The Great Tone Split and Central Karen

William G. Kauffman

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THE GREAT TONE SPLIT AND CENTRAL KAREN

by

William G. Kauffman
Bachelor of Religious Education, Prairie Bible College
1983

A Thesis
Submitted to the Graduate Faculty
of the
University of North Dakota
in partial fulfillment of the requirements
for the degree of
Master of Arts

Grand Forks, North Dakota
December
1993
This thesis, submitted by William G. Kauffman in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

Stephen A. Markett
(Chairperson)

David J. Weber

David C. Marshall

This thesis meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

Dean of the Graduate School

8-17-93
PERMISSION

Title The Great Tone Split and Central Karen
Department Linguistics
Degree Master of Arts

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Date [Date]
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I will not forget the hospitality of Khu Ooreh and Khu Ture, my Kayah supervisors, offering coke and tea, and porcupine curry, and arranging language teachers. I will not forget their loyal friendship.

Many thanks are due Payap University for visas and sponsorships.

I could not have done it without my wife Ruth, and children Daniel, Praise, Rachel, and Chet accompanying me to exotic cities and remote jungle villages, living, speaking, and eating in a different culture. And finally allowing me to abdicate my husbandly and fatherly duties for the final two months of writing.

I thank churches and friends for their finances, prayers, and encouragement, and God for strength when I did not feel I could get through another page.
Dedicated to:

Sara Du Phaebu (Thaebuphae)

Kayah leader, linguist, and philanthropist

Whose dedication to the welfare of his people is undisputed
This thesis is a comparative reconstruction of the tones and initial consonants of Proto-Central Karen based on the languages Eastern Kayah, Western Kayah, Geba, and Padaung. Other Karen languages are referred to but not studied to the same detail.

The study focuses on the great tone split that affected nearly all the languages of Southeast Asia, including Central Karen. I show that an understanding of the great tone split is crucial if one is to discover the phonological characteristics of Proto-Central Karen syllable-initial consonants.

In agreement with Haudricourt's (1946) analysis of Proto-Karen, I conclude that Proto-Central Karen had three proto-tones and a series of voiceless sonorants, and was affected by a great tone split in which the sets of voiced and voiceless consonants merged and the three proto-tones split. These are different conclusions than those drawn by two other major reconstructions of Proto-Karen, Jones (1961) and Burling (1969).
CHAPTER 1: INTRODUCTION

1.1 Purpose and Contributions

The main purpose of this study is to explain how the great tone split of Southeast Asia affected the initial consonants, vowel phonation and tone of several Central Karen languages. I show that an understanding of this phenomenon is crucial in reconstructing the Proto-Central Karen forms.

Haudricourt (1946) reconstructed Proto-Karen on the basis of only two Southern Karen languages. This study shows that his framework for analysis is also useful in reconstructing Central Karen languages.¹

Matisoff (1969:18) says it is better to get at Proto Tibeto-Burman by first reconstructing the various groups, of which Proto-Karen is one. Applying this concept one step down to a lower level of reconstruction, it would be easier to reconstruct Proto-Karen if the sub-groups within Karen have already been reconstructed. This study is one step toward the reconstruction of the Central Karen group.

¹Haudricourt showed that in Karen three original "tones" split up in two or three different ways, producing up to nine tones. This can be graphed on what I call a 3x3 grid.
Jones (1961:82) stated, "Before a true Proto-Karen can be arrived at, many other dialects must be included." He specifically mentions Kayah and Padaung. Both of those languages are included in this study, giving future reconstructionists of Proto-Karen more languages on which to base their conclusions.

Solnit (1989) introduces how East and West Kayah and Padaung fit into the tone analysis established by Haudricourt (1946). This study expands on Solnit's work.

This study provides modern data in Geba, confirming Luce's (1959:8) opinion that the voicing and loss of aspiration on initial sonorants in Geba was taking place in that generation of speakers. These new data give us two viewpoints from which to investigate the great tone split in process.

An incidental contribution of this study is its inclusion of data from Padaung, which up to the present has been absent in the majority of presentations on Karen. It also includes forms for Pa-o from Hopple (n.d.), which are valuable for reconstructing Proto-Karen final consonants.

1.2 Demographics

Most Karen people live in the mountains within about one hundred miles of the Thai-Myanmar border. More live in Myanmar (formerly Burma) than in Thailand.

Grimes (1992) lists fifteen Karen languages, with a total population of 3.5 million. The two largest and
southern-most groups are the Sgaw and the Pwo with about 1.25 million speakers each. The Pa-o is the northern-most group, living in Shan State in Myanmar. They number over one half million.

Central Karen

Sandwiched between the Pa-o to the north and the Sgaw and Pwo to the south are about ten smaller Karen languages, totalling less than one half million speakers. I am calling these languages Central Karen. It is thus a geographical designation, referring to the Karen languages spoken in Kayah State of Myanmar and the adjacent areas in Myanmar and Maehongsong Province in Thailand.

In time we may discover that Central Karen is also a linguistic designation. For example, Solnit (1989) notes that most of the Central Karen languages evidence contrastive phonation of the vowels, while the northern and southern languages do not.

It is difficult to know exactly how many languages are in the Central Karen area. One knowledgeable resident of Kayah State was able to list nine language groups. As he gave me the list however, he pointed out that at least some of the groups are divided on the basis of customs rather than language. For example, in his opinion the difference

-----------------------

\(^2\)Accurate statistics are hard to gather since Kayan State is in a state of civil unrest.
between the Yeinbaw and Padaung is that the women of the latter wear brass rings around their necks.

Another difficulty is that most languages have more than one name. There is a Burmese name, perhaps a Thai, Shan or English name, the name the people call themselves, names they are called by surrounding Karen groups, and in some cases a "politically correct" name. In addition, some of the names are actually deictic designations, with meanings like people upstream, or westerner, and so the group with that name is always the next one upstream, or the next one to the west (Solnit 1986).

For the purposes of this study, some of the Central Karen languages can tentatively be divided on the basis of three geographical areas, as in Figure 1. This study focuses on languages from each area. I call Geba a West Central Karen language, Padaung a North Central Karen language, and Eastern and Western Kayah East Central Karen languages. These four languages are the largest in number of speakers (Grimes 1992), accounting for eighty-three percent of the total number of Central Karen speakers.

3 The difficulties encountered in listing Tibeto-Burman languages are detailed in Matisoff (1973a).

4 See section 1.4 for a discussion of the classification Karen.
East Central Karen (Kayah)

The Central Karen language with the most speakers is Kayah (Karenni, Red Karen, Yañ Liañ, etc). The group numbers 210,000 according to a 1983 estimate (Grimes 1992).

I use the term Kayah because it more specifically refers to the language in question. It is also the term used by several other linguists in former and ongoing research. The Kayah leaders use the term Karenni (literally in Burmese 'Red Karen') as a more general name for all the Karen groups in Kayah State.

Within Kayah itself there is variation, the two major divisions being Eastern and Western Kayah. The Kayah people claim that the Salween River is the dividing line between the two dialects. See the map in Figure 2. The Eastern and Western Kayah consider themselves to be ethnically one, but the degree of intelligibility between the two dialects has
not to my knowledge been tested. At least one Eastern Kayah speaker, when exposed to Western Kayah speakers talking with each other, could not understand them. There seemed to be quite a number of Western Kayah speakers, on the other hand, who could understand Eastern Kayah. This could be due to having contact with Eastern Kayah after moving to Thailand, or perhaps exposure to Eastern-type varieties of Kayah in western Kayah State.  

Figure 2: Map of Central Karen Area

5 Two Eastern-type dialects in western Kayah State are documented by Bennett (1991).
West Central Karen (Geba)

Geba is spoken by about 40,000 people in Northern Karen State to the southwest of Kayah State (Grimes 1992). I am unsure whether the language area extends into southwestern Kayah State.

North Central Karen (Padaung)

Padaung is spoken by about 41,000 people in northwestern Kayah State and the adjacent town of Phekon in southern Shan State (Grimes 1992). There are also Padaung living to the southwest of Kayah State.

1.3 Data Sources

This study is based to a large extent on word lists gathered personally during two six-month periods in northwestern Thailand under the sponsorship of Payap University and the Summer Institute of Linguistics.

The word lists were transcribed and recorded from a standard word list of 406 words for each language. Most of the nouns were elicited and recorded first in isolation.

Padaung people have been featured in National Geographic because many of the women wear a long spiral of brass "rings" around their necks (Keshishian 1979).

I am very thankful to Payap University for their help in securing visas and authorization. I am thankful for J. Fraser Bennett for helpful input which I considered in my revision of my Western Kayah list. For Geba and Padaung I leaned heavily on Bennett's (1992) revision of my list since I had not marked breathiness on my first exposure to the languages. I take responsibility for any mistakes.
then in a frame that included the word, a numeral, and the relevant classifier. If there was any uncertainty about the tone, the frame was altered by inserting a different numeral with a different tone. In this way, any one entry could be juxtaposed with a numeral with low tone, high tone, and mid tone. This facilitated hearing the tone of the word, as well as helping to determine whether the tone changed in different environments. Verbs were elicited in isolation and with a modifier.

The Eastern Kayah dialect of this study is identical to that already described by Solnit (1986), spoken in several villages to the south of Maehongson in Thailand. For the location of the language groups, see Figure 2. Eastern Kayah is the only Central Karen language native to Thailand. If there are discrepancies between my list and Solnit's, I would suspect that it is because he knows the language in detail.

My language teacher, Ka₅me₂,⁸ was a woman from the village of Huaj⁴₂ Dwe¹, south of the provincial capital town of Maehongson.⁹ She was literate in Thai and spoke Shan in addition to Eastern Kayah. She was about thirty-five years old.

---

⁸Tones throughout this study are marked with superscript numbers, [₁] is the lowest and [⁵] highest. Two numbers after a syllable indicate that the tone is falling or rising.

⁹The name of both the province and the provincial capital is Maehongson.
The Western Kayah data in this study is from the dialect spoken in Kyebogyi. According to native residents of the Kyebogyi area, the Kyebogyi dialect is the standard one. It is the dialect used on the radio and in indigenous Western Kayah schools.

I elicited Western Kayah word lists from three different people. The list I use in this study is from Phε³bu³, who was about thirty years old. He is literate in Burmese and Western Kayah, and can also read some English. He wrote the entire list of words for me in Kayah script. This was a big help, especially since he transcribed breathiness, which I could not always hear. I was able to compare his list with my personal list and check out discrepancies. Phε³bu³ is one of the men who helped design the computer font for Kayah Script. He is gifted in poetry and musical instruments, and knows some of the "old traditional songs".

My teacher of Geba was a twenty-four year old woman named Pe³ro³sa³. She had recently come to Thailand from a village called Ke³sε³plu², in Lei³bu³ township, in the Karen State of Myanmar. The village is located southwest of Kyebogye. Her father died when she was seven years old. She left home at the age of sixteen.

In addition to Geba, she speaks Burmese, Gekho, and some "White Karen". She has no formal education, but
learned to read somewhat by reading the Geba books used in her church.

My Padaung information was provided by Lepi*2, a man about forty years old. His wife was also a Padaung speaker. He is a farmer with rice paddy fields in Demoso, northwestern Kayah State. He had been in Thailand about two years. In addition to Padaung, he knew Burmese and was learning Western Kayah.

1.4 Classification of Karen

Scholars agree that Karen is a Sino-Tibetan language, but they disagree concerning the genetic relationship of Karen to Tibeto-Burman. Benedict (1972) believes there is insufficient evidence to place Karen in the Tibeto-Burman branch. He places Karen at the same taxonomic level as Tibeto-Burman, both deriving from Tibeto-Karen, as in Figure 3 below. Some scholars take the similarities between Tibeto-Burman and Karen as an indication of Karen's membership in the Tibeto-Burman family. Benedict attributes these similarities to borrowing.

One of the reasons Benedict split Karen off from the Tibet-Burman languages at such a high level is Karen's SVO word order, which is unlike any other Tibeto-Burman language (SOV).

Having said that, Benedict introduced the possibility that Karen may have split off early from the Burmese-Lolo Nungish division of Tibeto-Burman, with its word order
later affected by the Tai languages (also SVO) (Benedict 1972:128-29).

Figure 3: Karen's Relation in Sino-Tibetan According to Benedict

Sino-Tibetan

<table>
<thead>
<tr>
<th>Tibeto-Karen</th>
<th>Sinitic</th>
</tr>
</thead>
</table>

 Proto-Karen    | Tibeto-Burman |

Benedict uses solid comparative principles and should be taken seriously. It was he who in 1942 first connected Thai with Austronesian rather than Chinese as others had done. He based his judgment on finding cognates in the "basic core of the vocabulary" rather than shared cultural vocabulary (Egerod 1972:499).

Other scholars, however, disagree with Benedict's conclusions. Weidert argues that the fact that Karen has a different word order does not preclude its inclusion in Tibeto-Burman.10 Wheatly (1985) shows that it is possible for a language to change its word order in a relatively short time.

Matisoff (1973:12) lists Karenic as one of four major divisions of Tibeto-Burman, along with Bodic, Burmic, and Baric, but notes Benedict's disagreement. See Figure 4.

10 For a fuller discussion see Weidert (1987:330-332).
Solnit (1986) places Karen in the Tibeto-Burman branch of the Sino-Tibetan linguistic stock. The point is that Karen is hard to classify. It differs from any other language group in the area.

**Figure 4: Karen's Relation to Sino-Tibetan and Tibeto-Burman According to Matisoff**

```
<table>
<thead>
<tr>
<th>Sino-Tibetan</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Tibeto-Burman</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Bovic Baric Burmic Karenic</td>
<td></td>
</tr>
</tbody>
</table>
```

As yet there seems to have been no attempt to classify the languages within Karen on anything other than geographical grounds (Solnit 1989:1). The divisions of Karen in Figure 1 are thus geographical designations.

**1.5 Previous Studies**

Haudricourt (1943) reconstructed Proto-Karen on the basis of a comparison of Pwo and Sgaw. His analysis (discussed later) forms the basis for this study.

In 1961 Jones did a major reconstruction in the Karenic group. His data were from six languages and dialects, including Sgaw, Pwo and Pa-o, but no Central Karen languages.

In 1969 Burling reanalyzed Jones's data. Burling felt that, because Jones followed the Theory of Linguistic
Bifurcation, he ended up not being able to posit a proto-form for any word that did not have a cognate in each of the six daughter languages, thus leaving many gaps in his final comparison. Of his 859 cognate sets, Jones reconstructs only 195 back to Proto-Karen.

Burling (1969:7) also claimed that Jones's rules were extremely complex. On the positive side, he thought Jones's data (apart from a few suspicious forms) appeared to be very reliable.

Bennett (1989) compares the three analyses and concludes that Haudricourt's (1946) explanation of the tones is the most simple and symmetrical. Solnit (1989) and Bennett (1991) find that his theory adequately accounts for the tones of several Central Karen languages. This present study will expand what Solnit and Bennett have done by applying Haudricourt's theory to several more Central Karen languages.
CHAPTER 2: SYNCHRONIC PHONOLOGICAL INVENTORIES OF THE LANGUAGES IN THIS STUDY

This chapter gives a brief introduction to the phonologies of the four Central Karen languages in this study.

2.1 Eastern Kayah

Of Central Karen languages, Eastern Kayah has the most contact with Thai. Its phonemic inventory shown in Figure 5 has several similarities to Thai not found in the other Central Karen languages in this study. Only Eastern Kayah has the phonemes /ch/ and /y/,\(^{11}\) and a contrastive high falling tone [52].\(^{12}\) each of which is similar to Thai.\(^{13}\)

The Eastern Kayah phonemic charts in Figure 5 and some of the notes that follow are adapted from

\(^{11}\)This study uses International Phonetic Association symbols, unless otherwise noted. In Karen, [ch] is an aspirated, voiceless, alveo-palatal flat affricate (IPA tɕʰ). The similar but unaspirated Karen segment is [c] (IPA tɕ). The similar but voiced segment in Proto-Central Karen is [dʐ].

\(^{12}\)See Chapter Three for the historical development of the [52] tone.

\(^{13}\)I do not claim that /ch/ has been borrowed from Thai. The influence of Thai may have slowed the progress of the *ch > sh sound change which occurred in other Central Karen Languages.
### Eastern Kayah Consonant Chart

<table>
<thead>
<tr>
<th></th>
<th>labial</th>
<th>dental</th>
<th>alveopalatal</th>
<th>retroflex</th>
<th>velar</th>
<th>glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceless unaspirated</td>
<td>p</td>
<td>t</td>
<td>c</td>
<td></td>
<td></td>
<td>k</td>
</tr>
<tr>
<td>voiceless aspirated</td>
<td>ph</td>
<td>th</td>
<td>ch</td>
<td></td>
<td></td>
<td>kh</td>
</tr>
<tr>
<td>voiced stop</td>
<td>b</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nasal</td>
<td>m</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td>n</td>
</tr>
<tr>
<td>fricative</td>
<td>s</td>
<td></td>
<td></td>
<td></td>
<td>h</td>
<td></td>
</tr>
<tr>
<td>approximant</td>
<td>w</td>
<td>l</td>
<td>j</td>
<td>r</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Eastern Kayah Vowel Chart

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>unrounded</td>
<td>rounded</td>
</tr>
<tr>
<td>Close</td>
<td>i</td>
<td></td>
<td>w</td>
<td>u</td>
</tr>
<tr>
<td>Close mid</td>
<td>e</td>
<td></td>
<td>(v)</td>
<td>o</td>
</tr>
<tr>
<td>Open mid</td>
<td>e</td>
<td></td>
<td>e</td>
<td>o</td>
</tr>
<tr>
<td>Open</td>
<td></td>
<td></td>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>

### Eastern Kayah Diphthongs

ja wi wa

### Eastern Kayah Tones

- [5] high level, with glottal stop utterance final
- [52] high falling, with glottal stop utterance final
- [3] mid
- [2] (or [1]) low level, with glottal stop utterance final
- [21] low falling, always ending with glottal constriction
Solnit (1986:14-15). The phoneme /s/ is a flat spirant. The vowels /e o/ are higher than cardinal position. Both segments off-glide very slightly: [e^i] and [ou]. The close vowels /i u/, on the other hand, are sometimes lower than cardinal position, making them hard for the non-native speaker to distinguish from /e o/. The back unrounded vowels /w y/ are slightly centralized. The vowel /v/ occurs only in a few words, almost always loans from Shan or Thai, and is contrastive only in the high tone.

The mid central vowel /ə/ varies from open-mid as in the vowel of English but, to close-mid as in the vowel and unretroflexed /r/ in British English sir. Solnit (1986) uses the symbol  for this segment. He uses the symbol  for the unstressed, colorless vowel in several affixes. I do not always distinguish between the stressed and unstressed segments in this study, but when I do, I indicate the reduced nature of the /ə/ in the affixes by giving them no tone mark.

Eastern Kayah has the diphthongs /wi wa ja/. Phonetically, the approximants in these diphthongs are very similar to the corresponding close vowels.

---

14 In endorsing and applying these notes, I take responsibility for any mistakes.

15 Diphthong is a term used in the phonetic classification of vowel sounds (Crystal 1991:105). In this study I usually use the term for a single phonological unit, sometimes known as a gliding vowel (Crystal 1991:377). In a few cases, in which the context
2.2 Western Kayah

Western Kayah consonants in Figure 6 are similar to Eastern Kayah except that the interdental phoneme /θ/ replaces /s/, the aspirated spirant /sh/ replaces the affricate /ch/, and the voiced flat spirant /z/ is added.

The vowels of Western Kayah in Figure 6 are identical to Eastern Kayah, except that the phonemes /v a/ are absent and phonation is contrastive. Each of the vowels may occur as breathy or non-breathy. The segment [ə] occurs predictably in the data in unstressed syllables, or as part of the diphthong /we/.

The diphthong /ja/ is fairly consistently an on-glide. For the others, it is difficult to determine whether these should be interpreted as on-glides, off-glides, or as two vowels of equal rank. The same combination may sound like an on-glide in an utterance final syllable with no glottal stop, or like an off-glide if there is a glottal stop.

Solnit (1989:4) feels that the two components of the diphthongs are about equal in duration and intensity.

16 Phonation is contrastive following initial sonorants and unaspirated voiceless stops, but not following fricatives, aspirated or voiced stops. The phonetic features of breathiness have not yet been adequately described for Central Karen languages. Solnit (1989) discusses it briefly. Breathy vowels and diphthongs are marked with two subscripted dots.
Figure 6: Western Kayah Phonemic Inventory

Western Kayah Consonant Chart

<table>
<thead>
<tr>
<th>labial</th>
<th>dental</th>
<th>alveo-palatal</th>
<th>retro-flex</th>
<th>velar</th>
<th>glottal</th>
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</thead>
<tbody>
<tr>
<td>voiceless unaspirated</td>
<td>p</td>
<td>t</td>
<td>c</td>
<td>k</td>
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</tr>
<tr>
<td>voiceless aspirated</td>
<td>ph</td>
<td>th</td>
<td>sh</td>
<td>kh</td>
<td></td>
</tr>
<tr>
<td>voiced stop</td>
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<td>d</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>m</td>
<td>n</td>
<td>η</td>
<td></td>
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</tr>
<tr>
<td>fricative</td>
<td>θ</td>
<td>z</td>
<td>h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>approximant</td>
<td>w</td>
<td>l</td>
<td>j</td>
<td>r</td>
<td></td>
</tr>
</tbody>
</table>

Western Kayah Vowel Chart

<table>
<thead>
<tr>
<th>Front</th>
<th>Central</th>
<th>Back</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unrounded</td>
<td>rounded</td>
<td></td>
</tr>
<tr>
<td>Close</td>
<td>i i</td>
<td>w w</td>
<td>u u</td>
</tr>
<tr>
<td>Close-mid</td>
<td>e e</td>
<td>o o</td>
<td></td>
</tr>
<tr>
<td>Open-mid</td>
<td>ɛ ɛ</td>
<td>o o</td>
<td></td>
</tr>
<tr>
<td>Open</td>
<td>a a</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Western Kayah Diphthongs

ie iɛ ja ja wə wə uə uə wi wi

Western Kayah Tones

[5] high, with optional glottal stop utterance final
[3] mid
[1] low, with optional glottal stop utterance final
Bryant (1992:6-7) interprets Western Kayah diphthongs as off-gldes, but notes that this interpretation is not without some problems.

2.3 Padaung

Padaung consonants shown in Figure 7 are similar to Western Kayah, except that Padaung has contrastive voiceless, labial-velar approximant /m/, but does not have /z/. The phonemic status of glottal stop /ʔ/ is questionable. It may be the contrastive feature distinguishing low tone [1] from low tone [2]. Its status is discussed further in Chapter Four.

Padaung has the fewest number of simple vowels, but a very rich variety of diphthongs. Phonation can occur on all vowels and diphthongs, but I do not know if it is contrastive. Breathy vowels tend to be longer and slightly falling in tone.

Padaung has a limited number of nasal vowels. All [-front -close] vowels and diphthongs may occur as nasal vowels. Only the first vowel of the diphthong needs to follow this condition (all diphthongs occur as nasal except [ei]).

There are some vowels in the data which are not included in Figure 7. The vowels [o ò] are probably allophones of /au aʊ/, occurring in unstressed syllables or shortened by a glottal stop. There are a few cases where [a å] likewise seem to be shortened forms of an
Figure 7: Padaung Phonemic Inventory

Padaung Consonants

<table>
<thead>
<tr>
<th>labial</th>
<th>dental</th>
<th>alveo-</th>
<th>retro-</th>
<th>velar</th>
<th>glottal</th>
</tr>
</thead>
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<td>flex</td>
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<tr>
<td>voiceless</td>
<td>unaspirated</td>
<td>p</td>
<td>t</td>
<td>c</td>
<td>k</td>
</tr>
<tr>
<td>voiceless</td>
<td>aspirated</td>
<td>ph</td>
<td>th</td>
<td>sh</td>
<td>kh</td>
</tr>
<tr>
<td>voiced stop</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></td>
<td></td>
</tr>
<tr>
<td>fricative</td>
<td>θ</td>
<td></td>
<td></td>
<td></td>
<td>h</td>
</tr>
<tr>
<td>approximant</td>
<td>w</td>
<td>m</td>
<td>l</td>
<td>j</td>
<td>r</td>
</tr>
</tbody>
</table>

Padaung Vowels and Diphthongs

<table>
<thead>
<tr>
<th>Front</th>
<th>Central</th>
<th>Back</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unrounded</td>
<td>rounded</td>
<td></td>
</tr>
<tr>
<td>Close</td>
<td>ɪ</td>
<td>u</td>
<td></td>
</tr>
<tr>
<td>Close-mid</td>
<td>ei</td>
<td>əw əɯ</td>
<td>əu əû</td>
</tr>
<tr>
<td>Open-mid</td>
<td>ɛ</td>
<td></td>
<td>ɔ ɔ̯</td>
</tr>
<tr>
<td>Open</td>
<td>ai a ā aɯ</td>
<td>au aû</td>
<td></td>
</tr>
</tbody>
</table>

Padaung Tones

[42] high, with a falling contour
[3] mid, optionally closed with a glottal stop
[2] and [1] low

---

17High falling [42] tone does not always fall when followed by another [42] tone. The low tones [2] and [1] are nearly identical in pitch, the differences being [breathy, slightly falling, longer, and open syllable] versus [non-breathy, level, shorter, and closed syllable]. I have not tested which of those features, if any, is contrastive.
open -> close diphthong, and [i] seems to be a shortened or unstressed pronunciation of /ei/ or /i/.

The following is a preliminary proposal regarding the phonological status of Padaung diphthongs. Many diphthongs start with the approximants /j/, /w/ or /w/, as listed below. Most of these occur only once or twice in the list of 406 words. The fact that they occur in such a variety of combinations, and with so few examples of each, makes me suspect that they are a combination of consonant and vowel. Another evidence for this claim is that [j] and [w] occur in combination with other diphthongs, as in [iaʔ] 69 and [waʔ] 33. If these were vowels, Padaung would have diphthongs with three vowels, which is not as likely. I list an example from the word list for each:

| [ii] 72 | [Mhά] 48 | [we] 254 |
| [iă] 312 | [Mhά] 194 | [we] 355 |
| [ieu] 84 | | [us] 400 |
| [ia]\u012e] 69 | | [wa]\u012e] 33 / [ua]\u012e] 294 |
| [iά] 350 | | [wά] 347 |
| [i]\u010b] 182 | | [wa] 176 |
| [iu] 37, | | [wu] 31 |
| | | [wo] 96 |

Several more examples which could perhaps be included as approximant plus vowel combinations, but which I transcribed as close-mid vowels are [eu] 12 and [o\u010b] 328.

18 The approximant /j/ is transcribed as a high front vowel [i] in these examples from the word list.
The following diphthongs, on the other hand, occur frequently in the data. I consider these to be single phonemic units. All these end with a close vowel. There are constraints on the allowable combinations of vowels, resulting in a pleasing symmetry:

1. The diphthong that starts with a front close-mid vowel must end with the front close vowel [ei].
2. Those that start with a back close-mid vowel must end with a back close vowel [əm], [əʊ], [əu], [əʊ].
3. Those that begin with the open vowel can end with either front or back close vowels, [ai], [aʊ], [au], [aʊ].

The only combination missing in the symmetry is [əm], but considering the small sample of data, this is not surprising. The diphthong [ɔʊ] appears to be an exception to the above constraints, but what I have transcribed may in fact be an allophone of /əʊ/.

The nasalization in nasal vowels is quite strong, especially on the second member of a diphthong. The most common nasal diphthong is /aʊ/. It is back, unrounded, very close, and strongly nasalized. At first I thought it was a velar nasal consonant. Bennett later convinced me that this...
was not the case, although I do not think the matter has yet been fully tested.

Padaung is one of the few Karen languages to retain any nasal vowels. Padaung has Karen cognates for many of the words which Pa-o lost due to borrowing, so this is a potential key for discovering more about the final stops in Proto-Karen.

Phonation, tone, and glottalization act in concert in Padaung, making it difficult to know a priori which of the features is contrastive. Padaung has three tones: high falling [42], mid [3], and low tones [2] and [1]. Tone [1] is always closed with a glottal stop in utterance final position. Tone [3] can optionally be closed with a glottal stop.

Phonation can occur on the mid [3] and low tone which I have labelled [2]. Breathy vowels are not closed with a glottal stop.

2.4 Geba

The Geba word list is preliminary phonetic data. The consonants, vowels and tone in Figure 9 should be tested to see if they are phonemic.

Geba has no /ŋ/, but it has the palatal nasal /ɲ/. It joins Padaung in having the voiceless labial-velar approximant /m/.

All the vowels can occur with breathy phonation. It appears to be phonemic. There are some cases of nasalized
**Figure 8: Geba Phonemic Inventory**

### Geba Consonants

<table>
<thead>
<tr>
<th></th>
<th>labial</th>
<th>dental</th>
<th>alveopalatal</th>
<th>retro-velar</th>
<th>glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceless unaspirated</td>
<td>p</td>
<td>t</td>
<td>c</td>
<td></td>
<td>k</td>
</tr>
<tr>
<td>voiceless aspirated</td>
<td>ph</td>
<td>th</td>
<td>ch/sh</td>
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<td>kh</td>
</tr>
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<td>voiced stop</td>
<td>b</td>
<td>d</td>
<td></td>
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<td>m</td>
<td>n</td>
<td>n</td>
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<td></td>
</tr>
<tr>
<td>fricative</td>
<td>θ</td>
<td>z</td>
<td>h</td>
<td></td>
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</tr>
<tr>
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<td>w m</td>
<td>l</td>
<td>j</td>
<td>r</td>
<td></td>
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</table>

### Geba Vowels

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
<th>Back</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>unrounded</td>
</tr>
<tr>
<td>Close</td>
<td>i i</td>
<td>u u</td>
<td>w w</td>
<td>u u</td>
</tr>
<tr>
<td>Close-mid</td>
<td>e e</td>
<td>u u</td>
<td>w w</td>
<td>u u</td>
</tr>
<tr>
<td>Open-mid</td>
<td>e ø</td>
<td>ø ø</td>
<td>ø ø</td>
<td>ø ø</td>
</tr>
<tr>
<td>Open</td>
<td>a a</td>
<td>a a</td>
<td>a a</td>
<td>a a</td>
</tr>
</tbody>
</table>

### Geba Tones

- [5] high
- [3] mid
- [1] low
vowels. They do not correspond to the occurrence of nasal vowels in Padaung. I am unsure if they are contrastive, or can be linked to historical nasal consonants. I have not included them in Figure 8.

There is no occurrence of [a] except in unstressed syllables, so it is not contrastive. Geba is the only language under study to have /u/. It is slightly rounded and centralized, very close to the vowel in English put.

Geba has two frequently occurring tones, mid [3] and high [5], and an infrequent low tone [1] which is discussed in Chapter Three.
CHAPTER 3: PROTO-CENTRAL KAREN TONES AND REFLEXES

In this chapter I explore the origin of phonemic tone in Southeast Asia. I sketch an overview of the great tone split that swept Southeast Asia, multiplying the number of tones. I list the historical sound changes that were involved in creating that great tone split, and detail how it affected Central Karen languages. I argue for the usefulness of Haudricourt's 3x3 grid, while pointing out its limitations. Finally, I diagram the evolution of tone from Proto-Central Karen to each of the modern languages in this study.

3.1 Tonogenesis

No language is spoken as a monotone. Every language has pitch. Phonetic pitch variations can be due to the speaker's attitude, intonation patterns in sentences, stress patterns in words, or the relative tenseness of the larynx at any particular moment. Matisoff (1973:76) has pointed out that laryngeal tenseness is associated with voicelessness, final glottal stop, retracted tongue-root, and high or rising pitch. By contrast, a lax larynx is associated with voicing, final [h], advanced tongue root, and lower or falling pitch. Lahiste (1970:71-73) has shown
that even for a non-tonal language like Serbo-Croatian, the fundamental frequencies of words beginning with voiceless consonants is about 15 Hz higher than words with voiceless consonants.

But what causes phonetic pitches to develop into significant tones? Where did tonal languages come from?

**Tonogenesis in Southeast Asia**

It seems that there are several factors in Southeast Asia that facilitated the development of tonal languages.

The first of these was that the languages were basically monosyllabic. In such languages, according to Matisoff (1973:77-78), the various parts of the monosyllable are often very tightly interdependent, increasing the likelihood that contrastive functions may shift from one phonological feature of the syllable to another.

The second factor was consonant reduction. Consonants affected the pitch of the word. Subsequently, as initial and final consonants and consonant clusters were reduced or neutralized, the pitch left behind had to carry the contrastive load. According to Matisoff (1973:81), one generalization holds in Sino-Tibetan languages such as Karen: the better preserved the consonantal system, the fewer the vowels and the fewer the tones, and vice versa.

There is also a functional reason why monosyllabic languages are more prone to becoming tonal. A monosyllabic
language typically has no more phonemes than a polysyllabic language, and yet it is generally restricted to one syllable in word formation, thus limiting the potential number of words. It must find other ways to increase the number of contrasts. Ancient Tibetan compensated for this by allowing up to five consonants in initial consonant clusters, and two more in the final (Mazaudon 1976:16). There is no indication in the orthography that the language was tonal. When the languages in Southeast Asia made tone contrastive, this served as an efficient way to increase the potential lexical inventory two or three fold.

**Tonogenesis in Burmese**

Burmese presents a clear example of tonogenesis. The tones in Burmese have developed from the assimilation of features (i.e. pitch) from the final consonant onto the syllable nucleus, after which the final consonant was deleted, and the pitch was phonemicized. Maran (1971) bases his argument on a comparison of Written Burmese, Standard Burmese and a large dialect which he calls Northern Burmese.

Written Burmese has quite a number of final consonants and supposedly represents how Burmese was spoken several hundred years ago. Northern Burmese has a reduced number of final consonants along with redundant
pitch which is completely predictable depending on the final consonant. Standard spoken Burmese has no final consonants and four contrastive tones. Thus Maran (1971) believes that Northern Burmese represents an intermediate historical stage between Written Burmese and Standard spoken Burmese.

Perhaps Burmese is a modern example of how tones originally developed throughout Southeast Asia. The first tones developed from final consonants. This seems to be the stage at which Standard Burmese is now. Subsequently, when tones were well entrenched in the language, initial consonant neutralization caused the number of tones to multiply. This, in fact, is the great tone split that has been documented in many of the other languages throughout Southeast Asia, which I discuss below.

3.2 The Great Tone Split in Southeast Asia

During the present millennium a great tone split has been sweeping across Southeast Asia affecting languages as far west as India's eastern-most state of Assam, all the way east to Vietnam and north into China. Gedney (1985:117) calls this "one of the most drastic and extensive sets of sound changes ever to have occurred anywhere." Mazaudon (1985:202) says "...this split is paralleled in all the languages of the area: Thai,
Chinese, Miao-Yao, and Vietnamese, and is more of an areal feature than a family trait."

Haudricourt (1972:60) defends the claim that language change can take place over a geographical area even among languages of different families. Such languages form a linguistic area, commonly known as sprachbund. He claims that Southeast Asia is a linguistic area, even though the languages belong to three different families. Languages in Southeast Asia were nearly all affected by the great tone split, regardless of how closely those languages were related.

The date of the split in Central Thailand can be narrowed down to the two hundred year period from the mid-fifteenth to the mid-seventeenth centuries (Gedney 1985:119). It is likely that it took place in many of the other languages prior to this. Brown (1965) details the fact that this split occurred in seven major Thai languages, as evidenced in seventy-nine modern Thai dialects.

One of the first to record the effects of this phenomenon was Karlgren (1915). Haudricourt (1972:58) cites Karlgren as saying that in certain Chinese dialects the initial voicing contrast was replaced by contrasting tones on the following vowel. Haudricourt goes on to present convincing evidence from dozens of languages across Southeast Asia that a two-way tone split in those
languages arose out of a similar voiced versus voiceless initial consonant contrast.\(^1\)

It is not necessary for all of the initial voicing contrasts to be neutralized in order for the split to take place. The Tho dialect of Thai demonstrates the fact that the neutralization of the contrast on the sonorants was sufficient to cause the tone split, even though the voiced stops were not devoiced (Haudricourt 1972:65).

It is interesting to note that in Burmese the split has not yet taken place. Accordingly, Burmese still has a full set of voiceless and voiced sonorants. Perhaps tones are not sufficiently entrenched in Burmese to make the language susceptible to the next step.

The split caused a language with three tones to split into six or nine tones, depending on whether the language split two or three ways. It affected all the Karen languages.

3.3 The Great Tone Split in Central Karen

The great tone split caused a two-way split in some Karen languages, (Haudricourt 1972:62) and a three-way split in others (Mazaudon 1976:11). But not all the scholars who have conducted Karen phonological reconstructive research recognized it.

\(^1\)In some languages, the tone split resulted in a three-way split, caused variously by glottalized, aspirated, and voiced consonants (Haudricourt 1972:58).
Previous Work on Tonogenesis and Tonal Evolution in Karen

Jones (1961) reconstructed two tones for Proto-Karen, and three classes of final consonants which combined to create six tones in the modern languages. He noted a cause and effect relationship between change of final stop, change of tone, and loss of aspiration of the initial stop. He built his reconstruction on the premise that the final consonant affected the tone, and the tone in turn affected the initial consonant. Thus, in contrast to the claims of Haudricourt and this study, he felt that the direction of effect between tone and the initial consonant was from right to left.²

For example, one of Jones' rules states, "Aspirated stops became unaspirated in the low tone on loss of final /q/, and also in high tone before [C₂] /-l-/ in items with final /ʔ/." (Jones 1961:102). This may account for the data, but it does not explain the motivation for deaspiration applying to only some of the stops. This claim that the class of aspirated initial consonants split does not seem as likely as Haudricourt's claim that, in fact, a merger took place.

Burling (1969) simplified Jones' rules somewhat, but he also did not consider the great tone split as one of

²I have been unable to review Jones' more recent work (1971) to see whether he may have revised any of his earlier theories.
the factors for tonal development in Karen. He proposed six tones for Proto-Karen, and traces the modern tones to those. Like Jones, he felt that tone affected initial consonants. One of his rules states that low tone [], mid tone [-], and low tone with inherent glottal stop [\?] caused the initial aspiration to be lost in Palaychi and Sgaw Karen. Regarding this, Mazaudon (1976:8) remarks that, "...it is not clear why a phonetically unmotivated loss of aspiration in a series of tones should occur."

Haudricourt (1946) reconstructed three classes of initial consonants similar to those in Thai: aspirated (high class), voiceless unaspirated (mid class), and voiced (low class). He proposed two proto-tones on syllables not closed by stops, tones *A and *B, and one tone on syllables closed with stops, tone *C. It is on this foundation that the analysis for this study has been built.

Later Haudricourt (1975:341) revised his theory to account for exceptions which do not fit his theory. He did so by proposing a fourth proto-tone. He labels this new tone

---

3An asterisk (*) indicates a proto-form or proto-tone, or a form or tone before the great tone split.

4For the sake of simplicity, I am calling it three tones. Haudricourt actually did not claim that the *C closed syllable was in fact a contrastive tone at the Proto-Karen level. Weidert (1987) suggests that these may not have been tones, but different types of syllables which lent themselves to the development of different tones.
tone, *Ei.\(^5\) This study will suggest why positing a *B\(^1\) tone may not be necessary.

**Five Sound Changes in The Great Tone Split**

All the Central Karen languages in this study split two ways, causing the number of tones to double. The split resulted from a series of historical sound changes listed below. Eastern Kayah is the only language in this study to have completed all five steps. Western Kayah has completed the steps through step four. I think Padaung is in the process of step four, and Geba being more conservative, has just completed step three in this generation.

Steps two and three are not ordered, since they apply to different sets of consonants.

1. Initial *voiced consonants caused the following vowel to be pronounced with breathy phonation. For example, *bo\(^3\) > bo\(^3\), *ma\(^1\) > ma\(^1\).\(^6\)

2. All *voiced obstruents became voiceless. All voiceless obstruents remained unchanged. Thus the voiced set [b d d\(^2\) g] merged with the unaspirated voiceless set [p t c k]. The vowels of words\(^7\)

\(^5\)For a fuller explanation of the B\(^1\) tone, and why Haudricourt proposed it, see also Mazaudon (1976:13) or Weidert (1987:326-327).

\(^6\)A right wedge (>) indicates a historical sound change.

\(^7\)I use the term *word* for any syllable.
originally having voiced initial consonants retained their breathy phonation. For example: *bɔ̄³ > pɔ³; *pɔ³ (no change).

3. All *voiceless sonorants [hm hn hŋ hm hl hj hr] became voiced, merging with the voiced sonorants.⁸ The vowels from words with voiced sonorants retained their breathy phonation. The voiceless sonorants which became voiced did not cause the vowels in those words to become breathy because that historical change was no longer operative. For example: *hlo⁵ > lo⁵; lo⁵ (no change).

As a result of these steps, phonation on the vowel became contrastive because the contrast of the initial consonants was lost.⁹ For example: po³ and pɔ³ (from the example in sound change #3 above) are now contrasted on the basis of vowel phonation rather than initial consonant voicing.

4. Breathiness on the vowel caused the pitch to lower. For example: po³ > pɔ¹; lo⁵ > lo³.

5. Breathiness was lost. For example: pɔ¹ > po¹; lo³ > lo³.

⁸Justification for Proto-Central Karen voiceless sonorants is given in Chapter Four.

⁹I think language is more likely to lose something that has already become redundant. The study follows the common practice among Tibeto-Burman reconstructionists of using h before a consonant to indicate voicelessness.
The fifth sound change completes the tone split. The tones on all words which had *voiced initial consonants ended up being lowered, while the tones of words with *voiceless initial consonants remained unchanged. The following two examples show all of the above sound changes in order:

1. *Voiced obstruents: *bo₅ > bo₅ > po₅ > po₃ > po₃.
   *Voiceless obstruents: *po₅ > po₅.
2. *Voiced sonorants: *lo₅ > lο₅ > lο₃ > lο₃.
   *Voiceless sonorants: *hlo₅ > lo₅.

The point of the above examples is not what happened to the consonants, since I discuss that in detail in Chapter Four, but to note that initial consonants caused tone [5] to split. The tone on words with *voiced consonants was lowered, while the same original tone on words with *voiceless consonants stayed the same. I will discuss in more detail how all three tones split in each language in the sections below.

Even though at the time of the split lower tone was associated with voiced initials, and higher tone with voiceless initials, there is a final claim to keep in mind when studying the etymology of modern tones. Once the contrast of the initial consonant is lost, the tones are free to evolve (Haudricourt 1972:63).
Haudricourt's 3x3 grid

The 3x3 grid is simply a graph with the variables of tones *A, *B and *C across the top, and three classes of consonants down the side, as in Figure 9. The intersection of the two variables represents a set of words. All words in any Karen language can thus be divided into nine sets. It is crucial to remember that these variables are based on the relevant features of the initial consonant and tone before the great tone split, not in the modern languages.

Figure 9: Haudricourt's 3x3 Grid Applied to Eastern Kayah

<table>
<thead>
<tr>
<th>Tone *A</th>
<th>Tone *B</th>
<th>Tone *C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Class *aspirated</td>
<td>[3]</td>
<td>[2]</td>
</tr>
<tr>
<td>Mid Class *unaspirated</td>
<td>[3]</td>
<td>[2]</td>
</tr>
<tr>
<td>Low Class *voiced</td>
<td>[2]</td>
<td>[21]</td>
</tr>
</tbody>
</table>

Each of the nine sets in the graph has a number. This number is the modern tone associated with the two variables. For instance in Figure 9, modern tone [21] has the variables voiced and tone *B. This makes certain claims about the set of words in Eastern Kayah with the modern tone [21], namely, that before the great tone split those words had voiced initial consonants and tone *B.
This is an interesting claim if one considers the fact that none of the modern words with tone [21] have voiced initial stops.

Note that all the mid class modern tones are the same as their high class counterparts. This is because both the high and mid classes are unvoiced, and in Central Karen the two-way split was caused only by the voiced versus voiceless contrast; aspiration was irrelevant.\textsuperscript{10}

Tone Mergers

The 3x3 grid for Eastern Kayah is ambiguous about the etymology of words with modern tone [2]. This ambiguity occurred because tones A3 (tone *A, consonant class 3) and B1 (tone *B, consonant class 1, etc) merged. Tones merged because the tone split produced an unnecessarily large number of tonal contrasts. Some of the tones that were created were similar enough in pitch that the difference was irrelevant. For example, in Eastern Kayah the mid tone (*A) split causing the tone on all *A3 words to become low, [3:] > [2:]. Next, it lost breathiness, making it identical to tone B1 which had not changed [2:] > [2].

The merging process is complicated by the fact that in different languages different tones merged. Even in

\textsuperscript{10}The above 3x3 grid is necessary for Karen languages which split a different way, such as Pwo, a Southern Karen language (Mazaudon 1976:11). In Pwo A2 merged with A3 instead of with A1 (Haudricourt 1972:81).
the same language, the split and consequent merging of tone seems to have happened in different ways in different villages. For example, there are two villages about fifteen miles apart with nearly identical dialects except for the tone pattern. 11 According to my language teachers, variation of tone is common in Kayah State.

This leaves us not knowing whether Eastern Kayah words with modern tone [2] descended from tone *A with voiced initial consonant, or tone *B with unvoiced initial consonant.

Luce's Cognate Sets

In cases of ambiguity, it becomes very useful to compare words with their cognates in Western Kayah, because in Western Kayah all six sets carry distinctive tone and phonation as shown in Figure 12. The A3 class of words in Western Kayah have breathy vowels with low tone [1:], and the B1 words have low tone, non-breathy vowels [1]. 12 Comparing cognates is facilitated by the work of linguists like Luce.

11 The two villages are Huay42 Poŋ1 ?oon3, about ten miles northwest of Maehongson which speaks the northern dialect of Eastern Kayah; and Huay42 Dma3, a few miles southwest of Maehongson, which speaks the southern dialect of Eastern Kayah.

12 A colon after the number indicate breathiness. In the transcription of words, breathiness will be indicated by two dots under the vowel.
Luce first published word lists in 1959, and again in 1985. In the more recent work he lists cognates from seven different Karen languages. He organized his data into sets of cognates based on their tones, which ended up roughly corresponding with the nine sets in Haudricourt's 3x3 grid above. For example, Luce's "Tone Pattern III" represent A1 words, indicating that the modern tones derived from *A tone. The modern reflexes for the cognates in "Tone Pattern III" are shown in Figure 10.

The Limitations of Haudricourt's 3x3 Grid

Luce found that tones within cognate sets were predictable. In Figure 10, if a Pwo word has tone [6], its cognate in Sgaw and Western Bwe is predictably tone [1], and tone [6] in Northern Pa-o.¹⁴

**Figure 10: Luce's Cognate Sets**

<table>
<thead>
<tr>
<th>Pattern III</th>
<th>Pwo</th>
<th>Sgaw</th>
<th>W. Bwe</th>
<th>N. Pa-o</th>
</tr>
</thead>
<tbody>
<tr>
<td>'fowl'</td>
<td>shā⁶</td>
<td>sho¹</td>
<td>f₁¹</td>
<td>chja⁶</td>
</tr>
<tr>
<td>'to weave'</td>
<td>thai⁶</td>
<td>the¹</td>
<td>the¹</td>
<td>then⁶</td>
</tr>
</tbody>
</table>

But there were examples of cognates that did not have the predictable tone. In "Tone Pattern V", which shows the

¹³I regret that to this point I have been unable to review the former lists.

¹⁴Luce (1985) uses a different tone marking system, which he does not explain.
modern reflexes for B2 words, all the tones were consistent except Sgaw, "which irregularly showed a tone /4/ = *A (aspirate / voiceless) tone" (Weidert 1987:326). So Haudricourt (1975:341) proposed an additional tone category at the Proto-Karen level to handle this inconsistency, making four columns instead of three. This increased the grid to a 3x4. The tone was labeled *B1*.

In response to this, Weidert (1987:330) asked an appropriate question: If research in more Karen languages uncovers additional inconsistencies, "...do we have to posit more proto-tones on the Common Karen level?" The inconsistencies that Weidert suspected have come to light from Kayah and Padaung data, as is shown below. But does that mean we must posit more proto-tones? Erroneously thinking that the variables in Haudricourt's 3x3 grid refer to the Proto-Karen stage might lead one to think so.

However, the variables on Haudricourt's 3x3 grid were arrived at by comparing how the great tone split affected various Southeast Asian languages, some of which had an orthography which revealed the stage of the language before the great tone split. In other words, on Haudricourt's 3x3 grid, the changes that took place between the stage represented by the variables and the tone numbers reflecting modern reflexes are the direct results of the great tone split and nothing else. Thus all
we can say about those variables is that they represent the language at the commencement of the great tone split.

In other words, based on a word's modern tone reflex, Haudricourt's 3x3 grid predicts the derivation of that tone and the word's initial consonant. But it can take the derivation back only to the stage at the commencement of the great tone split, not necessarily back to the Proto-Karen stage.

The great tone split did not take place at the Proto-Karen stage. Between the Proto-Karen stage and the great tone split, Karen had presumably split up into several dialects. Language changes had surely taken place already.

This has two implications. First, the variables on the grid are not necessarily features of Proto-Karen. A voiced consonant at the commencement of the great tone split was not necessarily voiced at the Proto-Karen stage. Neither are the tones *A, *B, and *C on the grid necessarily Proto-Karen tones. The variables represent whatever stage the language was at when the great tone split affected it.

Secondly, the nine sets of words that the 3x3 grid defines are not identical in all of the languages. For example, if one can determine that the second syllable of the Western Kayah word kha₃mi⁵ 'tail' is in the B3 class (*B tone, *voiced initial consonant), that does not necessarily mean that its cognates in other Karen
languages will belong to that same set. In fact, the Padaung cognate, \(ka^3mei^3\), is also a B3 word. But in Geba the tone indicates that the cognate, \(ka^5mi^3\), belongs to the B1 set, (*B tone, *voiceless initial consonant). The fact that the modern cognate in Luce's Geba, \(ka^1hmi^2\), is voiceless is additional confirmation of this.

Bwe may have lost all its final consonants between the Proto-Karen stage and the commencement of the great tone split.\(^{15}\) Therefore, it would not have any words that would fit into the *C (stopped syllable) tone classes.

Another factor is that the great tone split did not affect all the languages at the same time. I believe this to be true because language change usually spreads gradually. In fact the tone split took approximately 400 years to spread across Southeast Asia. The split has probably been completed for generations in some languages, while in Geba Karen it appears that the change is not yet complete.

The implication is that, upon finding irregular tones in a correspondence set, an alternative to positing new proto-tones would be that a sound change may have taken place in that language before the great tone split

\(^{15}\)The logic for this claim is as follows: tone *C is by definition the category of words closed by stops. As noted in Figure 14, Bwe modern tones in columns *B and *C are identical. One logical explanation for this merger is that the original contrast between the two categories was neutralized, namely, that final stops in *C were lost.
occurred. Such words would then have different variables, and thus be affected differently.

Another way to express it is that a sound change occurred before the split, which moved words from one class into another in Haudricourt's 3x3 grid.

Despite the caution mentioned above, Haudricourt's 3x3 grid is useful in reconstructing the proto-language, if these limitations are kept in mind.

Phonation in Central Karen

Contrastive phonation in several Central Karen languages further confirms Haudricourt's voicing versus voiceless analysis.¹⁶ In Kayaw and Western Kayah, all the words in the grid's high and mid classes have non-breathy vowels, and all the words in the low originally *voiced class have breathy vowels.

Put another way, contrastive breathy vowels occur only in syllables with modern initial obstruents /p t c k ʔ/ and sonorants /m n w l j r/. There is no contrastive phonation after initial voiced stops /b d/, the aspirates /ph th sh kh/ or the fricatives /θ h/. As Solnit (1989:3) puts it, "The phonation contrast descends from an old voicing contrast, with the initials of syllables now

¹⁶Much of the information in this section come from Solnit (1989).
distinguished by phonation being mergers of former pairs contrasting for voice."

3.4 Proto-Central Karen Tone

Figure 11 shows the evolution of tone from Proto-Central Karen (PCK) to the modern reflexes in the following languages: Padaung (PD), Geba (GB), Western Kayah (WK), Eastern Kayah (EK), and a Northern dialect of Eastern Kayah which I call Northeastern Kayah (NK). The languages divide on the highest level with Proto-North Central Karen (NCK) and Proto-West Central Karen (WCK) on the left, and Proto-East Central Karen (ECK) on the right.

Figure 11: Diagram of Proto-Central Karen Tone Evolution

The numbers represent the tone values of tones A, B, and C respectively. The following sections treat the processes involved in each language.
Merger of High and Mid Class tones

In the Central Karen languages, tones of the high (*aspirated) and mid (*unaspirated) classes are identical. The top row of numbers in the modern languages above represent the tones of that merged set (A1/A2, B1/B2, C1/C2). The bottom row of tone numbers (A3, B3, C3) is for the low class (*voiced) series. This abbreviated layout of Haudricourt's grid is also used by Solnit (1989) and Bennett (1991).

The Tone Numbers

In Central Karen before the great tone split, there were two tones. These could be represented by any two numbers. I chose [5] for high, and [1] for low, to facilitate comparison with the tone numbers used for the modern languages. The pitch associated with the codas that gave rise to tone *C was probably not yet phonemic, but I sometimes refer to it as a tone for the sake of discussion. The fact that tone *C syllables ended with stops was probably enough to distinguish them from the open syllables. I give tone *C the pitch value of [3] to

17 Aspiration was not a factor in the tone split for Central Karen languages.

18 If comparing their work, my *C tone compares to what they sometimes label *D tone.
show that it was somewhere in the mid range between the [5] and [1] tones.

Proto-Kayah's Innovative Tone Shift

In modern Padaung and Geba, tone A is high and tone C is mid, whereas in Kayah it is the other way around. How did these tones "switch place"? Figure 11 illustrates how they developed from a common Proto-Central Karen tonal system.

Before the great tone split, an innovation took place in Proto-East Central Kayah in which tone *C was raised to a higher pitch [?5], ending up phonetically higher than the high tone *A, [5]. We noted above (in section 3.1) that a high pitch is a natural phenomenon in syllables with final stops. In Proto-North and West Central Karen the raising did not take place.

When tone *C became phonemic, each language had to readjust internally to determine which tones would fill the high, mid and low tonemes. This was decided by comparing the relative pitches of tones A, B and C.

In comparing tone *A to tone *C in Proto-East Central Karen, tone C was higher due to the innovative raising it had undergone earlier. So tone *C became the high tone.

\[\text{---} \]

\[\text{19} \] Bennett (1991:12) also raises the possibility that this "switch" of A and C tone values occurred before the great tone split, but he does not develop it in that paper.
and tone *A became mid. In Proto-West and North Central Karen, in which tone *C had not been raised, tone *C was lower than tone *A, so tone *A became high tone and tone *C became mid. In all the languages tone *B was lower than tone *A or *C, so it remained low. This analysis is both simple and plausible.

3.5 Tone Evolution from Proto-Central Karen to Modern

Reflexes

This section details the evolution of tone in the three Central Karen language groups.

Figure 12 shows the modern tone correspondences for three of the Kayah languages included in this study.

When the great split occurred, the contrast of initial consonant voicing was transferred from the consonant to the vowel in the form of breathiness. Consequently, the voiced series tones were lowered in most modern languages. Compare the tones of the three modern languages in Figure 12.

Tone C3 is the only tone which lowered in all three dialects: [5:] > [3:]. This indicates that this sound change presumably occurred before the three dialects split apart. Assuming that mid tone [3] is the most neutral, least marked tone, it seems likely that naturalness may have been an added motivation for this tone to lower before the others.
At this stage Northeastern Kayah lost breathiness, and its tone evolution ended, resulting in its three modern tones.

Figure 12: Tones in East-Central Karen (Kayah)

<table>
<thead>
<tr>
<th>Proto-East Central Karen before the great tone split</th>
<th>Tone</th>
<th>*A</th>
<th>1</th>
<th></th>
<th>C</th>
<th>?5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proto-East Central Karen after the great tone split</td>
<td>Tone</td>
<td>*A</td>
<td>1</td>
<td></td>
<td>B</td>
<td>?5</td>
</tr>
<tr>
<td>*Non-voiced</td>
<td>3</td>
<td>1</td>
<td></td>
<td>C</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>*Voiced</td>
<td>3:</td>
<td>1:</td>
<td></td>
<td>C</td>
<td>5:</td>
<td></td>
</tr>
<tr>
<td>Northeastern Kayah</td>
<td>Tone</td>
<td>*A</td>
<td>1</td>
<td></td>
<td>B</td>
<td>?5</td>
</tr>
<tr>
<td>*Non-voiced</td>
<td>3</td>
<td>?1</td>
<td>?5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Voiced</td>
<td>3</td>
<td>?1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Kayah</td>
<td>Tone</td>
<td>*A</td>
<td>1</td>
<td></td>
<td>B</td>
<td>?5</td>
</tr>
<tr>
<td>*Non-voiced</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Voiced</td>
<td>1</td>
<td>?21</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Kayah</td>
<td>Tone</td>
<td>*A</td>
<td>1</td>
<td></td>
<td>B</td>
<td>?5</td>
</tr>
<tr>
<td>*Non-voiced</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Voiced</td>
<td>1:</td>
<td>5:</td>
<td>3:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Western and Eastern Kayah the process continued. The A3 tone became low: [3:] > [1:] in both dialects. Lowering the B3 tone, [1:], was problematic because it was already low. Eastern Kayah made it a low falling tone, ending with glottal constriction: [%21]. In Western

20 A more accurate transcription of the low tones in Eastern Kayah would be [1] and [1-0], if it is possible to have a zero tone, since the low falling seems to drop to the very bottom of the voice range. In these comparisons I use [1] and [21] for the low tones for ease in comparing to the other dialects, and in keeping with Solnit's and Bennett's notation. On my word lists, however, I used [2]
Kayah, rather than becoming lower, it was raised to the only remaining empty tone slot, namely, high: [5:].

Finally, Eastern Kayah lost breathiness, and very recently added a high falling tone [52]. The [52] tone developed when the final syllable of certain restricted constructions was lost, and its low tone merged with the high tone of the preceding syllable. For example, \textit{ku}[^3]khi[^5]o' 'corn' in Northeastern Kayah represents the historically more conservative form. In Eastern Kayah the final vowel was dropped, but its low tone remained, resulting in the form \textit{ku}[^2]khi[^5]z.\textsuperscript{21}

**Tone Evolution from Proto-North Central Karen to Modern Reflexes**

This section looks at the evolution of tone in several Karen languages which did not participate in Proto-East Central Karen's innovative raising of tone *C to [5]. In all these languages, modern tone A1 is higher than C1.

Kayaw appears to be very conservative. As the tones in Figure 13 suggest, Kayaw's tone system has not changed for low tone and [21] for low falling to show the relative pitch of the two to each other.

\textsuperscript{21}At present the [52] tone is relatively rare. It occurs in only five words in the list of four hundred words in the appendix. A minimal pair between the high and the high falling tone is: \textit{i}[^2]tho[^5] 'to row (a boat)'; \textit{i}[^2]tho[^5]z "knife". As noted in Chapter Two, Thai has a similar falling tone.
since the great tone split. The *voiced class of consonants produced breathiness, but not significant tone lowering. This evidence implies that at least for these languages "the initial laryngeal contrast transfers to the rhyme as phonation, and that pitch is only affected later (Solnit 1989:9)."

**Figure 13: Tones in North Central Karen Languages**

<table>
<thead>
<tr>
<th>Proto-North Central Karen before the great tone split</th>
<th>Tone *A</th>
<th>Tone *B</th>
<th>Tone *C</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td></td>
<td>?3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proto-North Central Karen after the great tone split</th>
<th>Tone *A</th>
<th>Tone *B</th>
<th>Tone *C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-voiced</td>
<td>5</td>
<td>1</td>
<td>?3</td>
</tr>
<tr>
<td>Voiced</td>
<td>5:</td>
<td>1:</td>
<td>?3:</td>
</tr>
</tbody>
</table>

**Kayaw (Solnit 1989)**

<table>
<thead>
<tr>
<th>*Non-voiced</th>
<th>55</th>
<th>11</th>
<th>33</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voiced</strong></td>
<td>55:</td>
<td>11:</td>
<td>33:</td>
</tr>
</tbody>
</table>

**Padaung**

<table>
<thead>
<tr>
<th>Non-voiced</th>
<th>42</th>
<th>71</th>
<th>73</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voiced</strong></td>
<td>2:</td>
<td>3:</td>
<td>73</td>
</tr>
</tbody>
</table>

As in the three Kayah dialects, Padaung's high breathy tone A3 was lowered. But unlike Kayah, it was

---

22 Although his tonal evolution is different, Solnit (1989) was the first to suggest that Kayaw represented a more conservative Karen tonal system.

23 Solnit reports that the mid tone on breathy syllables is slightly lower in pitch than the mid tone on non-breathy syllables, but he does not mark the difference (1989:2).
lowered all the way to low tone: \([5:] > [2:]\).\(^{24}\) The tone B3 breathy tone could not be lowered, since it was already low. So, similar to Western Kayah, it raised to the next higher available slot: \([1:] > [3:]\). I do not know the motivation for this, unless it is tone dissimilation. Padaung's tone C3 lost breathiness without lowering.

**Tone Evolution from Proto-West Central Karen to Modern Reflexes**

In West Central Karen the final stops were lost before the great tone split, causing tones *B* and *C* to merge, as illustrated in Figure 14. This is reflected in the modern languages of Geba and Bwe.

![Figure 14: Modern Geba and Bwe Tone](image)

<table>
<thead>
<tr>
<th>Geba</th>
<th>Tone A</th>
<th>Tone B/C</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Non-voiced</em></td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td><em>Voiced</em></td>
<td>3</td>
<td>(3/1:)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bwe (Henderson 1979)</th>
<th>Tone A</th>
<th>Tone B/C</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Non-voiced</em></td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td><em>Voiced</em></td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

In Geba about twenty percent of the B3/C3 (hereafter called B3) words are low breathy \([1:]\) tone with the remainder being mid breathy \([3:]\) tone. There is no

\(^{24}\)The low tones \([2]\) and \([1]\) are nearly identical in pitch, the differences being [breathy, slightly falling, longer, and open syllable] versus [non-breathy, level, shorter, and closed syllable].
apparent conditioning environment causing this. It is possible that, since Geba has just lost its voiceless sonorants in this generation, the resultant tone split has not yet stabilized. This supports the claim in section 3.3 that breathiness precedes tone lowering. The comparison with Bwe below seems to confirm this.

The Geba A3 tone, on the other hand, has already lowered and is fairly consistent.

Geba modern tones may represent an earlier stage of Bwe. In Bwe, as described in Henderson (1979), there are three phonetic tones. High tone occurs with non-voiced initials (A1 above). Mid tone can occur with voiced or voiceless initials (A3 merged with B1). Low tone always occurs with voiced initial (B3) words. The evolution from a Geba type tone system to Bwe involves two steps: First, B3 becomes low tone. Second, breathiness is lost, making the distinction between A3 tone and B1 tone irrelevant.

Losing breathiness seems to be quite natural. It has already been lost in Eastern Kayah, and there is some evidence that it is becoming less distinct in Western Kayah. For example, Bennett commented (personal communication) that marking breathiness is the most common spelling error of newly literate Western Kayah students. These facts would seem to indicate that breathiness is a waning phenomenon associated with the early stages of the great tone split, but easily lost.
Bennett (1991) documents an exceptional case. It is a Kayah dialect spoken by the single village of Do\textsuperscript{3}sho\textsuperscript{i}pia\textsuperscript{5} in a location surrounded by predominantly Western Kayah speakers. The vowels of this dialect are more like those of Eastern Kayah than those of Western Kayah. The tones on the other hand, in Figure 15, resemble neither Eastern or Western Kayah, but are like those of the North Central and East Central Karen languages such as Padaung and Geba. That is, tones A and C are opposite of what one would expect for a dialect of Kayah, an East Central Karen language.\textsuperscript{25}

**Figure 15: Tone Pattern for Do\textsuperscript{3}sho\textsuperscript{i}pia\textsuperscript{5}**

<table>
<thead>
<tr>
<th>Do\textsuperscript{3}sho\textsuperscript{i}pia\textsuperscript{5} (Bennett 1991)</th>
<th>Tone A</th>
<th>Tone B</th>
<th>Tone C</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Non-voiced</em></td>
<td>55</td>
<td>11</td>
<td>31</td>
</tr>
<tr>
<td><em>Voiced</em></td>
<td>33:</td>
<td>21:</td>
<td>11:</td>
</tr>
</tbody>
</table>

I suggest that this dialect originated when Karen from other areas immigrated into this village. For decades, if not centuries, the Central Karen area has been an area of movement. Kayah and Bwe fought the Paku Karen, (Luce 1959). Slave takers must have traveled through the area to capture Pa-o slaves to the North (Luce 1985a:28).

\textsuperscript{25}Do\textsuperscript{3}sho\textsuperscript{i}pia\textsuperscript{5} is the name of a village speaking an aberrant dialect of Western Kayah. Grouping it with Padaung and Kayaw raises historical questions which I am unable to answer at this point in our knowledge.
Kayah State has been in a state of civil unrest for most of the past half-century.

After moving into the area, these immigrants married with the local residents. Cross-language marriages are not uncommon among the Karen. One of my Kayah teachers was married to a Sgaw. My Geba teacher was married to a Padaung man and her sister to a Gekho.

More study needs to be done to determine more precisely which languages influenced this unusual dialect.
CHAPTER 4: PROTO-CENTRAL KAREN CONSONANTS AND REFLEXES

Chapter Three focused on the tonal sound changes associated with the great tone split. This chapter studies the sound changes that occurred to the initial consonants in Central Karen.

4.1 Initial Consonant Reduction

Nearly all the languages of Southeast Asia had one or more series of consonants with non-default laryngeal features (Haudricourt 1972:76). The glottalized stops and voiceless, aspirated sonorants in Proto-Central Karen are two such examples. It is common for regular sound changes to make a segment less marked. The great tone split was fueled in part by this natural tendency for language to move away from markedness.

4.2 Proto-Central Karen Consonants

Haudricourt (1946) proposed a set of *voiceless sonorants for Proto-Karen similar to those I have proposed for Proto-Central Karen in Figure 16. These later merged with the *voiced series. Jones (1961) and Burling (1969) did not. This chapter is based on Haudricourt's analysis, applied to Central Karen.
The data for this chapter are drawn from my word lists from each of the three divisions of Central Karen. West Central Karen will be represented by Geba (GB), East Central Karen by East Kayah (EK) and West Kayah (WK), and North Central Karen by Padaung (PD). I will include Pa-o (PA) for comparison, since it is the only language with final stops. The Pa-o entries come from three sources: Luce (1985), Jones (1961) and Hopple (n.d.).26

See the alphabetical listing in the appendix to find the source for any particular Pa-o word. The three Pa-o sources used different transcriptions for tone and
I also include cross references to Luce's (1985) Bwe (BL) and Geba (GL) data, and occasionally to Bennett's (1992) Geba (GJ) data to provide evidence for *implosives and *voiceless sonorants respectively.\textsuperscript{27}

Only the relevant word of an expression, or relevant syllable of a cognate will be shown.\textsuperscript{28} For a listing of the complete words, see the word lists in the Appendix.

4.3 Consonant Classes

One result of the great tone split was that in most languages voiced and voiceless sets of initial consonants merged together, resulting in different tones on the syllable. In order to determine the voicedness of the initial consonant before the great tone split it is therefore imperative to compare the modern tone with Haudricourt's 3x3 grid. The variables of the grid indicate the voicedness of the consonant before the great tone split.

back unrounded vowels, both of which I changed to be consistent with my lists.

\textsuperscript{27}Luce (1985) uses a different tone marking system, which I did not change for Bwe (BL) and Geba (GL).

\textsuperscript{28}Henderson (1979) warns against using only a syllable of a word because of the value of seeing syllables in context to check for possible affects of tone sandhi. I tried to use truly monosyllabic words to avoid this problem as much as possible. I invite the reader to investigate the full words and expressions in the appendix to see if tone restraints may be a factor. There are examples in Padaung, for example, of the same apparent proto-word showing up in two different modern expressions with two different tones.
As discussed, however, in Chapter Three, the etymology of words with modern low tone [2] in Eastern Kayah is ambiguous. Tone mergers in other Central Karen languages resulted in additional ambiguities. The etymology of these words can be determined by comparing them with unambiguous cognates in other Karen languages, especially Western Kayah. The Figures 17 and 18 included below are a helpful tool for doing that. The expected tone values for these patterns come directly from the 3x3 grids in section 3.5 of this study.

For example, in Figure 17 the expected tones for A1 cognates are as follows: EK [3], WK [3], GB [5], PD [42]. Any set of cognates that have these tones are without doubt A1 words. The example given for evidence of *ph below is EK phi3, WK phi3, GB phi45, PD phei42, PA pla1, 'rice husk'. The tones in the example match the expected tone values, except that GB is [45] instead of [5]. This discrepancy is probably because the Geba data is written phonetically.

If any of the words seriously departed from the expected tone values, an explanation would need to be found for the inconsistency, as is done for voiceless nasals below.

29 Figures 17 and 18 are similar to Luce's "tone pattern" charts introduced earlier, but include the Karen languages studied here.
Additional evidence for proto-segments can be found in more conservative languages in the family. For many of the proto-consonants I am positing below, I was able to compare seven Central Karen languages, plus some of their dialects.  

Figure 17: High/Mid Class Tone Values of Cognate Sets

<table>
<thead>
<tr>
<th>Expected modern tone values for *voiceless consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luce</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>III</td>
</tr>
<tr>
<td>VI</td>
</tr>
<tr>
<td>VIII</td>
</tr>
</tbody>
</table>

The tone patterns cannot be used to check *voiceless aspirated versus *voiceless unaspirated because, as noted above, in Central Karen aspiration was not a factor in the tone changes that occurred at the great tone split.

4.3.1 High Class Consonants

The *aspirated consonants were one of the most stable sets of consonants. Figure 17 gives tone values for high and mid class cognates. The first column indicates the corresponding number from Luce's tone patterns for cross-referencing with other Karen languages. The second column gives the consonant class according to Haudricourt's 3x3

30 Many thanks to Bennett for sharing his data (Bennett 1992), which included four additional languages.
grid. The expected tone values for tone *A1, *B1 and *C1 are given, (since aspirated consonants fall in all three categories).

**Voiceless Aspirated Stops**

*ph  EK phi³, WK phi³, GB phje⁴⁵, PD phei⁴², PA pla¹,  
\[ \text{rice husk' (70), (A1). See also 39, 44, 174, 213, 306, 342, 287a.} \]

In the four languages of this study, *ph has not changed since Proto-Central Karen.

*th  EK thê⁵, WK thja⁵, GB thê³, PD thau?³, PA thê⁵, 'pig' (85), (C1). See also 19, 23, 32, 196, 386, 272, 216, 384.

There has been no historical change in *th. In Geba, /th/ is realized as [ch] or [sh] (perhaps slow speech versus fast speech) before close-front vowels (see 23). This rule may also apply optionally to front close-mid vowels (see 15).

*ch  EK cha³, WK shie³, GB shi⁵, PD ñhi⁴², PA chja¹,  
\[ \text{'chicken' (99), (A1). See also 375, 168, 331, 4, 264, 318, 200, 305, 96, 374, 279, 91, 237} \]

WK, GB and PD have undergone deaffrication, while retaining aspiration /sh/. ³¹ This explains the origin of

³¹ The characteristics of the aspirated fricative were tested by J. Fraser Bennett and myself on an SIL Speech Analysis System (Cecil Box). It is composed of a period of
aspirated spirants in these languages. Before close vowels, /sh/ is pronounced [ʃh] (see 168).32

*kh  EK khi3, WK khi3, GB khi5, PD khei42, PA ke3 'tiger' (73) (A1). See also 75, 133, 376, 313, 153 301, 236, 214, 1a, 189, 169, 185, 12, 370.

In consonant clusters, *kh was reduced to k in Kayah (see 185).

Fricatives

*θ  EK si5, WK θε5, GB θa3, PD sa3, PA shaʔ5, 'heart' (141), (C1). See also 202, 269, 61, 78, 45, 62, 71, 368, 141, 239, 252, 266, 110, 324, 79, 378.

In Western Kayah and Geba, *θ did not change. In Geba free variation between [θ] and [t] is possible before front-close vowels (compare 202 and 269). In Western Kayah /θ/ is occasionally realized as [s] (compare 110 and 324).

In Eastern Kayah and Padaung, *θ became dental point of articulation, becoming modern /s/ (a flat fricative). In Padaung there is free variation between [s] and [θ] preceding non-front vowels, compare 78 and 45.

*h  EK ho3, WK xwa3, GB hε5, PD hw42, PA hun1, 'hear' (222), (A1). See also 321, 186, 26, 28, 16, 65, 377.

friction followed by an approximately equal period of aspiration before the following vowel is voiced.

32 This is not obvious in the transcription of Western Kayah because this segment is written phonemically.
The *h has not changed. In Western Kayah, /h/ is realized as [x] before the high back vowel /u/, 222 and 321. This allophonic occurrence of [x] is not evidence for *x in Proto-Central Karen.33

Jones (1962:100) proposed *x and *γ for Proto-Karen. There is no trace in the modern languages that this contrast ever existed in Proto-Central Karen. Namely, there are no syllables with the initial consonant [h] or [x], with breathy vowels. If *γ had existed in Central Karen, modern WK breathy vowels would reflect that.

**Voiceless Oral Sonorants**

Voicelessness is a marked feature on oral sonorants. The oral sonorants in the Central Karen languages are losing the marked series, but at different rates in different languages.

The voiceless lateral *hl became voiced in all the languages. Geba has just begun voicing *hl in this generation. (Compare Geba of this generation (GB) with Luce's Geba of the last generation (GL) below).

The segments *hj and *hr became voiced in all the languages except Geba. In Eastern and Western Kayah *hm became voiced.

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33 The phonological rule above is an adequate explanation for the occurrence of [x]. A similar rule showing the typical effect of vowels on consonants in Karen is that the approximant [j] is raised to the fricative [j] before close vowels.
*hm  EK ve², WK ve¹, GB ho³, PD mha?¹, PA va⁵, 'bamboo' (48), (B1). See also 282.

*hl  EK le³, WK le³, GB le⁵, PD la⁴², PA la¹, GL hlɛ¹, 'moon' (3), (A1). See also 43, 14, 249, 235, 371, 25, 270.

Padaung does not fit the expected tone patterns for 25 and 270.

*hj  EK je⁵, WK za⁵, GB jho³, PD jo?², PA jo?⁵, GL hjo², 'swollen' (379), (C1). See also 161, 390, 257.

The [?2] instead of [?3] tone on the Padaung entry was probably a transcription mistake.

*hr  EK rw³, WK rw³, GB ho⁵, PD ṭwa⁴², PA ron¹, 'silver' (33), (B3). See also 333.

Voiceless Aspirated Nasals

The voiceless aspirated nasals comprise a very small percentage of the forms, but evidence for these proto-segments cannot simply be dismissed. This evidence, together with the voiceless oral sonorants, forms a symmetry which argues for their existence at the proto-stage of the language. The fact that this set of words is small indicates that by the time of the great tone split, many of the nasals had already become voiced, as shown below.
"hm  EK ma³, WK mie³, GB mi¹, PD mei⁴, PA met³, GL hmi¹
'sleep' V (261) (A1). See also 177, 140, 166, 212, 45a, 170.
The examples above follow the tone patterns with adequate consistency. However, the additional examples 37, 90, and 233 are problematic. In Geba the tones consistently match the high class patterns, evidence for "hm, and in fact the modern forms of GL and GJ are voiceless. But in Eastern and Western Kayah and Padaung the tone patterns resemble the corresponding low class values, as one would expect for "m.

A possible explanation is that the voiceless nasals had already begun merging with the voiced nasals before the great tone split in Kayah and Padaung. For the tone split to have an effect, the split in the tone must precede neutralization of the voicing contrast between the high and low class initial consonants. In these examples, the neutralization apparently occurred first. When the tone split occurred later, these words were already voiced (in the three languages mentioned), so they underwent the associated sound changes along with other voiced segments. In Geba they were still voiceless, so they were treated as high class segments, and were given high class tones.

Realizing that changes occurred between the Proto-Central Karen Stage and the great tone split relieves us
from postulating more proto-tones for Proto-Central Karen to account for the exceptions.

*hn  EK no^2, WK nae^1, GB nu^5, PD nae^2, PA num^5, GL hnu^1
    'sniff' (223) (B1). See also 270.
Neither example 223 or 270 follows the normal tone patterns completely. However, there is insufficient data to establish an alternate pattern. Number 270 follows the C1 tone pattern for the first three languages and the A1 tone for Padaung. I cannot explain that, unless there is another influence on the tone.

*hŋ  EK ne^3, WK ne^3, GB he^3^4, PD nae^2, PA na^5, 'know'
(252) (A1). See also 226, 273.
None of the three examples of *hŋ follow the tone patterns for either high or low class consonants. However, this makes sense if in some languages these nasals were voiced before the great tone split, similar to *hm above.

Specifically, 252 follows the A1 pattern, except for Padaung, which matches the A3 tone. Therefore in Padaung the segment was voiced prior to the great tone split. Both 226 and 273 were voiced in Eastern and Western Kayah and probably Padaung before the tone split.

All the examples match the high class tone values for Geba, indicating that in Geba they were still voiceless. Geba eventually dropped off the nasal, retaining only the [h] in the modern language. In the case of 273, I am not
sure why the Geba form moved to the dental point of articulation.

4.3.2 Mid Class Consonants

In the tone patterns, mid class (unaspirated, voiceless) consonants merged with high class (aspirated), so Figure 17 can still be used for checking these tone patterns. Glottalized (implosive) consonants are included in this set.

Voiceless Unaspirated Stops

*p  EK pw'i', WK pw'i', GB p'i', PD pwh'i', PA pw'i', 'bird nest' (94) (B1). See also 25, 27, 88, 404.

In 94, Geba’s breathiness and consequent lower tone is probably due to the lingering aspiration from the deleted mh. The Padaung cognate provides evidence for this.

*t  EK to', WK to', PD tua're', PD taw' 'correct' (400) (A1). See also 402, 393, 273, 64, 403, 405, 406.

There are only rare cases of modern /t/ in monosyllabic words. It is often associated with absence of stress. The most common occurrence of *t in Western Kayah is in the unstressed prefix te- found in almost ten percent of the Kayah words elicited. For example, EK ta' ?a', WK te ?a', GB te' ?e', PD ei're', PA en', 'ginger' (64). That same prefix does not generally occur as a cognate in the other languages in this study, thus it is perhaps not good
evidence for *t. This segment also occurs perhaps as a suffix in several question words (see 403, 405 and 406 listed above).

Although the distribution of the modern /t/ is limited, it is not completely predictable. I do not see how to eliminate *t at this point.

In 393 and 273 the phoneme is realized as [d] in some languages, [t] in others, perhaps marginally voiced and somewhat in free variation. Their tones indicate that these words derived from a voiceless (*t) or glottalized (*d) segment. I favor using these two examples to support the voiceless ancestor, *t, because the reflexes are weakly and inconsistently voiced. The reflexes of glottalized *d are fully voiced, and consistently represented as /d/ in all the languages in this study.

*ç EK çɔ́³, WK çɔ́³, GB çɔ́⁵, PD çɔ́w⁴², PA çɔ́ŋ', 'tie' V
(289) (A1). See also 356, 280, 381, 286, 241, 274.

*k EK kɔ́⁵, WK kɔ́⁵, GJ ku³, PD kɔ́³ 'full' (stomach) (230) (C1). See also 158, 337, 36, 63, 66, 112, 146, 148, 202, 282.

Most of the examples of /k/ are two or three syllable words or expressions. In many cases Geba is cognate with the syllable or syllables of the word or expression which does not include the /k/.
There is no evidence of Proto-Central Karen glottal stop in syllable initial position. There are two rules concerning glottal stop in the modern languages. First, it is predictably inserted before any syllable not beginning with a consonant. This is especially noticeable when it is inserted before the second or third syllable of a word, as in 27, 61, and 67.

The only exception to this insertion rule is in the case of particles. Solnit (1986:15-16) reports for Eastern Kayah that for particles starting with a vowel, "the clitic nature of particles finds phonetic expression in their being fused to the preceding morpheme." He gives the following minimal pair to illustrate: The morpheme [u⁵] is the classifier for books. The particle [u⁵] is a diminutive suffix. When the classifier is used in a phrase, a glottal stop is inserted: kəjɛ² li³ u⁵ 'Kayah book'. By contrast, when the particle is used, no glottal stop is inserted: 'kəjɛ² li³ u⁵ 'the Red Karen' (full self-designation of the Kayah) (Solnit 1986).

Glottal stops are also associated with certain tones. Glottal constriction always accompanies the [52] tone in Eastern Kayah. It is associated with that tone and is thus predictable. There is another potential analysis for this. If one were to say that the [2] and [21] tones were allophones of the same tone, the difference in
pronunciation being caused by the presence or absence of a non-predictable glottal stop, then the glottal stop would be contrastive. One fact that raises doubt about this analysis is that non-predictive glottal stop only occurs with low tone. In either case, it does not argue for Proto-Central Karen glottal stop, because our theory of tone evolution claims that the [21] tone derives from tone *B. Only tone *C syllables were closed with stops.

The Padaung data is different. I would argue that the glottal stop on modern *tone C syllables is evidence for Proto-Central Karen glottal stop in syllable final position. The fact that it occurs on both high and low class syllables in the *C tone category is evidence that this glottal stop did not originate from the great tone split. Furthermore, it is on mid tone syllables. All of the tone-related glottal stops in our data occur on high or low tone syllables. The *C tone syllables were by definition closed by stops. The modern glottal stops are the reflexes of those Proto-Central Karen glottal stops.

The fact that these glottal stops can be deleted in modern speech shows that the process of reduction is continuing unabated. It does not argue against Proto-Central Karen glottal stop in syllable final position. One final argument is that Pa-o Karen still has final stops in *C tone syllables. The glottal stops in North and East
Central Karen at the time of the great tone split were remnants of those consonants.

Finally, I claim that, if there had been no glottal stops in Central Karen at the time of the great tone split, the *B and *C tone categories would have merged. (I discussed this above for Proto-West Central Karen).

Implosives

*6  EK be2, WK bja1, GB ba3, PD ba2, PA baŋ5, BL 6a2  
'bamboo shoot' (49) (B1). See also 68, 220, 347, 363, 366, 196, 65, 346, 354, 204, 53, 86.

*cf  EK di2, WK di1, GB di3, PD dei2, PA de5, BL di2,  
'frog' (106) (B1). See also 106, 140, 98, 78, 95, 183, 69, 258, 339.

Bwe is the only modern Central Karen language with implosive consonants. The modern reflexes in all the other central Karen languages are solidly /b d/.

Implosives segments were not changed by the first two sound changes listed below. The vowels associated with these segments are not breathy, even though the modern consonants are voiced. Also, the modern reflexes are not voiceless, even though all voiced obstruents became voiceless. This is evidence that the sound changes involving these processes must be ordered as follows:  
(Note #1 and #2 are from section 3.)
1. Vowels became breathy after voiced consonants.
   (For example: bo > bɔ)

2. All voiced obstruents became voiceless. (For example: bo > pɔ)

3. Glottalized consonants lost their glottalization. (For example (ɓo > bo).

If change three had happened before change one, breathy vowels would be associated with all modern voiced obstruents, but they do not occur with any of them.

If change three had happened before change two, there would be no voiced obstruents in the modern languages, but there are.

4.3.3 Low Class Consonants

Low class consonants were voiced. The *voiced consonants passed phonation on to the following vowel. The great tone split occurred when these segments were devoiced, merging them with the set of unvoiced consonants. The result was that the phonation on the following vowel was the only remaining contrast for syllables that had previously been distinguished by the presence or absence of voicing on the initial consonant.

The voiced oral sonorants and nasals were not affected by the great tone split. However, they still passed phonation on to the vowels.
The only modern language in this study to have retained the phonation contrast in all three tone categories is Western Kayah.

Figure 18 is a useful reference for checking the tones of the following cognates against what is expected for low class segments.

Figure 18: Low Class Tone Values of Cognate Sets

<table>
<thead>
<tr>
<th>Expected modern tone values for *voiced consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Luce</strong></td>
</tr>
<tr>
<td>I</td>
</tr>
<tr>
<td>IV</td>
</tr>
<tr>
<td>VII</td>
</tr>
</tbody>
</table>

Voiced Stops

*b  EK pɔ^2, WK pɔ^1, GB phu^3, PD pɛw^2, PA phvŋ^3 'cooking pot' (205) (A3). See also 86, 180, 205, 309, 257, 171, 117, 111, 144, 317.

In Geba *b > ph unless there was an initial consonant cluster. In Luce's (1985) Geba and Bwe (GL, BL) the *voiced stops were still voiced. See *d, number 101 and *g, number 382 below. In my Geba (GB) list, elicited one generation later, they are voiceless.

*d  EK te^3, WK tc^3, GB ta^3, PD ta^3^2, PA tha'?', BL da^3, GL da^2 'fish' N (101). See also 52, 72, 265, 283.
The evidences for *dʐ is that in several modern languages /c/ is followed by a breathy vowel, and the examples usually have the expected tone values. This indicates that the initial consonant was originally voiced, even though no modern instances of [dʐ] are found in Central Karen.

In Geba and Padaung the stop component of *dʐ has been deleted unless the initial was a consonant cluster. There are some inconsistencies in the tones for these words. Only about half have the expected tone values. I do not know what is causing this.

Voiced Oral Sonorants

*ɣ  EK ku^2^1^,  WK kṳ^5^,  GB ku^3^,  PD k^u^3^,  PA kho^4^2^,  BL go^2^,  GL go^2^, 'hot' (382) (B3). See also 108, 7, 62, 129, 165, 278

In both Kayah dialects, labial-dental friction was added to the features of *w in syllable initial position.

*ɬ  EK li^2^,  WK li̤,  GB li^3^,  PD lei^2^, 'red' (364) (A3). See also 369, 382a, 190, 362, 29, 36a.

*ɻ  EK jo^2^1^,  WK zo̅e^5^,  GB ju^3^,  PD ju^3^,  PA ju^2^, rat (80) (B3). See also 97, 11, 76, 358, 332, 351.
It can be argued that all the modern languages retain /j/ as an underlying form. Eastern Kayah is the only language with the surface form [j] in all environments. In the other three languages, the segment is changed in syllable initial position as follows:

1. In Geba /j/ optionally has the allophones [z] or [j] before close vowels.
2. In Padaung /j/ is a fricative [j] before all but open vowels.
3. Western Kayah /j/ is [z] in all syllable initial environments.

There are two words in Western Kayah where [j] occurs syllable initially. First, je (360), is part of a diphthong. Second, jo3 (103) was not affected because it is the reflex of a consonant cluster, cf. EK jwa3. The proof that neither of these two examples descends from *j is that neither of the vowels are breathy.

*r EK ri21, WK ri5, GB we3, PD qi3, PA re2 'rattan' (51) (B3). See also 42, 102.
In Geba *r has merged with *w. There are few examples of /r/ in word initial position.

Voiced Nasals

*m EK mo21, WK mo5, GB mu3, PD ma32, PA mu42 'sun' (2) (A1). See also 12, 14, 15, 37, 47, 52, 173, 182, 217, 233, 263, 310.
The proto-form *m was retained in all the modern languages.

*n  EK ne^2, WK ne^5, GB ne^3, PD na^3, PA na^4 'buffalo' (88) (B3). See also 171b, 277, 89, 121, 268.

There are various degrees of palatalization of /n/ before close vowels in the languages under study.

*n EK ne^3, WK na^3, GB na^3, PD na^3, PA na^5 'five' (326) (C3). See also 244.

In Eastern Kayah and Padaung, /n/ is realized as [ŋ] before a high front vowel or glide. (244, 84). In Western Kayah, it has the allophone [ŋ] before all non-back vowels. In Geba, *ŋ lost its nasality, and became an alveo-palatal fricative: [ʂ].

Two sets of cognates with initial nasal consonants are puzzling. Both of them pattern as *voiceless, high class reflexes. One would therefore expect to find the voiceless nasal in GL and GJ as in all the other examples, as deriving from *hm and *hn. But instead the modern forms are voiced. Examples:

'sky' (1/1a) (C1) EK mo^5, WK mo^5, GB mo^3, PD mo^2, GL mo^2.


The most likely explanation for this seems to be that Central Karen still had some glottalized nasals at the time of the great tone split. Glottalized consonants are
mid class, and pattern with the high class tones. Therefore, the change that took place mirrored that which occurred with *6 and *d', resulting in reflexes that are voiced and associated vowels that are non-breathy.

However, I resist positing a third series of proto-nasals simply on the basis of these two examples. It does remain a possibility to be explored.

Haudricourt (1972) reconstructs glottalized and/or voiceless nasals for several languages in Southeast Asia, and documents a Miao dialect which still has all three.
CHAPTER 5: SUMMARY

As a result of pitch differences caused by laryngeal features of the final consonants, Southeast Asian languages came to have tone. Subsequently, a sweeping tone split caused the number of tones to multiply. The split began as the transfer of laryngeal features from initial voiced consonants to the following vowel, resulting in contrastive phonation. This contrastive phonation subsequently became contrastive pitch, (i.e. tone).

In Central Karen the three original tones split two ways, resulting in six contrasts. Karen reconstructionists who failed to recognize this split could not account adequately for the modern tones.

The tone split was concomitant with the neutralization of the contrast between voiced and voiceless initial consonants. Tone came to distinguish words that had previously been distinguished by the voicing contrast of the initial consonants.

The five sound changes connected with the great tone split are not complete in all Central Karen languages. The voiceless sonorants of Padaung and Geba are becoming voiced. Western Kayah is losing breathiness on the vowels.
Finally, glottalized consonants became voiced, filling the vacuum in the sound system caused by voiced consonants becoming voiceless, and resulting in Central Karen's modern voiced obstruents.

Languages which have undergone all the sound changes connected with the tone split continue to change in new ways. East Kayah's falling tone has become contrastive, and will become more pervasive. Only time will tell what new changes will take place.
APPENDIX I: KAREN WORD LISTS

Notes on Transcription

1. All syllables are separated by a space. Two vowels not separated by a space indicates a diphthong. No conjecture is made concerning word breaks.

2. Parenthesis () usually indicate an optional part of a word or expression. Parenthesis in the gloss may also enclose additional clarifying information.

3. Entries separated by commas are synonyms, or words from different sources or speakers.

4. Words or letters separated by back slash are optional or unsure pronunciations, for example shu/w.

5. Luce did not explain his tone marking system for BL and GL. I left them in their original form.

6. For Pa-o, I use [1 3 5] to mark Jones's (1961) low, mid, and high tones respectively, and [42] for his circumflex tone. I use [w] for Hopple's (n.d.) barred-u and Jones's [y]. I use [v] for Hopple's barred-ə, and Jones's barred-u. For the source of the Pa-o entries, see the English Glossary, directly following the word list.
1. sky (lower)  
EK mo² le²  
WK mo² le³,  
PD mo² la³  

1a. sky (upper)  
WK mo² hu¹  
GB mo³ khu¹  
PA mo⁵ kham² ko¹  

2. sun  
EK to² mo² ¹  
WK te mo⁵  
GB lu³ mu³  
PD maw³  
PA mu⁴ ²  

3. moon  
EK le³  
WK le³  
GB le⁵  
GL hie¹  
PD la⁴ ²  
PA la¹  

4. star  
EK che²  
WK she¹  
GB she³  
PD sha?¹  
PA cha⁵  

5. cloud  
EK s⁵ lo² ¹  
WK s⁵ la³  
GB te³ to³ bu³  
PD le² ūe⁴ ²  
PA te³ bo⁴ ², wm⁵  

6. mist  
EK the³ ū³, the³ te shi⁵  
WK thie³ ò³, thie³ te shi⁵  
GB te³ shi³ thi⁵  
PD pe² sw³ ūh⁴ ²  

7. rain (verb)  
EK ke⁵ cw²  
WK ke⁵ cw¹  
GB me³ la¹  
PD ka³ fhwe⁷ ³  
PA kham⁴ ² lo¹, shan¹  

8. rainbow  
EK the³ lo² ¹ bo² ?o⁵ ²  
WK thie³ la¹ me³ sha⁵  
GB lu¹ ta¹ pa⁵  
PD pra³ ūe³ fhw⁴ ²  

9. lightning  
EK cha² le²  
WK shie¹ la¹, ka¹ te she³  
GB le⁵ wa¹ li¹  
PD kla³ me³ la²  

10. thunder  
EK mo⁵ khrö³  
WK mo⁵ kro³  
GB le⁵ la³ phla³  
GL hla¹  
PD kla³ me³ ja³  
PA khrvŋ⁵  

11. shadow/photo  
EK jë² jo²  
WK za⁵ zo¹  
GB kë³ le¹  
PD a³ jö²  
PA jö³, ru¹  

12. night  
EK mo²¹ khi⁵  
WK mo⁵ khi⁵  
GB te¹ chi⁵  
PD me³ khw²  
PA mu¹ khi⁵  

13. day  
EK mo²¹ se³ kle³  
WK mo⁵ she³ kle³  
GB lu³ mu³ shi⁵  
PD me³ sha⁴ ²/cha⁴ ²  
PA mu¹ ja¹
14. morning
EK mo3 li3
WK mo5 li3
GB lu3 mu3 wa1
PL mən le142

15. noon
EK mo3 thø2
WK mo5 thu(e)1
GB mu3 shø3
PD məø3 thi2

16. yesterday
EK pa3 he5 nuw2
WK pa3 he5 nu1
GB mu5 he3
PD la4 muw42 ha2 ha3

17. tomorrow
EK pa3 ro2
WK shie5 pa5 ro3
GB mo1 pe3
PD məu3 cøu2 mə2 røu2

18. year
EK na2
WK na1
BL de2
GB de3
PD nei?1
PA neŋ5

19. east
EK si5 the2
WK ci5 the1
GB lu3 mu3 thø3
PD be2 thə1

20. west
EK si5 no3
WK ci5 məw3
GB lu3 mu3 la1
PD phə2 nə3

21. north
EK si5 the2
WK ci5 thja1
GJ su3 te se3
PD phə2 tho42

22. south
EK si5 le2
WK ci5 lja1
GJ su3 te thwe3
PD phə2 lə2

23. water
EK thø3
WK thie3
GB chi5
PD chw42
PA thi1

24. river
WK thie3 klo3
GB chi5 lo1
PD chw42 lau3

24a. stream
WK lja3 klo1
GJ lθ1 phø3

25. sea
WK pa3 le3
GB pe3 le3
PA paŋ5 le42/laï42

26. soil
EK he2
WK he1
GB lu1 ha3
PD hə2 khlo3
PA ham5

27. mud
EK pa2 ?a5
WK pa1 ?a5
GB ha3 pe3 ?e3
PD hə2 phe3 ?e142
PA phe?1

28. dust
EK he2 mu2
WK he1 mu1
GB hə3 phi5 mu3
PD hə2 phə?1
PA ham5 phun5
29. stone
EK lo⁵
WK lo⁵
GB lu¹
PD ləu³
PA ləŋ⁴²

30. sand
EK he² so³
WK he¹ θo³
GB lu¹ θi⁵ mi³
PD hə² sō³⁴²

31. lime
EK thwi⁵
WK thwi⁵
GB thu³
PD thwmi²³

32. gold
EK the³
WK the³
GB the⁵
PD thi⁴²

33. silver
EK ru³
WK ru³
GB ho⁵
PD ñwə⁴²
PA rə¹

34. iron (metal)
EK to² the⁵
WK to⁵ the⁵
GB thə³ la³
PD thə³¹

35. mountain
EK cho²
WK sho¹
GB kho³ lo⁴³
PD shəu³¹

36. cave
EK la²¹ ku³
WK la⁵ ku³
GB hə³ pu¹
PD shəu¹ ku⁴²

36a. rice paddy field
WK lja⁵
GJ lə²¹
PA ləu⁴²

37. forest
EK mi² kle³
WK mi¹ kle³
GB mi³ lə¹ kle³
GJ hme⁵ lə¹ kle³
PD miu² ka⁴²
PA te³ khra⁵ phə¹

38. tree
EK so²
WK θo¹
GB θo³
PD θəw¹
PA neŋ⁵

39. branch
EK phe³
WK phja³
GB phə⁵
PD phə⁴²
PA pan⁴²

40. bark of tree
EK pha⁵
WK pha⁵
GB phe⁵
PD phe³³

41. thorn
EK so² che⁵
WK su¹ shja⁵
GB əa³ θi⁵
GJ te³ shu³
PD əaw¹ jhu¹³

42. root
EK so² rwi²
WK θo¹ rwi⁵
GB θo³ kha³ wi³
PD əaw¹ rui¹³
PA rwi⁴², hru⁴²
43. leaf
EK le\textsuperscript{2} 
WK le\textsuperscript{1} 
GB le\textsuperscript{4} 
GL le\textsuperscript{2} 
PD la?\textsuperscript{1} 
PA la\textsuperscript{5} 

44. flower
EK pho\textsuperscript{3} 
WK pho\textsuperscript{3} 
GB pho\textsuperscript{5} 
PD phau\textsuperscript{4} 

45. fruit
EK se\textsuperscript{2} 
WK \theta\textsuperscript{c} \textsuperscript{1} 
GB \theta\textsuperscript{c} \textsuperscript{3} 
PD \theta\textsuperscript{m} \textsuperscript{1} 

45a. to be ripe
WK m\textsuperscript{i} \textsuperscript{3} 
GJ h\textsuperscript{m} \textsuperscript{i} \textsuperscript{5} 
PA min\textsuperscript{1} 

46. seed
EK p\textsuperscript{lo} \textsuperscript{2} 
WK p\textsuperscript{lo} \textsuperscript{1} 
GB phlo\textsuperscript{3} 
PD phleu?\textsuperscript{1} 

47. grass
WK m\textsuperscript{i} \textsuperscript{1} \theta\textsuperscript{c} \textsuperscript{1} 
GB m\textsuperscript{i} \textsuperscript{3} 

48. bamboo
EK ve\textsuperscript{2} 
WK ve\textsuperscript{1} 
GB ho\textsuperscript{3} 
PD m\textsuperscript{ha}?\textsuperscript{1} 
PA va\textsuperscript{5} 

49. bamboo shoot
EK be\textsuperscript{2} 
WK bja\textsuperscript{1} 
BL ba\textsuperscript{2}(\textsuperscript{1}) 
GB ba\textsuperscript{3} 
PD ba\textsuperscript{m}?\textsuperscript{1} 
PA ba\textsuperscript{5} 

50. mushroom
EK khr\textsuperscript{m} \textsuperscript{2} 
WK k\textsuperscript{r} \textsuperscript{m} \textsuperscript{1} 
GB cu\textsuperscript{3} 
PD rw\textsuperscript{a} \textsuperscript{2} 
PA shun\textsuperscript{3} 

51. rattan
EK ri\textsuperscript{2} \textsuperscript{1} 
WK ri\textsuperscript{5} 
GB we\textsuperscript{3} 
PD \i\textsuperscript{e} \textsuperscript{i} \textsuperscript{3} 
PA re\textsuperscript{2} 

52. kapok
EK to\textsuperscript{2} /twi\textsuperscript{2} mo\textsuperscript{2} \textsuperscript{1} 
WK to\textsuperscript{1} mo\textsuperscript{5} 
GB cw\textsuperscript{i} \textsuperscript{3} mu\textsuperscript{1} 
PD tu\textsuperscript{i} \textsuperscript{3} mw?\textsuperscript{2} 

53. sugar cane
EK di\textsuperscript{3} kle\textsuperscript{3} bo\textsuperscript{3} 
WK di\textsuperscript{3} klja\textsuperscript{3} bo\textsuperscript{3} 
GB da\textsuperscript{3} khle\textsuperscript{4} mu\textsuperscript{3} 
PD di\textsuperscript{e} \textsuperscript{4} khla\textsuperscript{i} \textsuperscript{4} be\textsuperscript{u} \textsuperscript{4} \textsuperscript{2} 

54. betal nut
EK mu\textsuperscript{5} se\textsuperscript{2} 
WK mc\textsuperscript{5} \theta\textsuperscript{c} \textsuperscript{1} 
BL \theta\textsuperscript{u} \textsuperscript{1} bu?\textsuperscript{2} ... 
GB kwa\textsuperscript{3} \i\textsuperscript{5} 
PD mw\textsuperscript{i} \textsuperscript{1} sa?\textsuperscript{1} 
PA plu\textsuperscript{4} \textsuperscript{2}, m\textsuperscript{e}\textsuperscript{k} \textsuperscript{1} muk\textsuperscript{4} \textsuperscript{2} 

55. liquor
EK the\textsuperscript{3} i\textsuperscript{5} ph\textsuperscript{re} \textsuperscript{2} \textsuperscript{1} 
WK thie\textsuperscript{3} si\textsuperscript{5} pre\textsuperscript{5} 
GB \i\textsuperscript{5} ra\textsuperscript{3} 
PD si\textsuperscript{3} \i\textsuperscript{1} \textsuperscript{w}?\textsuperscript{1} 

56. banana
EK di\textsuperscript{3} klwi\textsuperscript{5} se\textsuperscript{2} 
WK di\textsuperscript{3} klwi\textsuperscript{5} \theta\textsuperscript{c} \textsuperscript{1} 
PD khlui\textsuperscript{4} \textsuperscript{2} sa?\textsuperscript{1} 

57. papaya
EK di\textsuperscript{3} klwi\textsuperscript{5} he\textsuperscript{3} se\textsuperscript{2} 
WK di\textsuperscript{3} klwi\textsuperscript{5} he\textsuperscript{3} \theta\textsuperscript{c} \textsuperscript{1} 
PD khlui\textsuperscript{4} \textsuperscript{2} khei\textsuperscript{1} sa?\textsuperscript{1}
59. mango
EK te² khe⁵ se²
WK te khja⁵ te¹
GE te⁵ khe³ te³
PD khau² sa?¹

60. jackfruit
EK mu⁵ le⁵ se²
WK mo⁵ lja³ te¹
GB ma³ na³ te³
PD pha² la⁵ sa?¹

61. coconut
EK mi⁵ tu² se²
WK ma⁵ tu¹ te¹
GB o⁵ di⁵
PD pha³ ?eu³ sa?¹
PA mak⁵ uin¹ hra⁵

62. eggplant
EK ke² se²
WK kja⁵ te¹
GB ka³ du⁵ te³
PD ka⁵ sa?¹

63. peanut
EK ku⁵ bi³ su⁵ se²
WK ko⁵ bi³ tu⁵
GB mo³ be³ su⁴
PD be⁴² ha⁵² ka⁴²

64. ginger
EK ta² ?a³
WK te ?a³
GB te³ ?e⁵
PD ei⁴²
PA en¹

65. garlic
EK bo² ho⁵ bu³
WK pho³ ho⁵ bu³
GB ce⁵ to³ bo⁵
PD be² hau³ bu⁴²

66. red pepper
EK se³ he⁵
WK te hja⁵
PD se⁴ hai⁴²

67. corn
NK ku³ khi¹ o¹
EK ku² khi⁵
WK ku¹ khi⁵
GB te³ khi³
PD k⁴ khi³

68. rice, unhusked
EK bo⁵ te²
WK bu⁵ te¹
BL su²
GB bu³
PD bem³
PA bu¹

69. rice, cooked
EK di³
WK di³
GB di⁵
PD diam⁴²
PA den¹, den¹ min⁵

70. rice husk
EK phi³
WK phi³ te³
GB tho³ phje⁵
PD phei⁴²
PA pla¹

71. salt
EK i⁵ se²
WK i¹ te¹
GB di⁵ te³
PD cr¹ sa?¹
PA ta sha¹

72. animals (lit., animal wild, animal domestic)
EK te² mi² te² do³
WK te¹ mi¹ te¹ do³
GB te³ pho³ te³ we³
PD ta¹ mi¹ ta¹ lam²

73. tiger
EK po³ khi³
WK phus³ khi³
GB khi⁵
PD khei⁴²
PA ke³
74. bear
  EK the³
  WK the³
  GB the⁵
  PD thaw⁴²

75. deer
  WK te khie³
  GB khu⁵
  PD khjo?³
  PA khjo?³

76. monkey
  EK jo³
  WK zo³
  GB zù³ θì⁵
  PD jò³ ləu²

77. gibbon (lit., monkey black)
  EK jo³ lo²
  WK zo³ lp¹
  GB zù³ θì⁵
  PD jò³ ləu²

78. rabbit
  EK de³ se²
  WK da³ ðç¹
  BL pe² de²
  GB de⁴⁵ ðç³
  PD dai⁴² saʔ¹

79. porcupine
  EK sw²
  WK sw¹
  GB ðu³
  PD sòʔ¹
  PA shun⁵

80. rat
  EK jo²¹ khro⁵
  WK zwè⁵ kry⁵
  GB ju³
  PD ju³ khroa⁴²
  PA ju²

81. dog
  EK thwi²
  WK thwi¹
  GB thwi³
  PD thwiʔ¹
  PA thwi⁵

82. bark (verb)
  EK o²
  WK o¹
  GB o³
  PD uʔ¹
  PA u⁵

83. bite (verb)
  EK a²¹
  WK a¹
  GB e¹
  PD eiʔ¹
  PA en⁵

84. cat
  EK thwa⁵
  WK thwo⁵
  GB mi³ jò³
  PD niu⁴², niu⁴²

85. pig
  EK the⁵
  WK thja⁵
  GB thò³
  PD thauʔ³
  PA thò⁵

86. cow
  EK pu²¹
  WK puh⁵
  GB po³
  PD pəu³
  PA pho⁴²

87. milk (lit., breast water)
  EK i² nu⁵ the³
  WK nuə⁵ thie³
  GB nu³ chi⁵
  PD nu¹ fhw⁴²
88. buffalo
EK pe$ ne 21
WK pe 1 ne5
GB pe 3 ne 3
PD me na 3
PA pe7 5 na 42

89. horn (of buffalo)
EK no 2
WK no 1
GB nu 3
PD ka nau 21
PA no$ 3

90. tail
EK ku 5 mi 21
WK kha 3 mi 5
GB ka 5 mi 3
GL ka 1 hmi 2
PD ka 3 mei 3
PA me 42

91. elephant
EK te 2 che 3
WK te shja 3
GB ka 3 sha 5
PD sha 42
PA cha$ 1

92. elephant tusk
EK p! 3
WK p! ja 3
GB p! 3
PD mai 7 3

93. bird
EK thu 2 u 5
WK thuh 1
GB tho 5
PD thu 1
PA v$a 42, va 42

94. bird nest
EK pwi 2
WK pwi 1
GB p! 1
PD pwhi 2
PA pwi 1

95. wing, feather
EK da 5
WK da 5
BL de 2
GB de 3
PD de 3 kai 2
PA de 7 5

96. down feather, whisker
EK chw 2
WK shw 1
GB sho 3
PD jhwo 21
PA chon 5

97. fly (verb)
EK jo 2
WK zwa 1
GB mi 3
PD jem 2

98. egg
EK de 2
WK die 1
BL di 2
GB di 3
PA di 1

99. chicken
EK cha 3
WK shie 3
GB shi 5
PD /hi 42
PA chja 1

100. duck (noun)
EK ta 2 sa 5
WK te shas 5
GB u 3 pe 3
PD pe 3 2 be 3 2

101. fish (noun)
EK te 3
WK tc 3
GB ta 3
PD ta 3 2
PA tha 7 1
102. snake
EK ru2
WK ru5
GB wu3
PD 3u32
PA ru5

103. lizard (species found indoors)
EK jwa3 hi2
WK jo3 hi1
GB de5 li3
PD pla3

104. turtle
EK kli5
WK kli5
GB khli3
PD kla3

105. crocodile
EK te2 je21
WK te ze5
GB te4 me3
PD ja2

106. frog
EK di2
WK di1
BL di2
GB di1
PD dei2
PA de5

107. insect
EK pho3
WK pho3
GB phu3 ba5
PD mu4 pu42

108. spider
EK pho3 ke21
WK phu3 kja5
GB ku3 ka3
PD ka3
PA ku3 kau42

109. spider web
EK co21
WK co5
GB the5
PD lu2

110. louse
EK so2
WK go1
GB go3
PD gi71
PA su5

111. termite
EK phu5 wa5
WK pu5 wo3
GB po3 so5
PD phe2 so42

112. cockroach
NK lo1 ki5 u1
EK lo2 ki52
WK lo1 ki5
GB kho5 bi3
PD te2 kei42

113. snail
NK klu1 de3 hi5 o1
EK klu2 de5 hi52
WK klu1 da3 hi5
GB co3 mi5
PD khlau71
PA uwi5

114. mosquito
EK pho3 chi5
WK pho3 shi5
GJ pe so3 thi45
PD pu2 tei2 jau2

115. bee
EK ti2 ni3
WK te ni3
GB ki1 ni1
PD nei42
116. beetle, green
EK phw3 so3
WK phw3 thw3
GB phw3 ba5 klo3
PD pw2 mw3 su42
PA pi75 thu3

117. butterfly
EK ku5 pe21
WK pi3 pja5
GB k3 n3 phi5
PD mu4 pa42 phn3

118. scorpion
EK de3 me2
WK da5 me1
GB do1 ti1
PD klau2 ma2 tha2 di73

119. head
EK ku2 klo5
WK khu1 klo5
GB ku3
PD ke3 klo73
PA kho7 (top)

120. face
EK pe5 se2
WK me1 ce1
PD mu4 phlw71

121. brain
EK ku2 klo5 no3
WK khu1 klo5 no3
GB i5 nu3
PD ke3 no73
PA ka nok5/no75

122. hair
EK ko5 lo2
WK khu1 lw31
GB khu3 lu4
PD ke3 lu2

123. forehead
EK ma2 the5
WK ma3 the5
GB mi3 tha3
PD mu4 tha1 khew71

124. eyebrow
EK ma3 ko3
WK ma3 kw3
GB me3 ri3 sho3
PD mu4 rau2 fhw71

125. eye
EK pe5 se2 pla2
WK me1 ce1 pla1
GB ka3 du5 phw3
PD mu4 sa1 phlw71
PA me71

126. eyelid
EK pe5 se2 pla2 phw5
WK me1 ce1 phw5
GB ka3 du5 phw3
PD mu42 sa1 phlw1 phw73

129. ear
EK ke5 le2 ko2
WK kha3 le1 kw5
GB ni3 kw3
PD le2 ku/u42
PA na5, na5 la5

130. mouth
EK ku5 ?u2
WK kha3 ?u1
PD kau3 ku42

131. tongue
EK pli2
WK pli1
GB pl3
PD plei21
PA phw3

132. saliva (lit., tongue water)
EK pli2 the3
WK pli1 thw3
GB p3 chw5
PD plei2 shw42

133. tooth
EK ku(h)2 kha3
WK ku1 khwe3
GB o5
PD se2 kwh42
PA te75 na1
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<td>WK khe¹</td>
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<td>beard (lit., chin hair)</td>
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<td>GB chi³ sho³</td>
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<td>EK klw²</td>
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<td>EK ne²¹</td>
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<td>EK ho⁵</td>
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<td>EK di³ bo³</td>
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<td>BL di¹</td>
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<td>GB di³ mo⁵</td>
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<td>GJ de³ hmo⁵⁴</td>
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<td>PD dei⁴ bô⁴²</td>
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<td>PA pa dei¹</td>
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<td>GB òa³</td>
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<td>GB òo⁵ òa³</td>
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<td>143.</td>
<td>liver</td>
<td>EK so²</td>
<td>GB, PD, PA</td>
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<td></td>
<td></td>
<td>WK òwe¹</td>
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<td>GB òa³ bu³</td>
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<td>PD sew⁷¹</td>
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<td>144.</td>
<td>intestines</td>
<td>EK phra³</td>
<td>GB, PD</td>
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<td></td>
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<td>WK prã³</td>
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<td></td>
<td></td>
<td>GB plwi¹</td>
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<td></td>
<td></td>
<td>PD prê³²</td>
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<td>PA phre⁷¹</td>
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<td>145.</td>
<td>hand</td>
<td>EK ku⁵ khu²</td>
<td>GB, PD, PA</td>
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<td></td>
<td></td>
<td>WK te khu¹</td>
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<td></td>
<td></td>
<td>GB cu³ khô³ le³</td>
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<td></td>
<td>PD ci¹ khêu⁷¹</td>
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<td>146.</td>
<td>elbow</td>
<td>EK cu⁵ ma³ ke³</td>
<td>GB, PD, PA</td>
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<td></td>
<td></td>
<td>WK te ma³ kja³</td>
<td></td>
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<td></td>
<td></td>
<td>GB cu³ li³ mi³</td>
<td></td>
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<td></td>
<td></td>
<td>PD ci¹ dei¹ ka⁷⁴²</td>
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<td>147.</td>
<td>armpit</td>
<td>EK pla³ le³</td>
<td>GB, PD</td>
</tr>
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<td></td>
<td></td>
<td>WK pla³ le³</td>
<td></td>
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<td></td>
<td></td>
<td>GB pli⁵ li³</td>
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<td></td>
<td></td>
<td>PD di³ la³⁷³</td>
<td></td>
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<td>148.</td>
<td>palm</td>
<td>EK ku⁵ ja³ ku³</td>
<td>GB, PD, PA</td>
</tr>
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<td></td>
<td></td>
<td>WK te khu³ ku³</td>
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<td></td>
<td></td>
<td>GB cu³ ?i⁵ ta³</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>PD ci¹ ja¹ keu⁷⁴²</td>
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149. finger
EK ku² no³
WK ke no³
GB cu³ mu³
PD ci¹ məə³

150. finger nail
EK ku⁵ me²¹
WK ke no³ ba¹
GB cu³ mu³ pi
PD ci¹ mʊ¹

151. buttocks
EK ku² pja⁵
WK kha³ plie⁵
GB ka³ thə⁵
PD ka⁴ kwʔ¹

152. leg
EK khec²
WK kha¹
GB ka³ kho³
PD hə¹ deî²

153. thigh
NK khec¹ da³ (inner thigh)
EK khec⁵ kə²
WK kha³ kie¹
BL kha² du²
GB kha³ du³
PD hə¹ du¹
PA ki⁵, tji⁵

154. knee
EK khec² ma⁹
WK kha¹ ma³
GB kha³ le³ mi³
PD hə¹ leiʔ³

155. calf (of leg)
EK khec⁵ do² plə²
WK kha³ dəə¹ plə¹
GB kha³ de³ ɵə³
PD hə¹ phun⁴ phəluʔ¹

156. shin
EK khec⁵ khi²
WK kha³ khi¹
GJ kha³ kho kho²
PD ŋa⁴ kəə⁴²

157. foot
EK khec⁵ le² / ku⁵ le¹
WK kha³ dəe¹
GB kha³ kho³ le³
PD ka³ keu¹ laʔ¹

158. heel
EK khec⁵ no² ke³
WK kha³ nəə¹ kja³
GB sha³ jhe⁵ du³ ka⁵
PD ka³ deî¹ ka⁴²

159. bone
EK khrwi⁵
WK kri⁵
GB kwi³
PD rmiʔ²/jhi⁵
PA chut⁵

160. rib
EK rə³ khrwi⁵
WK rə³ kri⁵
GB jə³ kwi³
PD jə³ rmiʔ²
PA reʔ¹, khrwt¹

161. flesh
EK ja²
WK zie¹
GB he³
PD jaʔ¹
PA ja⁵

162. fat, oil (noun)
EK su⁵
WK Θu⁵
GB jə³ pho⁵ jhi³

163. skin
EK pha⁵
WK pha⁵
GB phe³
PD phe⁵²
PA phe⁷⁵

164. blood
EK swi²
WK Θwi¹
GB Θwi¹
PD swiʔ¹
PA shwi⁵
165. sweat
EK ku² sa³
WK ku⁵ θa³
GB chwi⁵ tha³
PD ko³ sei⁴²

166. pus
EK mi³
WK mi³
GB mi⁵
GL hmi¹
PD kwhi¹, whi¹
PA min¹

167. excrement
EK i²¹
WK i¹
GB i¹
PD ei?¹
PA e¹

168. urine
EK i⁵ che²
WK i¹ shié¹
GB jhi³
PD θe¹ jhm?¹
PA chi⁵

169. man
EK phre² khu³
WK prê¹ khu³
GB mi³ kho⁵
PD pra² khêu⁴²
PA kho¹

170. woman
EK phre² mo²
WK prê¹ mo¹
GB mi³ mu⁵
PD pra² mō?²
PA lō⁵ mōŋ⁵

171. person
EK phre² (classifier for person)
WK prê¹
GB pja¹
PD pra²
PA phra³

171b. you (singular)
WK mɛ¹
GJ mɛ³
PA na³

172. father
EK phe³
WK phe³
GB pa⁴
PD pha⁴²
PA pha¹

173. mother
EK mo²¹
WK mwe⁵
GB mɔ³
PD maw³
PA mψ⁴²

174. child
EK phu⁵
WK phu⁵
GB phi⁵ se⁵ pho³
PD phɔ⁳
PA pho¹

175. son-in-law
EK me³ phre² khu³
WK mɛ³ prê¹ khu³
GB cha³ ma³
PD mà³ phre² khêu⁴²

176. husband
EK ve²
WK vɛ¹
GB wa³
PD wa²¹
PA va³, v"a³

177. wife
EK me³
WK me³
GB me⁵
PD ma⁴²
PA ma¹

178. widow
EK phre² mo² ?o² khre⁵
WK prê¹ mo¹ ?o¹ krja⁵
GB mɔ³ sho⁵ ma³
PD pra² mo² shai³
179. elder sibling
EK me²¹
WK vja⁵
GB me¹
PD kwε³
PA ve⁴²

180. younger sibling
EK po²¹
WK puwa⁵
GB pi³ kc⁵ θε⁵ de³
PD pu³
PA phu⁴²

181. friend
EK kho³ be⁵ swa⁵
WK kho³ ba⁵ θwo⁵
GB θε³
PD ηol ṣaw³

182. name
EK mi²², mui³
WK mwi¹
GB mi³
PD mi³
PA mjṁ³

183. village
EK do³
WK do³
BL do¹
GB du⁵
GL do¹
PD dswu⁴²
PA dɔn¹

184. road, path
EK kle⁵
WK klja⁵
GB kle³
PD khlai?³
PA kλai¹ (location)

185. boat
EK so² kle³
WK θo¹ klie³
GB klhi⁵
PD te khlw⁴²
PA phri¹

186. house
EK hi²
WK hi¹
GB ji³
GJ hi³
PD θiů?¹

187. door
EK ka² da³ du²
WK ke da³
GB kha³ kle³
PD ke da⁴²

188. window
EK ka² da³ hu⁵
WK ke da³ phu⁵
GB kha³ kle³ phu³
PD ke da⁴² pho⁵?

189. roof
EK khu²
WK khu¹
GB khu³
PD kheu?¹

190. space under house
EK dle³
WK le²³
GB le³
PD la³

191. wall (of house)
EK dɔ⁵
WK dɔ⁵
GJ tɔ³
PD dɔ²²

192. mat
EK le²¹ de³
WK le⁵ de³
GJ khlo³
PD nu³ da⁴²

193. pillow
EK mwa⁵
WK mwo⁵
PD mwâ²
194. blanket
EK i² ke³
WK hi⁵ ke³
GB mi⁵ ja³
PD mhäuser¹²
PA hom¹

195. clothing
EK hs² ca²
WK hiei ca¹
PD mu⁴ cai²¹

196. weave (cloth)
EK bo⁵ the⁵
WK bo⁵ the⁵
gb bu³ the³
PD bi³ the³
PA thä⁵

197. dye, soak (cloth)
EK ce²
WK ce¹
GB truy³ la³
PD cu² fhew²¹

199. trousers
EK ha² khe² pha³ la³
WK hiei khja¹ thu³
PD nu² leu³ bai⁴²/bai⁴²

200. sew
EK che⁵
WK i¹ she⁵
GB sha³
PD sha³ mhäuser¹²
PA cha⁴²

201. needle
EK the⁵
WK the⁵
GB na⁵ de³
GJ hna⁵ de³
PD cil tu³
PA te?¹ thä?²

202. comb (noun)
EK ku⁵ se²
WK ko³ the¹
GB ti¹
PD ke³ the¹
PA pa shi⁵

203. ring (for finger)
EK to² plo⁵
WK te plowi⁵

204. paper
EK ce² ba²
WK ce¹ ba¹
GB se³ ku³
PD si⁴ beï¹

205. cooking/rice pot
EK di³ p³²
WK di³ p³¹
GB ku³ phu³
PD diā⁴ pew²
PA phu³

206. ladle
EK the³ e⁵ du²
WK thie³ du²¹
PD fhew³ ne⁴ du²²

209. spoon
EK di³ co²¹ (lit., rice spoon)
WK di³ co⁵
GB cwe³
PD co³

210. plate
EK di³ be³ lo²¹ (lit., rice plate)
WK di³ be³ lo⁵
GB la¹ pa¹
PD diā⁴² bai⁴²

211. firewood
EK khru²¹
WK kru¹
GB ho³
PD cau⁴²
PA so⁵

212. fire
EK mi²
WK mi¹
GB mi⁵
GL hmi², mi²
PD mëi?¹
PA me⁵
213. ashes
EK ku5 phe2
WK ko5 phε1
GB phε3 jhe5
PD pha?1
PA pha3

214. smoke
EK kho2
WK khwe1
GB khu3
PD khu?1
PA khu5

215. candle
EK te2 re5 bo3
WK te re5 bo3
PD phe?1 j33 tei?1

216. drum
EK tho3
WK tho3
GB tho5
PD thu42
PA tho?1

217. gong
EK mo2
WK mo1
GB mo3
PD pa?21
PA mo?5

218. crossbow
EK kle2
WK klie1
GB jhi3
PD jhm?1
PA khr?5

219. arrow
EK ple21
WK ple5
GB ple3
PD pla32
PA pla1

220. spear (noun)
EK te2 be3
WK te bja3
BL ba1 ba1
GB ba3 ba5
PD ba?42
PA ba?1

221. knife
EK i2 tho52
WK di1 tho5
GB da3
PD do42

222. hear
EK ni21 ho3
WK ni5 xwe3
GB nε3 he5
PD na3 hu?42
PA hwn1

223. sniff
EK no2 vi2
WK nε1 thja3
GB le3 nu5
GL hnu1
PD nε?2 ?wi?1
PA num5

224. see
EK me5 the2
WK mja5 th?e1
GB ca3
PD u2 jhm?1

225. wink (verb)
EK bo2 kle5
WK bo1 klε5
GB bi3 co3
PD be?1 khm?1

226. weep
EK no21
WK nε5
GB ha3
PD nε?32
PA ny?42
227. eat
EK e²
WK e¹
GB a³
PD a mù¹/a mù?¹
PA am¹

228. swallow (in) (verb)
EK ju² klu³ (no³)
WK zu⁵ klu³
GB jho⁵ ni³
PD te klu⁴ (na³)

229. hungry
EK si⁵ ?e² di³
WK θe⁵ e¹ di³
GB θa³ wi³
PD sa¹ ?àm¹ dià⁴²

230. full (stomach)
EK ko⁵
WK ko⁵
GJ ku³
PD ko³ hw⁴²

231. thirsty (lit., desire
drink water)
EK si⁵ ?o³ the³
WK θe⁵ o³ thje³
GB θa³ ?o⁵ chi⁵
PD sa³ ?o⁴ jhù⁴²

232. drink (verb)
EK o³
WK o³
GB o⁵
PD o⁴
PA ok⁵, ?wa?⁵

233. to be drunk
EK mu²
WK o³ mu¹
GB o⁵ mu³
GL θe⁹ hmu²
PD mèm² si³
PA mun³

234. vomit (verb)
EK phre⁵
WK prja⁵
GB po⁵
PD prau³²
PA phro?⁵, phrok⁵

235. spit (verb)
EK thu² pla⁵
WK thu¹ pla⁵
GB thui³ pe³ chi⁵
PD ci⁴ thwi⁴²

236. cough (verb)
EK tw² khw⁵
WK te khw⁵
GB θu⁵ khu³
PD sa⁴ khu³

237. sneeze (verb)
EK te² che⁵
WK ka shja⁵
GB ko⁵ shê⁵
PD ka¹ shai⁷³

238. yawn (verb)
EK ta² kha³
WK te kha³
GB la³ ta³
PD sa⁴ hai⁴²

239. breathe
EK se⁵
WK θe⁵
GB θe³
PD sa⁴
PA sha¹

240. whistle
EK i⁵ vi³
WK θwi⁵
GB mi³
PD mhi?²/ hui
PA hyu¹

241. suck
EK cwi⁵
WK cwi⁵
GB yo³ ?o⁵
PD cwi⁷³
PA tyup¹
242. lick
EK ja¹
WK i¹ lie¹
GB li³ ta³
PD li³?¹ lie²?¹

244. laugh
EK na³
WK ne³
GB ñ³
PD ña³?
PA ña³?

245. speak
EK i⁵ be²
WK he⁵ be¹
PD ni² jhwí⁴²

246. tell
EK de⁵ cho²
WK he⁵ sho¹ (dv⁵ na³)
GB do³
PD tai³ ba?¹

247. shout
EK e⁵ tho³
WK ë³ tho³
PD ka³

248. answer (verb)
EK i⁵ be² chw²
WK he⁵ sho¹ ka¹ khie³ shw¹
PD ni⁴ jhwí⁴ jw³

249. lie, fib (verb)
EK le² ho³
WK la¹ ho³
GB plc⁵
PD lau?¹
PA lcn¹

250. sing
EK i⁵ ro³
WK he⁵ ro³, òe⁵ wi³
GB ta³ po¹
PD sa⁴ pi³ kla?¹
PA ña³ do⁵ ta³

251. think
EK te² ne²
WK te ne¹
GB ku¹ mu¹
PD ni⁴ sw³

252. know
EK si⁵ ñe³
WK ãe⁵ ne³
GB ãi³ he⁵
PD sei⁴ ña³²
PA she¹ na⁵

253. forget
EK cho³ ta² pa²
WK sho³ te pa¹
GB sho³ to⁵ pho³ ñε³
PD se⁴ pei²

254. choose
EK le² phja⁵, me⁵ phja⁵
WK novo⁵ phie⁵
GB ë³ phi³
PD jwe³ phi⁷²

255. love, want (verb)
EK si⁵ jw²¹
WK ãe⁵ zw⁵
GB ë³ lc³
PD ãi³ jw³

256. hate (verb)
EK si⁵ to² kho³, si⁵ the¹
WK ãe⁵ the¹
GB ãi³ we³ ce³ no³
PD ñ⁵ cw⁴ to³¹

257. wait (verb)
EK o²¹ po²¹
PD o¹ pi³³
PA o¹ pe⁴²

257a. wait (a request)
NK jwa³
WK o¹ ñwo³
GB õ³ sho⁵
258. count
EK de5
WK dja5
GB do3
PD dau3
PA do1

259. afraid
EK si5 i2 che3
WK the5 i1 she3
GB si3 sa5
PD sa2 rau2

260. angry
EK si5 plo2 du2
WK the5 plo1 du1
GB the3 tho3
PD sa42 thu2 dau2

261. sleep (verb)
EK o2 ma3 ta2 pa2
WK o1 mie3
GB sho3 mi5
GL sho2 hmi1
PD o1 mei4 khlw42
PA me3 ben3; ben5 (lie)

262. snore
EK o2 me3 se5 phra2
WK o1 mie3 the5 pra1
GB sho3 mi5 the3 ho3
PD mei42 sa1

263. dream (verb)
EK me2i
WK mie3
GB ma3
GL hma2
PD mei42 ma42
PA man42

264
EK che3
WK she3
GB she5
PD sha42

265. medicine
EK te3 khuh2
WK te1 kha1
GB ti3 mi3
PD cm1 sw1

266. itch (verb)
EK ke2 se5
WK ke the5
GB the5
PD ke4 sa1

267. scratch (verb)
EK ku5 va1
WK ko5 pra1
GB wa3
PD bau2

268. shiver
EK te2 nc3
WK te na3
GB ka3 na3
PD ka2 nau1

269. die
EK sa3
WK the3
GB the5
PD sw42
PA shi1

270. ghost
EK lo3 ne5
WK lwa3 ne5
GB te3 shi3 te3 ne3
PD le2 nau42 pho1
PA lu3

271. sit
EK o2 ne3
WK o1 na3
GB sha3 na5
PD nau42 sho1
PA on5 lan5

272. stand
EK ko5 tho2
WK ko tho1
GB we3 tho3
PD se4 them1
PA on1 then42
273. kneel
EK de⁵ n̂u⁲
WK da⁵ n̂u⁲
GB tu³ nu⁵ la³
GL te hnu⁵ la³
PD thu³ kwa³ nweʔ³/nocʔ³

274. walk
EK cwa⁵
WK cwe⁵
GB he³
PD təu²
PA thoŋ¹

275. crawl
EK hu⁵ n̂o² cwa⁵
WK pw⁵ n̂o¹ cwe⁵
GB po³ co³ ke³
PD kəg² təu²

276. come
EK he² ?
WK hja³
GB le ba³
PD lai²

277. enter
EK no³
WK n̂we³
GB le³
PD ne³ kəu⁴²
PA ny¹, lon¹

278. return
EK ka²
WK ka³
GB kî³ ba³ ke³
PD shai¹ de⁴ dəu⁴²
PA sen¹

279. push
EK che²
WK shja¹
GB sha³
PD shəu¹ lə¹

280. pull
EK cwï²
WK cwï¹
GB cwï³
PD cui¹ lə¹
PA thyʔ⁵

281. kick
EK te² pe³
WK te pe³
PD te pa³

282. throw
EK vi⁵ ke³
WK vi² kja³
GB me⁵
PD Mhi⁴/hui⁴ kai⁴²
PA wan⁵, vot⁵

283. fall
EK ta³
WK le ta³
GB la³ de³
PD la² taiʔ³
PA lan⁳, thct¹

284. swim
EK te² je²¹ the³
WK te zě⁵ thie³
GB wa¹ chi⁵
PD kwa³ ŋu⁴²

285. float
EK lo²
WK lo¹
GB la³ pli³
PD le² jəu²
PA ə³ phu³

286. sink
EK ta³ cw⁵
WK ta³ cw⁵
GB la³ zo¹
PD le¹ prəwʔ¹

287. flow
EK thwi⁵
WK thwi⁵
GB chi⁵ lə¹ la¹
PD thwiʔ³
287a. take (to pass from one to another?)
WK phi\textsuperscript{5} phi\textsuperscript{5} GJ phi\textsuperscript{3} PD phei\textsuperscript{1} (give) PA phe\textsuperscript{5} (give)

288. give
EK die\textsuperscript{5} WK die\textsuperscript{5} GB i\textsuperscript{3}

289. tie
EK co\textsuperscript{3} WK co\textsuperscript{3} GB co\textsuperscript{5} PD caw\textsuperscript{42} PA cv\textsuperscript{1}

290. wipe, scrub
EK thw\textsuperscript{5} WK thw\textsuperscript{5} GB tho\textsuperscript{5} PD thaw\textsuperscript{3}

292. wash
EK su\textsuperscript{5} pli\textsuperscript{3} WK shi\textsuperscript{3} pli\textsuperscript{3} GB su\textsuperscript{5} sa\textsuperscript{3} ba\textsuperscript{5} PD c/shaw\textsuperscript{42}

293. launder
EK i\textsuperscript{5} cho\textsuperscript{2} WK i\textsuperscript{1} shu\textsuperscript{1} GB shi\textsuperscript{5} po\textsuperscript{1} te\textsuperscript{1} PD jhu\textsuperscript{1} (la\textsuperscript{42})

294. bathe
EK i\textsuperscript{5} lo\textsuperscript{2} the\textsuperscript{3} WK i\textsuperscript{1} lwa\textsuperscript{5} thi\text{ie} GB u\textsuperscript{5} sa\textsuperscript{3} chi\textsuperscript{5} PD wa\textsuperscript{2} jhu\textsuperscript{42}/jhu\textsuperscript{42}

295. hit
EK mw\textsuperscript{3} WK mw\textsuperscript{3} GB tho\textsuperscript{3} PD pau\textsuperscript{2}, tei\textsuperscript{3}

297. cut (hair)
EK ci\textsuperscript{2} WK i\textsuperscript{1} ci\textsuperscript{1} GB di\textsuperscript{3} PD ji\textsuperscript{1} tu\textsuperscript{42}

298. stab
EK chw\textsuperscript{5} WK shw\textsuperscript{3} GB phlo\textsuperscript{5} PD shai\textsuperscript{3} pau\textsuperscript{2}

299. grind, stir
EK te\textsuperscript{2} ri\textsuperscript{3}, nm\textsuperscript{5} WK te\textsuperscript{3} ri\textsuperscript{3} GB pi\textsuperscript{1} re\textsuperscript{1} PD Ge\textsuperscript{4} jhu\textsuperscript{3} pau\textsuperscript{2}

300. plant (verb)
EK cho\textsuperscript{5} WK i\textsuperscript{1} sho\textsuperscript{5} GB sho\textsuperscript{3} PD sho\textsuperscript{1}

301. dig
EK khw\textsuperscript{2} WK i\textsuperscript{1} khw\textsuperscript{1} GB khu\textsuperscript{3} PD kho\textsuperscript{1}

302. bury (a corpse)
EK plw\textsuperscript{3} WK i\textsuperscript{1} plw\textsuperscript{3} BL bu\textsuperscript{1} la\textsuperscript{1} GB bu\textsuperscript{5} la\textsuperscript{5} PD bm\textsuperscript{42} (bm\textsuperscript{3}?) PA bim\textsuperscript{1}

303. winnow (rice)
EK i\textsuperscript{2} khre\textsuperscript{5} WK i\textsuperscript{1} krc\textsuperscript{5} GB me\textsuperscript{3} ba\textsuperscript{5} PD ki\textsuperscript{4} khlai\textsuperscript{3}?

304. dry (verb)
EK lu\textsuperscript{3} WK luh\textsuperscript{3} GB lo me\textsuperscript{5} GL hlo\textsuperscript{1} PD lu\textsuperscript{4} jhei\textsuperscript{42} PA lo\textsuperscript{1}
305. pound (rice)
EK i² cha⁵
WK i¹ sha⁵
GB tō³
PD tâu³
PA thōn⁵

306. cook, boil
EK pho³
WK i¹ pho³
GB pha⁵
PD phān⁴²

308. burn (transitive verb)
EK chw⁵
WK i¹ shw⁵
GB ke³
PD cu³

309. extinguish
EK me² pi³
WK me¹ pi³
GB me³ lā³ pi³
PD mei¹ pwi³

310. do, cause, make,
EK me²
WK me¹
GB me³
PD ma²
PA ma³

311. play
EK ko⁵ no²¹
WK la¹ vō³
GB kā³ ja³
PD kla⁴¹

312. dance (verb)
EK le³ phre²¹
WK pa¹ na⁵
GB pja³ sa³
PD liā³ (kla⁴¹)

313. shoot
EK khe⁵
WK khē⁵
GB khe³
PD kha⁴³
PA kha⁵

314. hunt
EK hē³ o² le³ khe⁵ te² mi²
WK hja³ lo³ khe⁵ te¹ mi¹,
    hja³ o¹ le³ khe⁵ te¹ mi¹
    GB hē³ khe³ a³ te¹
    PD lai¹ le¹ kha² ta¹ mi¹

315. kill
EK me² se³
WK me¹ θie³
GB me³ əi⁵
PD ma² sm⁴²
PA ma³ si¹

316. fight, argue
EK kja⁵ lu³
WK klie⁵ lu³
PD le¹ thei³ ju³

317. buy
EK i⁵ phri²
WK i¹ pri¹
GB pwì³
PD a¹ pri²
PA phre³

318. sell
EK i⁵ che³
WK i¹ she³
GB she⁵
PD ã¹ sha⁴²
PA tja¹

319. exchange
EK bu² le² lu³
WK ph/thu¹ la¹ lu³
GB ba⁵ kle³
PD la¹ lai¹ ju²³

320. pay
EK pla⁵; ca²¹ e²¹ (Shan)
WK i¹ e¹
GB i³ ke³
PD ã¹ kha³
321. steal
EK e² ho²
WK e¹ xws¹
GB i₅ hu³
PD a¹ hu²¹
PA ta khun³

322. one person
EK te² phre²
WK te prë¹
GB te³ pwë³
PD la² præ²

323. two
EK ne³
WK nie³
PD nw⁴
PA ni¹

324. three
EK so³
WK swë³
GB ðo⁵
PD ðw⁴
PA shom¹

325. four
EK lwi³
WK lwi³
GB lwi³
PD lui³
PA lit⁵

326. five
EK në³
WK na³
GB ze³
PD ñai³
PA nat⁵

328. seven
WK nwc⁵
PD noe⁴

331. ten
EK cha⁵
WK shie⁵
GB jhi³
PD jhw⁴²
PA chi¹

332. hundred
EK je²
WK zë¹
GB je³
PD ja¹
PA arya³

333. thousand
EK ri⁵
WK ri⁵
PD reiʔ³
PA te² ren¹

334. many (persons)
EK o² ro²¹
WK o¹ ro⁵
GB o³ ke⁵
PD o¹ ?aʔ³
PA a¹

335. all
EK lo³ pli³
WK lo³ pli³
GB lo³ ke³
PD lo³ lā⁴²

336. some
EK te² he²
WK te¹ he¹
GB to³ co³
PD la² há²

337. few
EK pi² ti⁵ (cf. 340)
WK te ki¹
GB ɔ² jhi³
GJ ti⁴ ki³
PD le¹ kiʔ¹

339. big
EK du(h)²
WK duh¹
BL do²
GB du³
PD dau²
PA tan⁴² na⁵
340. small
EK \( pi^2 \) \( ti^5 \)
WK \( pa \) \( ti^5 \)
GB \( jhi^3 \) \( phu^3 \)
PD \( pho^?3 \) (\( ti^?3 \))

341. long
EK \( thu^3 \)
WK \( thu\text{\textbar}h^3 \)
GB \( tho^5 \)
PD \( thou^4 \)
PA \( tho^1 \)

342. short (length)
EK \( pho^2 \)
WK \( phwe^1 \)
GB \( pi^5 \) \( phu^3 \)
PD \( phew^2 \)

343. tall
EK \( the^2 \) \( lo^3 \)
WK \( thja^1 \) \( la^5 \)
GB \( tha^3 \) \( ji^3 \)
PD \( th\text{\textbar}a^1 \) \( lw^42 \)

344. short (height)
EK \( le^2 \) \( jm^21 \)
WK \( te \) \( rw^5 \)
GB \( bo^3 \) \( la^3 \)
PD \( la^1 \) \( phew^2 \) (cf. 342)

345. thick
WK \( duw^3 \)
GB \( ti^4 \)
PD \( du^42 \)
PA \( dun^1 \)

346. thin
EK \( bu^3 \)
WK \( bu^3 \)
GB \( pu^5 \)
PD \( bi^42 \)
PA \( be^3 \)

347. fat, plump
EK \( bu^2 \)
WK \( bu^1 \)
BL \( bu^2 \)
GB \( bo^3 \)
PD \( bw\text{\textbar}u^?1 \)
PA \( ple\text{\textbar}n^5 \)

348. skinny
EK \( khre^3 \)
WK \( krja^3 \)
GB \( che^3 \) \( we^1 \)
PD \( cau^2 \)

349. wide, broad
EK \( le^2 \)
WK \( lja^5 \)
PD \( lai^2 \)

350. narrow
NK \( i^3 \) \( pi^5 \) \( o^1 \)
EK \( i^1 \) \( pi^51 \)
WK \( i^1 \)
GB \( i^3 \) \( nu^5 \) \( pho^3 \)
PD \( i\text{\textbar}a^1 \)

351. deep
EK \( je^3 \)
WK \( za^3 \)
GB \( j\text{\textbar}p^1 \)
PD \( cau^2 \)
PA \( jo^1 \)

352. shallow
EK \( tw^2 \) \( lw^21 \)
WK \( te \) \( lw^5 \)
GB \( la^3 \) \( da^3 \)
PD \( phju^42 \)

353. round ?
EK \( tw^2 \) \( \beta w^2 \)
WK \( te \) \( \nu w^1 \)
GB \( du^3 \) \( lu^5 \) (\( we^1 \))
PD \( ti^4 \) \( leu^42 \)
PA \( ka^1 \) \( du^3 \)

354. full
EK \( ba^3 \)
WK \( ba^3 \)
GB \( pi^5 \)
PD \( boe^42 \)
PA \( bwe^1 \)

355. rightside
EK \( thwa^5 \)
WK \( thwo^5 \)
GB \( thwe^3 \)
PD \( thwe^2 \)
PA \( thwe^1 \)
356. leftside
EK ci²
WK ci¹
GB ci³
PD ce³
PA tje⁵, cje⁵

357. straight
EK co⁵
WK co⁵ ra ne⁵
GB ta³ na³
PD ce³ co³?

358. far
EK ja²
WK zje¹
GB z³ z³
PD ji²
PA na³ (Old Mon = jirney)

359. near
EK phw²
WK phw¹
BL 6u²
GB 6³ bo³
PD phw³
PA bo⁵

360. this
EK e³
WK je³
GB bi⁵ ju¹
PD ba⁴ ?w⁴²

361. that
EK na²
WK nw³
GB do³ ba³ di³ nu³
PD te⁴ do⁴²

362. black
EK lo²
WK jo¹
PD le²
PA sin³

363. white
EK bu³
WK bu(h)³
BL 6u¹ ba¹
GB bo⁵
PD bu⁴²
PA bwa¹

364. red
EK li²
WK li¹
GB li³
PD lei²
PA te⁵ nja⁵

365. green
EK so³
WK sw³
PD sw⁴²

366. yellow
EK be³
WK bja³
GB ba⁵
PD ba⁴²
PA ban³

367. dirty
EK i⁵ ?e²¹
WK ra¹ cja⁵
PD ci⁴ phu?³

368. new
EK se³
WK ge³
GB ge⁵
PD si⁴²
PA sha¹

369. old
EK la²
WK li⁴¹
GB li³ la³
PD lw²
PA li³
370. dark
EK khi\textsuperscript{5}
WK khi\textsuperscript{5}
GB khi\textsuperscript{3}
PD khiw\textsuperscript{3}
PA khe\textsuperscript{5}

371. bright
EK li\textsuperscript{3}
WK li\textsuperscript{3}
GB li\textsuperscript{5}
PD khiw\textsuperscript{2} (\textit{fhai}\textsuperscript{2} ra\textsuperscript{u}?\textsuperscript{1})

372. same
EK se\textsuperscript{5}\textsuperscript{1} lu\textsuperscript{3}
WK se\textsuperscript{5}\textsuperscript{1} lu\textsuperscript{3}
GB la\textsuperscript{3} l\textsuperscript{2}\textsuperscript{3}
PD khiw\textsuperscript{3}/coi\textsuperscript{3} jw\textsuperscript{2}

373. different
EK ko\textsuperscript{2} dw\textsuperscript{2}
WK kho\textsuperscript{1} dw\textsuperscript{1}
PD kho\textsuperscript{3} jw\textsuperscript{2}

374. sweet
EK chu\textsuperscript{3}
WK chu\textsuperscript{3}
PD khiw\textsuperscript{4}\textsuperscript{2}

375. sour
EK cha\textsuperscript{2}
WK shie\textsuperscript{1}
GB jhi\textsuperscript{3}
PD khi\textsuperscript{1}\textsuperscript{1}
PA chja\textsuperscript{5}

376. bitter
EK khe\textsuperscript{2}
WK khe\textsuperscript{1}
GB khe\textsuperscript{3}
PD kha?\textsuperscript{1}
PA kha\textsuperscript{1}

377. spicy hot
EK he\textsuperscript{5}
WK hja\textsuperscript{5}
GB he\textsuperscript{3}
PD hai\textsuperscript{3}\textsuperscript{3}
PA hat\textsuperscript{5}

378. rotten
EK so\textsuperscript{3}
WK so\textsuperscript{3}
GB so\textsuperscript{5}
PD when\textsuperscript{4}\textsuperscript{2}
PA sen\textsuperscript{3}

379. swollen
EK je\textsuperscript{5}
WK za\textsuperscript{5}
GB ho\textsuperscript{3}
GL hij\textsuperscript{2}
PD jo\textsuperscript{2}
PA jo\textsuperscript{5}

380. dry (adjective)
EK khra\textsuperscript{3}
WK kra\textsuperscript{3}
GB me\textsuperscript{5}
PD khi\textsuperscript{1}\textsuperscript{4}\textsuperscript{2}
PA she\textsuperscript{1}\textsuperscript{n}

381. wet
EK co\textsuperscript{2}
WK co\textsuperscript{1}
GB thu\textsuperscript{5}
PD co?\textsuperscript{1}
PA tjau\textsuperscript{5}

382. hot
EK ku\textsuperscript{2}\textsuperscript{1}
WK kuh\textsuperscript{5}
GB ku\textsuperscript{3}
PD ku\textsuperscript{3}
PA kho\textsuperscript{4}\textsuperscript{2} lja\textsuperscript{4}\textsuperscript{2}

382a. warm
WK le\textsuperscript{1}
GB le\textsuperscript{3}
PA lom\textsuperscript{3}, kho\textsuperscript{4}\textsuperscript{2} lja\textsuperscript{4}\textsuperscript{2} (hot)

383. cold
EK ke ro
WK ro\textsuperscript{1}

383a. cool
EK da\textsuperscript{2} ca\textsuperscript{5}
WK klu\textsuperscript{1}
GB cu\textsuperscript{3} (cold)
PD khi\textsuperscript{4}\textsuperscript{2}
<table>
<thead>
<tr>
<th>384. sharp</th>
<th>391. strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>EK the³</td>
<td>EK chwa²</td>
</tr>
<tr>
<td>WK thja³</td>
<td>WK shwo¹</td>
</tr>
<tr>
<td>GB thā⁵</td>
<td>PD khro?³</td>
</tr>
<tr>
<td>PD tham⁴²</td>
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<tr>
<td>PA cja¹</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>385. blunt</td>
<td>392. faint</td>
</tr>
<tr>
<td>EK dw³</td>
<td>EK le² de⁵</td>
</tr>
<tr>
<td>WK dw³</td>
<td>WK le¹ dja⁵</td>
</tr>
<tr>
<td></td>
<td>GB la³ ta³ (tired)</td>
</tr>
<tr>
<td></td>
<td>PD sa¹ taw³ (tired)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>386. heavy</td>
<td>393. tired</td>
</tr>
<tr>
<td>EK tho²</td>
<td>EK si⁵ phra⁵</td>
</tr>
<tr>
<td>WK thu³</td>
<td>WK θe⁵ pra⁵</td>
</tr>
<tr>
<td>GB thu³</td>
<td>PD phi³⁷ (faint)</td>
</tr>
<tr>
<td>PD thaw?¹</td>
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<tr>
<td>PA thu⁵</td>
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<tr>
<td>387. hard</td>
<td>394. blind</td>
</tr>
<tr>
<td>EK phre³</td>
<td>EK pe⁵ se² khi⁵</td>
</tr>
<tr>
<td>WK pri³</td>
<td>WK mc¹ θe¹ khi⁵</td>
</tr>
<tr>
<td>GB sha³</td>
<td>PD mo⁴ sa¹ khw?³</td>
</tr>
<tr>
<td>PD shāu?²</td>
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<td></td>
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<tr>
<td>388. smooth</td>
<td>395. deaf</td>
</tr>
<tr>
<td>EK kla²</td>
<td>EK ku⁵ le² ko² o³</td>
</tr>
<tr>
<td>WK kla¹</td>
<td>WK kha³ le¹ ko¹ ?o³</td>
</tr>
<tr>
<td></td>
<td>GB ni¹ ku¹ ta³ ?u⁵</td>
</tr>
<tr>
<td></td>
<td>PD la¹ ku⁴ ?ew⁴²</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>388b. easy</td>
<td>396. bald</td>
</tr>
<tr>
<td>EK phre³</td>
<td>EK ku² kla⁵ la²¹</td>
</tr>
<tr>
<td>WK zu</td>
<td>WK khu¹ kla⁵ de³</td>
</tr>
<tr>
<td>GJ jho⁴</td>
<td>BL da² gla³</td>
</tr>
<tr>
<td>PA jo¹</td>
<td>GB mi³ po³ te kla³</td>
</tr>
<tr>
<td></td>
<td>GL da gla²</td>
</tr>
<tr>
<td></td>
<td>PD ka³ kla² klā?¹</td>
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<td></td>
<td></td>
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<tr>
<td>388c. loose</td>
<td>397. naked</td>
</tr>
<tr>
<td>EK phre³</td>
<td>EK o² kla²¹ kla²¹</td>
</tr>
<tr>
<td>WK prja³</td>
<td>WK o¹ kha³ kla¹</td>
</tr>
<tr>
<td>GB plā³</td>
<td>PD o¹ cw¹ kwâ⁴²</td>
</tr>
<tr>
<td>PD phra¹⁴²</td>
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<tr>
<td></td>
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<tr>
<td>389. fast</td>
<td>398. good</td>
</tr>
<tr>
<td>EK phre³</td>
<td>EK re⁵</td>
</tr>
<tr>
<td>WK prja³</td>
<td>WK rja⁵</td>
</tr>
<tr>
<td>GB plā³</td>
<td>GB e³</td>
</tr>
<tr>
<td>PD phra¹⁴²</td>
<td>PD rau?²</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>390. slow</td>
<td>399. bad</td>
</tr>
<tr>
<td>EK jo³</td>
<td>EK re⁵</td>
</tr>
<tr>
<td>WK zo³</td>
<td>WK rja⁵</td>
</tr>
<tr>
<td>PD jœu⁴². juc⁴²</td>
<td>GB te³ no³</td>
</tr>
<tr>
<td></td>
<td>PD cw⁴ rau?²</td>
</tr>
</tbody>
</table>
English Glossary to Karen Word List

T stands for Thailand Word List and is the numbering system used throughout this thesis.

The other letters pertain only to the source of the Pa-o entries. All Pa-o entries coded with an L are from charts F through J in Luce (1985). Entries from chart E of Luce (1985) are coded LE. The H indicates that the Pa-o entry is from Hopple (n.d.), and the J stands for Jones (1961).

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rice, unhusked T68, LE36
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