʰnɨt/ kən/  
/kʰnɨt/ naʔ/  
/kʰnɨm/  
/kʰnɨm/ kʰa¹ kʰiŋ³/  
/kʰnɨm/ kʰrɛŋ³/  
/kʰnɨm/ loʔ/  
/kʰnɨm/  
/kʰnɨm/ pʰa³/  
/kʰnɨm/ pʰa³ ham³/  
/kʰnɨŋ/  
/kʰnɨŋ/ pʰa³/  
/kʰnɨŋ/ pʰa³ cʰoŋ¹/  
/kʰnɨŋ/ pʰa³ kip⁴/  
/kʰnɨŋ/ tu³/  
/kʰnɨŋ/ də³/  
/kʰnɨŋ/ cʰoŋ¹/  
/kʰnɨŋ/ ?əʔ¹/  
/kʰnɨŋ/ mi³/  
/kʰnɨŋ/ nəŋ⁴/  
/kʰnɨŋ/ ja³/  
/kʰnɨŋ/ lam²/  
/kʰnɨŋ/ loŋ⁴/  
/kʰnɨŋ/ loŋ⁴ pʰoŋ³/  
/kʰa¹/  
/kʰuŋ¹/  

shoot  
turn up side down  
west  
north  
east  
south  
rain  
rainy season  
thunder  
to rain  
gold  
world  
earth  
foot  
shoes  
cut shoes  
slippers  
ankle  
heel  
sock  
inside of knee  
claw, toe nail  
toe  
sole of foot  
address  
shin  
calf  
bitter  
table
put on (hat)
glutinous rice
egg-plant
tomato
couple of shoes (cN)
male
young man
young man
sweet corn
cloths
urine (fm)
feces (fm)
prawn
hunt
roast
garden
log (cN)
rub
chop-sticks
scratch
shout
crossbow
country
dig
brittle
scrape
purple
steam
poor
/kw^{3}/ seed
/kw^{4}/ I (fm)
/kwa^{4} tʰa^{3}/ mine
/kwa^{4} sou^{2}/ I (used with monk by man)
/kwa^{4} sou^{2} mu^{3}/ I (used with monk by woman)
/kwa^{4} ja^{3}/ rabbit
/kwa^{1}/ cold
/kwa^{1} tʰa wa^{1}/ chill
/kwa^{1} kʰiŋ^{3}/ winter
/kwa^{4}/ sweep
/kwaŋ^{3}/ fly
/kwa^{4}/ axe
/kwa^{13}/ turn
/kwa^{4} sa^{3}/ rabbit
/kwɨ^{4}/ rich
/kwrwa^{3}/ to saw
/kw^{4}/ gibbon
/kw^{4} jəŋ^{3}/ song (cN)
/kwa^{1} rəŋ^{4}/ basket
/kwa^{3} si^{1}/ lion
/kw^{1} jəŋ^{1}/ sambar deer
/kw^{3}/ smooth

/ʔ/

/ʔ^{2}/ will
/ʔe^{1}/ tear
/ʔe^{4}/ chop
bite
ginger
galanga
feces (informal)
similar
stupid
sub-district
week
this week
thin thing
thickness
shortage
rotten thing
age
pale blue
width
smell
at
outside
above
inside
over there
where
there
here
beneath
eat
stuff
many
they
talk
vegetable
to bark
blow
volume (cN)
break
bend down
live
stand up
sit down
to fry
pick out
cup
pare (with hand)
squat
vomit
forget
expose to the sun

incline...

baby
be
need
delicious
drink
/ s /

/siŋ⁴ /
/si¹ kja³ /
/si⁴ /
/si⁴ poŋ¹ jo⁴ /
/si⁴ rik⁴ /
/seŋ¹ pen⁴ /
/seŋ¹ paŋ⁴ /
/seŋ¹ koŋ⁴ /
/seŋ¹ mu⁴ /
/seŋ¹ ra³ /
/seŋ¹ ran³ seŋ¹ ra³ tʰi⁴ /
/seŋ⁴ /
/se² /
/se⁴ /
/se⁴ na³ /
/se¹ /
/seʔ¹ /
- /seŋ³ /...
\come back...
/seŋ³ lon⁴ /
/seŋ⁴ /
/shʔ¹ /
/sh¹ /
/shn³ /
/sh³ /
/sən² /
/sən⁴ /
/so lop² /

rotten
god
die
you (you&they)
cigarette
plank
branch of tree
log
tree
fruit
fruit juice
dry
horse
know
understand
always
chip
return
dry
cut
chapel
liver
louse
dull
strengthen
public rest-house
<table>
<thead>
<tr>
<th>Thai</th>
<th>Pinyin</th>
<th>English</th>
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<tbody>
<tr>
<td>/sə ra³ won³ /</td>
<td>physician</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ /</td>
<td>mind</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ pe¹ /</td>
<td>disappointed</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ tə kʰəʔ¹ /</td>
<td>selfish</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ ka¹² /</td>
<td>sad</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ʔaj² /</td>
<td>chest</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ re³ /</td>
<td>glad</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ ra³ /</td>
<td>heart</td>
<td></td>
</tr>
<tr>
<td>/saʔ¹ rja² /</td>
<td>angry</td>
<td></td>
</tr>
<tr>
<td>/saʔ⁴ /</td>
<td>plantation</td>
<td></td>
</tr>
<tr>
<td>/saʔ⁴ teu² /</td>
<td>nausea</td>
<td></td>
</tr>
<tr>
<td>/saŋ³ pʰo³ /</td>
<td>papaya</td>
<td></td>
</tr>
<tr>
<td>/saŋ¹ pʰo³ /</td>
<td>boat</td>
<td></td>
</tr>
<tr>
<td>/saŋ¹ pʰo⁴ cjoŋ¹ /</td>
<td>airplane</td>
<td></td>
</tr>
<tr>
<td>/sa⁴ tʰan³ /</td>
<td>inhale</td>
<td></td>
</tr>
<tr>
<td>/sa⁴ tʰa³ /</td>
<td>breath</td>
<td></td>
</tr>
<tr>
<td>/sa⁴ ne³ /</td>
<td>exhale</td>
<td></td>
</tr>
<tr>
<td>/sut¹ /</td>
<td>boil</td>
<td></td>
</tr>
<tr>
<td>/sun¹ /</td>
<td>mushroom</td>
<td></td>
</tr>
<tr>
<td>/su⁴ /</td>
<td>six</td>
<td></td>
</tr>
<tr>
<td>/som¹ /</td>
<td>three</td>
<td></td>
</tr>
<tr>
<td>/so¹ /</td>
<td>firewood</td>
<td></td>
</tr>
<tr>
<td>/sot¹ /</td>
<td>eight</td>
<td></td>
</tr>
<tr>
<td>/soʔ¹ /</td>
<td>add</td>
<td></td>
</tr>
<tr>
<td>/soʔ⁴ /</td>
<td>learn</td>
<td></td>
</tr>
<tr>
<td>/soŋ⁴ /</td>
<td>side</td>
<td></td>
</tr>
<tr>
<td>/sɔn¹ /</td>
<td>sand</td>
<td></td>
</tr>
<tr>
<td>/sɔŋ⁴ /</td>
<td>pebbles</td>
<td></td>
</tr>
<tr>
<td>/sa¹³ /</td>
<td>blood</td>
<td></td>
</tr>
</tbody>
</table>
/swi⁴/  Kaffir lime
/sjeʔ¹/  insects

/h/

/heʔ¹/  call
/həʔ²/  collide with
/hañ⁴/  hear
/hat⁴/  spicy
/ham³/  ground
/ham³ pʰun³/  dust
/ham³ boʔ¹/  mud
/ham³ bjak¹/  mud
/ham³ ?un⁴/  mud
/han² ni³/  today
/han³ ?o¹/  food
/han³ lu¹/  white greens
/han³ lu¹ klo³/  greens
/han³ lu¹ lug³/  cabbage
/hoʔ¹/  belly
/hoʔ¹ twañ²/  diarrhea
/hoʔ¹ cʰa⁴/  stomach-ache
/hoʔ¹ kʰo²/  hungry
/hoʔ¹ kʰleʔ⁴/  flatulent
/ho³/  read
/hau⁴/  good
/m/

/min¹ /
/min³ /
/min⁴ /
/min⁴ ben³ /
/mi¹ /
/mi³ /
/meʔ⁴ /
/me² /
/me³ /
/me³ tʰaʔ¹ /
/me³ kʰʁɛt⁴ /
/me³ ŋu³ /
/me³ len⁴ can⁴ /
/me³ la³ /
/me³ loʔ¹ /
/me³ raʔ⁴ tʰa³ /
/me³ rwɪ¹ /
/meʔ⁴ eye /
/meʔ⁴ pʰlɔŋ¹ /
/meʔ⁴ pʰlɔŋ¹ phren² /
/meʔ⁴ bi³ /
/meʔ⁴ cʰɔn³ /
/meʔ⁴ ku³ /
/meʔ⁴ ku³ cʰɔn³ /
/meʔ⁴ kʰu³ /
/meʔ⁴ man³ /
/meʔ⁴ ɲwa³ /

if
name
ripe
sleepy
condiment
nail
turmeric
tail
fire
flash-light
match
charcoal
electricity
electricity bulb
firefly
train
smoke
eyeball
iris
eyelid
eyelash
eyebrow
hair of eyebrow
eyeball (used with children)
glasses
face
true
want
aim
fast
sun
sunset
rainbow
at noon
sunrise
day before yesterday
midnight
night
evening
late morning
morning
tomorrow
same
gong
bad
feminine
mother
parental mother
parental younger sister or
mother's younger brother
pin
for wind to blow
wife
do
sing
/ma³ si³/  
/ma³ sa³/  
/ma⁴/  
/mun³/  
/mun⁴/  
/mu³/  
/mu³ pe¹ na³⁴³³/  
/mu³ nam³/  
/mu³ lam⁴ pe¹/  
/mor¹ re³/  
/mor¹ lan²/  
/mor⁴/  
/mok¹ pra²/  
/mok¹ cok¹/  
/mok¹ cok¹ ti⁴⁴⁴³/  
/mok¹ keŋ³ ka³/  
/mok¹ keŋ⁴/  
/mok¹ klæŋ³/  
/mok¹ tun⁴/  
/mok¹ mu¹/  
/mor¹ kleŋ¹/  
/mor¹ kʰοŋ⁴/  
/ma³³/  
/ma³³ kʰa⁴/  
/mwi² can³ tʰa³/  
/mwa¹/  

kill  
corpse  
false  
drunk  
life  
female  
younger sister sibling  
young woman  
young woman  
cloud  
sky  
raw  
lime  
orange  
vinegar  
guava  
pineapple  
jack-fruit  
coconut  
areca  
hat  
to steam  
(?) question marker  
when  
much very  
yes
/ n /

/niʔ¹ pʰu⁴ /
nose

/niʔ¹ pʰu⁴ kəŋ³ /
nose bridge

/niʔ¹ pʰu⁴ ʔe³ /
snot

/niʔ¹ pʰu⁴ ηwa⁴ /
nostril

/nim¹ /
flinch

/ni¹ /
loin cloth

/ni³ /
day

/ni⁴ /
two

/we /
we

/ni⁴ bwa¹¹ /
you (used with the monk)

/ni⁴ cʰi⁴ /
twenty

/ni⁴ nam² /
myself

/ni⁴ we² /
you (used with elder person)

/ni⁴ wəŋ³ som¹ /
we (incl.)

/naŋ³ /
year

/naŋ¹ /
tea

/ne⁴ /
some

/nek² / ——

/nek² ti⁴ /
breast milk

/nek² ra³ /
nipple

/ne⁴ həŋ² /
question particle (or not?)

/nut¹ /
seven

/nom³ /
to smell

/nom³ seŋ⁴ /
bad smelling

/nom³ su³ /
rancid

/nə¹ /
sweet

/naʔ¹ /
Enter
/naʔ⁴ /
/naʔ⁴ məŋ⁴ /
/naʔ⁴ lja³³ /
/naŋ⁴ deŋ⁴ ci³ /
/naŋ³ /
/na¹ li³ /
/na² /
/na³ /
/nut¹ /
/nuk¹ cʰak⁴ /
/nuʔ¹ cʰən³ /
/nun³ /
/noŋ³ /
/noŋ⁴ /
/na¹ ma¹³ /
/njeʔ¹ /

knife
long-handled knife
long knife
belt
goddess
clock
ear
you (familiar)
sin
shake
mustache
push
horn
swamp
how?
press down

/ŋ /

/ŋaʔ⁴ /
/ŋum⁴ /
/ŋən³ /
/ŋə¹ /
/ŋə¹ tʰa³ /
/ŋat¹ /
/ŋəʔ⁴ /
/ŋam³ /
/ŋan³ /

look up
yawn
neck
cry
weep
five
laugh
fear
narrow
fish soy
back
waist
hell
next
to fry
nod
language
cat
far
a kind of leaf
shell

four
book
note book
vagina
lizard
grandchild
nephew
niece
hour
burn
anus
clever
kidney
/leŋ¹/ cremate
/leŋ²/ already
/leŋ⁴/ scare, tell a lie
/loŋ¹/ bunch (cN)
/lak⁴/ sharp
/lak⁴ leŋ³/ clever
/laŋ⁴/ usable
/لام²/ house
/لام² su¹/ husband (fm)
/لام² loŋ²/ roof
/laŋ¹/ great-grandchild
/laŋ²/ sit
/laŋ³/ flow
/la¹/ spit
/la³/ leaf
/la⁴/ moon
/la⁴/ month
/lu¹/ ghost
/lu³/ god
.../lu³ kʰam²/ heaven
/lu³ mu²/ goddess
/lu⁴/ thread
/loŋ¹/ bury
/loŋ⁴/ all gone
/lom²/ enough
/lom³/ warm
/loŋ²/ stone
/loŋ² pʰun³/ sand
/loŋ³/ worm
/lo³/ need
/lo³/ person
/lo³ pe¹/ children
/lo³ kʰo⁴/ man
/lo³ kʰro²/ poor person
/lo³ mu¹/ woman
/lo³ lam²/ villager
/lo⁴/ clothe
/lon⁴/ come
/la¹²/ wide
/la¹⁴/ cockroach
/lwaʔ¹ tʰi⁴/ ugly
/lwaʔ¹ ga³/ lazy
/lwa⁴/ fall off
/lwaŋ²/ run
/lwa⁴/ go
/lwa¹⁴/ mill
/ljaʔ¹/ rip out

/r /

/ri²/ bar (cN)
/ri³/ flowing drop
/ri⁴/ ask
/re²/ rattan
/ru¹/ born
/ru²/ fight
/rət¹/ sing
| /ra\(^2\)/ | tired          |
| /ra\(^3\)/ | anklet        |
| /ra\(^4\)/ | fruit         |
| /ru\(^1\)/ | snake         |
| /ra\(^2\)/ | stab          |
| /ra\(^3\)/ | hurriedly     |
| /ra\(^4\)/ | beam          |
| /ron\(^2\)/ | silver        |
| /ron\(^4\)/ | very          |
| /ron\(^4\)  na\(^3\)/ | color        |
| /ron\(^3\)/ |             |
| /ra\(^2\)/ | rice field    |
| /ra\(^1\)  sa\(^2\)/ | farmer      |
| /ra\(^1\)/ | cut           |
| /rwa\(^3\)/ | root          |
| /rja\(^2\)/ | saw           |
| /rjan\(^4\)/ | children of great-grandchild |
| /rja\(^2\)/ | hot           |
| /rja\(^2\)  k\(^h\)i\(^n\)\(^3\)/ | summer      |
| /rju\(^1\)/ | cool          |

| /w/          |

| /we\(^4\)  t\(^h\)u\(^3\)/ | fly          |
| /we\(^2\)/ | elder sibling |
| /we\(^2\)  k\(^h\)o\(^4\)/ | elder brother |
| /we\(^2\)  mu\(^3\)/ | elder sister  |
| /wa?\(^1\)/ | fell down    |
| /wa?\(^4\)/ | snow         |
/wan³/ dish
/wan¹/ throw
/wan²/ fan oneself
/wan³/ he, she
/wan³ saʔ¹/ ashamed
/waŋ⁴/ to strike by rod
/wa¹/ bamboo
/wa²/ bird
/wa² pʰøŋ²/ beak
/wa² cʰøŋ³/ feather
/wa³/ husband (inf)
/wa⁴/ bee-hive
/wa¹⁴ ne³/ district

/j /

/jip⁴/ wink
/jen⁴/ quiet
- /je³/ police
/jøŋ¹/ wave
/jap¹ saʔ¹/ harassed
/jaʔ¹/ pant
/jaʔ²/ old and out of use, long
/jaŋ⁴ lam⁴/ opium
/jan²/ again
/ja¹ tʰi⁴/ swim
/ja³/ flesh
/ja³ du³/ muscle
/ja⁴ kʰo² /
sunshine
/ja⁴ kʰo² tʰʌn³ /
for sun to shine
/ja⁴ seʔ⁴ /
hermit
/ju¹ /
think
/joʔ⁴ /
monkey
/jo⁴ /
this
/jo⁴ pʰoŋ¹ su³ /
these
/jo⁴ kʰa⁴ /
now
/jo⁴ kʰa⁴ hɔn² na⁶³ /
previously, earlier
/joʔ⁴ /
/swell
/jwaʔ⁴ /
wait
/jwaʔ⁴ dæn² /
wait a moment
BIOGRAPHY

<table>
<thead>
<tr>
<th><strong>NAME</strong></th>
<th>Miss Orranat Thanamteun</th>
</tr>
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<tbody>
<tr>
<td><strong>DATE OF BIRTH</strong></td>
<td>25 April 1966</td>
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<tr>
<td><strong>PLACE OF BIRTH</strong></td>
<td>Nakhonpathom, Thailand</td>
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</table>
| **INSTITUTION ATTENDED** | Mahidol University, 1985-1988  
  (Bachelor Degree of Science  
  Nursing and Midwifery)  
  Mahidol University, 1996-2000  
  Master Degree of Arts  
  (Linguistics)          |
| **POSITION AND OFFICE** | 1988-Present,Mahidol University,  
  Faculty of Medicine,  
  Siriraj Hospital,  
  Nurse                  |