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# The Great Tone Split and Central Karen

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THE GREAT TONE SPLIT AND CENTRAL KAREN

by

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Bachelor of Religious Education, Prairie Bible College

1983

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of the

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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.

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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.

Harry Kull

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Dedicated to:

Sara Du Phaebu (Thaebuphae)

Kayah leader, linguist, and philanthropist

Whose dedication to the welfare of his people is undisputed



## ABSTRACT

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.<sup>1</sup>

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.

-----

<sup>1</sup>Haudricourt 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.<sup>2</sup> 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

-----  
<sup>2</sup>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.

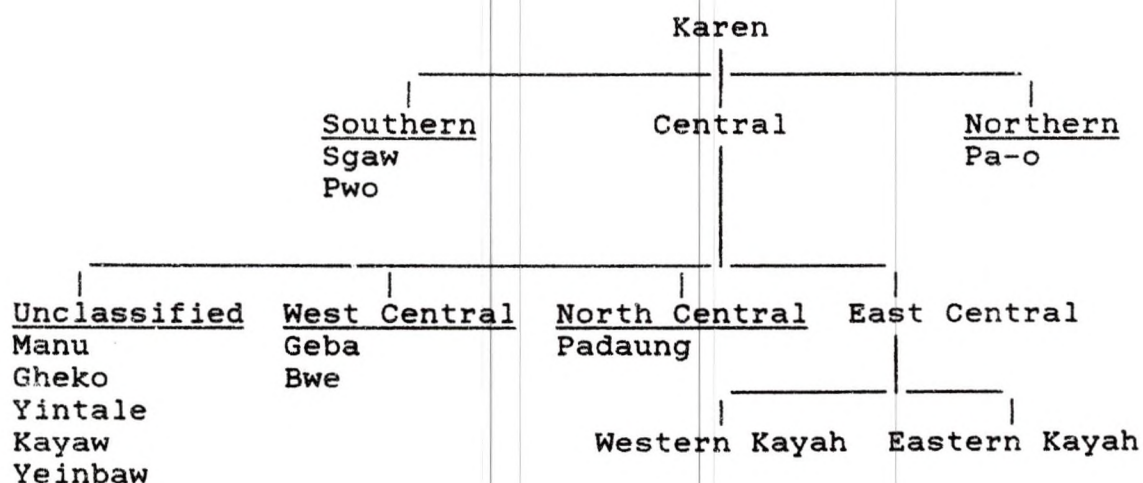
Another difficulty is that most languages have more than one name.<sup>3</sup> There is a Burmese name, perhaps a Thai, Shan or English name, the name the people call themselves, names they are called by surrounding Karen groups, and in some cases a "politically correct" name. In addition, some of the 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.<sup>4</sup> 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.

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

<sup>4</sup>See section 1.4 for a discussion of the classification Karen.

Figure 1: The Karen Languages



#### East Central Karen (Kayah)

The Central Karen language with the most speakers is Kayah (Karenni, Red Karen, Yan Lian, 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.<sup>5</sup>

Figure 2: Map of Central Karen Area



<sup>5</sup>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).<sup>6</sup> 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.<sup>7</sup>

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,

-----

<sup>6</sup>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).

<sup>7</sup>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, *Ka<sup>5</sup>mε<sup>2</sup>*,<sup>8</sup> was a woman from the village of *Huaj<sup>4</sup> Dwe<sup>1</sup>*, south of the provincial capital town of Maehongson.<sup>9</sup> She was literate in Thai and spoke Shan in addition to Eastern Kayah. She was about thirty-five years old.

---

<sup>8</sup>Tones 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.

<sup>9</sup>The 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 *Phε<sup>3</sup>bu<sup>3</sup>*, 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. *Phε<sup>3</sup>bu<sup>3</sup>* 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 *Pe<sup>3</sup>ro<sup>5</sup>sa<sup>3</sup>*. She had recently come to Thailand from a village called *Ke<sup>3</sup>se<sup>5</sup>plu<sup>2</sup>*, in *Lei<sup>3</sup>θu<sup>3</sup>* 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<sup>42</sup>*, 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

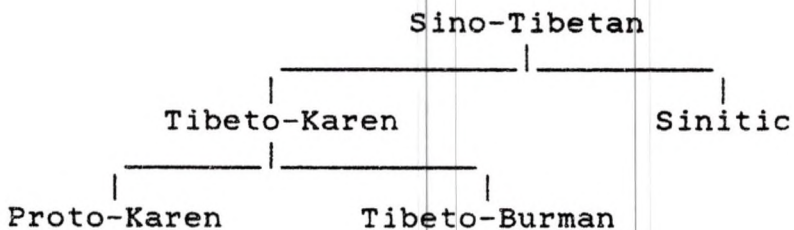
Scholars agree that Karen is a Sino-Tibetan language, but they disagree concerning the genetic relationship of Karen to Tibeto-Burman. Benedict (1972) believes there is insufficient evidence to place Karen in the Tibeto-Burman branch. He places Karen at the same taxonomic level as Tibeto-Burman, both 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**



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).

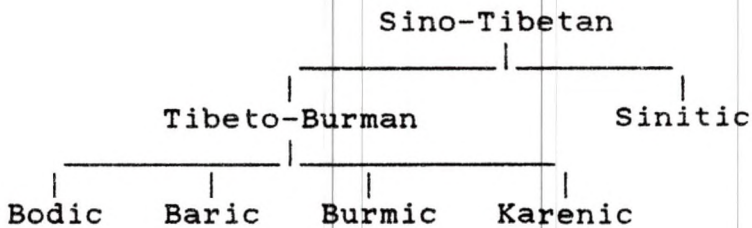
Other scholars, however, disagree with Benedict's conclusions. Weidert argues that the fact that Karen has a different word order does not preclude its inclusion in Tibeto-Burman.<sup>10</sup> Wheatly (1985) shows that it is possible for a language to change its word order in a relatively short time.

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.

<sup>10</sup>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**



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 /v/,<sup>11</sup> and a contrastive high falling tone [52],<sup>12</sup> each of which is similar to Thai.<sup>13</sup>

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

-----

<sup>11</sup>This study uses International Phonetic Association symbols, unless otherwise noted. In Karen, [ch] is an aspirated, voiceless, alveo-palatal flat affricate (IPA tʃʰ). The similar but unaspirated Karen segment is [c] (IPA tʃ). The similar but voiced segment in Proto-Central Karen is [dʒ].

<sup>12</sup>See Chapter Three for the historical development of the [52] tone.

<sup>13</sup>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.

Figure 5: Eastern Kayah Phonemic Inventory

Eastern Kayah Consonant Chart

	labial	dental	alveo- palatal	retro- flex	velar	glottal
voiceless unaspirated	p	t	c		k	
voiceless aspirated	ph	th	ch		kh	
voiced stop	b	d				
nasal	m	n			ŋ	
fricative		s				h
approximant	w	l	j	r		

Eastern Kayah Vowel Chart

	Front	Central	Back unrounded	Back rounded
Close	i		u	u
Close mid	e		(ɤ)	o
Open mid	ɛ	ə		ɔ
Open		a		

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).<sup>14</sup> The phoneme /s/ is a flat spirant. The vowels /e o/ are higher than cardinal position. Both segments off-glide very slightly: [e<sup>i</sup>] and [o<sup>u</sup>]. 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 /u v/ 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 ʌ for this segment. He uses the symbol ə 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/.<sup>15</sup> Phonetically, the approximants in these diphthongs are very similar to the corresponding close vowels.

-----  
<sup>14</sup>In endorsing and applying these notes, I take responsibility for any mistakes.

<sup>15</sup>*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 ə/ are absent and phonation is contrastive. Each of the vowels may occur as breathy or non-breathy.<sup>16</sup> The segment [ə] occurs predictably in the data in unstressed syllables, or as part of the diphthong /wə/.

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.

-----  
 should make it obvious, I use the term for an approximant and vowel, that is, two phonemes within the same syllable.

<sup>16</sup>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. Breathiness and diphthongs are marked with two subscripted dots.

Figure 6: Western Kayah Phonemic Inventory

Western Kayah Consonant Chart

	labial	dental	alveo- palatal	retro- flex	velar	glottal
voiceless unaspirated	p	t	c		k	
voiceless aspirated	ph	th	sh		kh	
voiced stop	b	d				
nasal	m	n			ŋ	
fricative		θ	z			h
approximant	w	l	j	r		

Western Kayah Vowel Chart

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

Western Kayah Diphthongs

ie ie ja ja we we uo uo 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-glides, 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 ɔ̃] are probably allophones of /əu əũ/, occurring in unstressed syllables or shortened by a glottal stop. There are a few cases where [a ă] likewise seem to be shortened forms of an



Figure 7: Padaung Phonemic Inventory

Padaung Consonants

	labial	dental	alveo- palatal	retro- flex	velar	glottal
voiceless unaspirated	p	t	c		k	(?)
voiceless aspirated	ph	th	sh		kh	
voiced stop	b	d				
nasal	m	n			ŋ	
fricative		θ				h
approximant	w m	l	j	r		

Padaung Vowels and Diphthongs

	Front	Central	Back unrounded	Back rounded
Close	i		ɯ	u
Close-mid	ei		əw əũ	əu əũ
Open-mid	ɛ			ɔ ɔ̃
Open	ai	a ă aũ	au aũ	

Padaung Tones<sup>17</sup>

[42] high, with a falling contour

[3] mid, optionally closed with a glottal stop

[2] and [1] low

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<sup>17</sup>High 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 [ɪ] 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/, /m/ 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 [iaʉ] 69 and [waʉ] 33.<sup>18</sup> 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:

[iě] 53	[mhi] 282	[wi] 81 / [ui] 280
[ii] 72	[mha] 48	[we] 254
[iě] 312	[mhă] 194	[wɛ] 355
[iəu] 84		[uə] 400
[iaʉ] 69		[waʉ] 33 / [uaʉ] 294
[iă] 350		[wă] 347
[iʉ] 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 [ew] 12 and [oɛ] 328.

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<sup>18</sup>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 [əw], [əũ], [əu], [əũ].
3. Those that begin with the open vowel can end with either front or back close vowels, [ai], [aũ], [au], [aũ].

The only combination missing in the symmetry is [aw], but considering the small sample of data, this is not surprising.<sup>19</sup> The diphthong [ɔũ] 30 appears to be an exception to the above constraints, but what I have transcribed may in fact be an allophone of /əũ/.

The nasalization in nasal vowels is quite strong, especially on the second member of a diphthong. The most common nasal diphthong is /aũ/. 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

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<sup>19</sup>There is another possible reason for this lack of symmetry. The diphthong [aũ] derives from Proto-Karen [\*aŋ] (cf. Pa-o 7, 26, etc.). There may be no historical reason for the existence of [aw].



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 tones in Figure 8 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 /ɱ/.

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

	labial	dental	alveo- palatal	retro- flex	velar	glottal
voiceless unaspirated	p	t	c		k	
voiceless aspirated	ph	th	ch/sh		kh	
voiced stop	b	d				
nasal	m	n	ɲ			
fricative		θ	z			h
approximant	w ɱ	l	j	r		

Geba Vowels

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

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 [ə] 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 voiced 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.<sup>1</sup>

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.

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<sup>1</sup>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.<sup>2</sup>

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 [C<sub>2</sub>] /-l-/ in items with final /?/." (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

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<sup>2</sup>I 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<sup>3</sup> and \*B, and one tone on syllables closed with stops, tone \*C.<sup>4</sup> 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

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<sup>3</sup>An asterisk (\*) indicates a proto-form or proto-tone, or a form or tone before the great tone split.

<sup>4</sup>For 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, \*E<sup>1</sup>.<sup>5</sup> This study will suggest why positing a \*B<sup>1</sup> 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<sup>3</sup> > bɔ<sup>3</sup>, \*ma<sup>1</sup> > ma<sup>1</sup>.<sup>6</sup>
2. All \*voiced obstruents became voiceless. All voiceless obstruents remained unchanged. Thus the voiced set [b d dʒ g] merged with the unaspirated voiceless set [p t c k]. The vowels of words<sup>7</sup>

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

<sup>6</sup>A right wedge (>) indicates a historical sound change.

<sup>7</sup>I use the term *word* for any syllable.



originally having voiced initial consonants retained their breathy phonation. For example: \*bo<sup>3</sup> > po<sup>3</sup>; \*po<sup>3</sup> (no change).

3. All \*voiceless sonorants [hm hn hŋ hm hl hj hr] became voiced, merging with the voiced sonorants.<sup>8</sup> 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: \*hlo<sup>5</sup> > lo<sup>5</sup>; lo<sup>5</sup> (no change).

As a result of these steps, phonation on the vowel became contrastive because the contrast of the initial consonants was lost.<sup>9</sup> For example: po<sup>3</sup> and p̥o<sup>3</sup> (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: p̥o<sup>3</sup> > p̥o<sup>1</sup>; lo<sup>5</sup> > lo<sup>3</sup>.
5. Breathiness was lost. For example: p̥o<sup>1</sup> > po<sup>1</sup>; lo<sup>3</sup> > lo<sup>3</sup>.

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<sup>8</sup>Justification for Proto-Central Karen voiceless sonorants is given in Chapter Four.

<sup>9</sup>I 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:       \*bo<sup>5</sup> > bɔ<sup>5</sup> > pɔ<sup>5</sup> > pɔ<sup>3</sup> > po<sup>3</sup>.  
    \*Voiceless obstruents:   \*po<sup>5</sup> > po<sup>5</sup>.
2. \*Voiced sonorants:       \*lo<sup>5</sup> > lɔ<sup>5</sup> > lɔ<sup>3</sup> > lo<sup>3</sup>.  
    \*Voiceless sonorants:   \*hlo<sup>5</sup> > lo<sup>5</sup>.

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

	Tone *A	Tone *B	Tone *C
High Class *aspirated	[3]	[2]	[5]
Mid Class *unaspirated	[3]	[2]	[5]
Low Class *voiced	[2]	[21]	[3]

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.<sup>10</sup>

### **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

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<sup>10</sup>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.<sup>11</sup> 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].<sup>12</sup> Comparing cognates is facilitated by the work of linguists like Luce.

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<sup>11</sup>The two villages are *Huay*<sup>42</sup> *Pooŋ*<sup>1</sup> *ʔooŋ*<sup>3</sup>, about ten miles northwest of Maehongson which speaks the northern dialect of Eastern Kayah; and *Huay*<sup>42</sup> *Dwə*<sup>3</sup>, a few miles southwest of Maehongson, which speaks the southern dialect of Eastern Kayah.

<sup>12</sup>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.<sup>13</sup> 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.<sup>14</sup>

Figure 10: Luce's Cognate Sets

Pattern III	Pwo	Sgaw	W. Bwe	N. Pa-o
'fowl'	shǎ <sup>6</sup>	sho <sup>1</sup>	fi <sup>1</sup>	chja <sup>6</sup>
'to weave'	thai <sup>6</sup>	the <sup>1</sup>	the <sup>1</sup>	theŋ <sup>6</sup>

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

<sup>13</sup>I regret that to this point I have been unable to review the former lists.

<sup>14</sup>Luce (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 \*B<sup>1</sup>.

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 *kha<sup>3</sup>mi<sup>5</sup>* '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, *kə<sup>3</sup>mei<sup>3</sup>*, is also a B3 word. But in Geba the tone indicates that the cognate, *ka<sup>5</sup>mi<sup>3</sup>*, belongs to the B1 set, (\*B tone, \*voiceless initial consonant). The fact that the modern cognate in Luce's Geba, *ka<sup>1</sup>hmi<sup>2</sup>*, 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.<sup>15</sup> 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

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<sup>15</sup>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.<sup>16</sup> 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 ?/ 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

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<sup>16</sup>Much of the information in this section come from Solnit (1989).

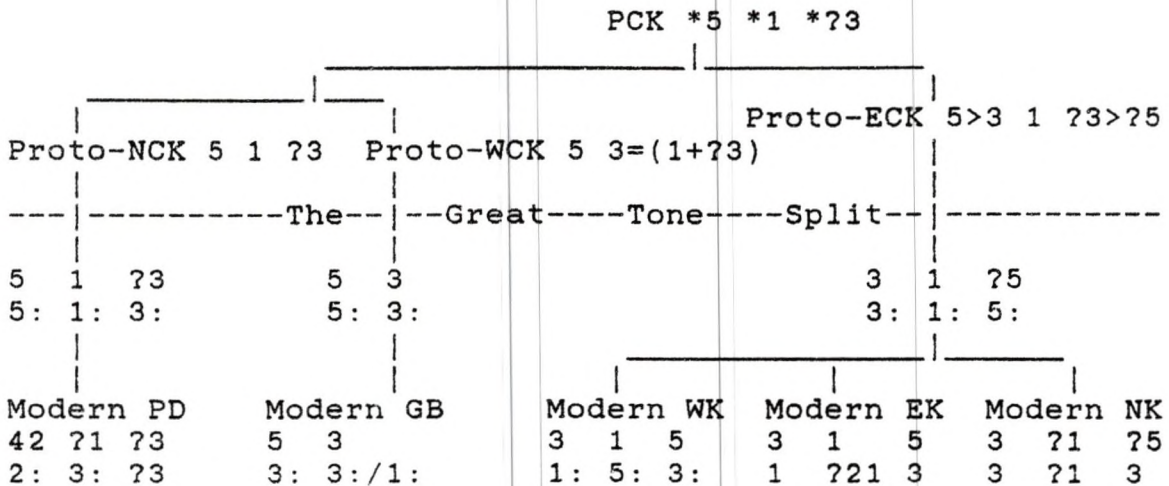


distinguished by phonation being mergers of former pairs contrasting for voice."

### 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.<sup>17</sup> 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).<sup>18</sup>

### 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

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<sup>17</sup>Aspiration was not a factor in the tone split for Central Karen languages.

<sup>18</sup>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 [ʔ5], ending up phonetically higher than the high tone \*A, [5].<sup>19</sup> 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,

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<sup>19</sup>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)

<u>Proto-East Central Karen before the great tone split</u>					
	Tone *A	Tone *B	Tone *C		
	3	1	ʔ5		
<u>Proto-East Central Karen after the great tone split</u>					
	Tone A	Tone B	Tone C		
*Non-voiced	3	1	ʔ5		
*Voiced	3:	1:	5:		
<u>Northeastern Kayah</u>					
*Non-voiced	3	ʔ1	ʔ5		
*Voiced	3	ʔ1	3		
<u>Eastern Kayah</u>					
*Non-voiced	3	1	5		
*Voiced	1	ʔ21	3		
<u>Western Kayah</u>					
*Non-voiced	3	1	5		
*Voiced	1:	5:	3:		

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: [ʔ21].<sup>20</sup> In Western

<sup>20</sup> 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, *ku<sup>3</sup>khi<sup>5o1</sup>* '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 *ku<sup>2</sup>khi<sup>52.21</sup>*

#### 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.

<sup>21</sup>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: *i<sup>2</sup>tho<sup>5</sup>* 'to row (a boat)'; *i<sup>2</sup>tho<sup>52</sup>* "knife". As noted in Chapter Two, Thai has a similar falling tone.



since the great tone split.<sup>22</sup> The \*voiced class of consonants produced breathiness, but not significant tone lowering.<sup>23</sup> 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

<u>Proto-North Central Karen before the great tone split</u>						
	Tone	*A	Tone	*B	Tone	*C
	5		1		ʔ3	
<u>Proto-North Central Karen after the great tone split</u>						
	Tone	A	Tone	B	Tone	C
*Non-voiced	5		1		ʔ3	
*Voiced	5:		1:		ʔ3:	
<u>Kayaw (Solnit 1989)</u>						
*Non-voiced	55		11		33	
*Voiced	55:		11:		33:	
<u>Padaung</u>						
Non-voiced	42		ʔ1		ʔ3	
*Voiced	2:		3:		ʔ3	

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

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

<sup>23</sup>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:].<sup>24</sup> 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

Geba	Tone A	Tone B/C
*Non-voiced	5	3
*Voiced	3:	3/1:
<hr/>		
Bwe (Henderson 1979)		
*Non-voiced	5	3
*Voiced	3	1

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

-----  
<sup>24</sup>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 Ewe 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 *Dɔ<sup>3</sup>sho<sup>1</sup>pi<sup>a</sup><sup>5</sup>* 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.<sup>25</sup>

Figure 15: Tone Pattern for *Dɔ<sup>3</sup>sho<sup>1</sup>pi<sup>a</sup><sup>5</sup>*

*Dɔ<sup>3</sup>sho<sup>1</sup>pi<sup>a</sup><sup>5</sup>* (Bennett 1991)

	Tone A	Tone B	Tone C
*Non-voiced	55	11	31
*Voiced	33:	21:	11:

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).

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<sup>25</sup> *Dɔ<sup>3</sup>sho<sup>1</sup>pi<sup>a</sup><sup>5</sup>* 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.



Figure 16: Proto-Central Karen Consonant Chart

	labial	dental	alveo- palatal	retro- flex	velar	glottal
voiceless unaspirated	*p	*t	*c		*k	*ʔ
voiceless aspirated	*ph	*th	*ch		*kh	
voiced	*b	*d	*dʒ		*g	
implosives	*ɓ	*ɗ				
voiceless nasal	*hm	*hn			*hŋ	
nasal	*m	*n			*ŋ	
voiceless fricative		*s				*h
voiceless approximant	*hm	*hl	*hj	*hr		
voiced approximant	*w	*l	*j	*r		

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.).<sup>26</sup>

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<sup>26</sup>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.<sup>27</sup>

Only the relevant word of an expression, or relevant syllable of a cognate will be shown.<sup>28</sup> 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.

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

<sup>27</sup>Luce (1985) uses a different tone marking system, which I did not change for Bwe (BL) and Geba (GL).

<sup>28</sup>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.<sup>29</sup> 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 phi<sup>3</sup>*, *WK phi<sup>3</sup>*, *GB phje<sup>45</sup>*, *PD phe<sup>i42</sup>*, *PA pla<sup>1</sup>*, '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.

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<sup>29</sup> 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.<sup>30</sup>

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

Expected modern tone values for *voiceless consonants					
Luce	Haudri-court	EK	WK	GB	PD
III	Tone *A1	[3]	[3]	[5]	[42]
VI	Tone *B1	[2]	[1]	[3]	[?1]
VIII	Tone *C1	[5]	[5]	[3]	[?3]

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

<sup>30</sup> 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 phi<sup>3</sup>, WK phi<sup>3</sup>, GB phje<sup>45</sup>, PD phe<sup>i42</sup>, PA pla<sup>1</sup>,  
'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 the<sup>5</sup>, WK thja<sup>5</sup>, GB tho<sup>3</sup>, PD thau<sup>23</sup>, PA tho<sup>5</sup>, '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 cha<sup>3</sup>, WK shie<sup>3</sup>, GB shi<sup>5</sup>, PD fhi<sup>42</sup>, PA chja<sup>1</sup>,  
'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/.<sup>31</sup> This explains the origin of  
-----

<sup>31</sup>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).<sup>32</sup>

\*kh EK khi<sup>3</sup>, WK khi<sup>3</sup>, GB khi<sup>5</sup>, PD khi<sup>42</sup>, PA ke<sup>3</sup> '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 si<sup>5</sup>, WK θε<sup>5</sup>, GB θa<sup>3</sup>, PD sa<sup>3</sup>, PA sha<sup>25</sup>, '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 ho<sup>3</sup>, WK xwə<sup>3</sup>, GB hε<sup>5</sup>, PD hw<sup>42</sup>, PA hən<sup>1</sup>, '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.

<sup>32</sup>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 /ɯ/, 222 and 321. This allophonic occurrence of [x] is not evidence for \*x in Proto-Central Karen.<sup>33</sup>

Jones (1962:100) proposed \*x and \*ɣ 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 \*ɣ 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.

-----

<sup>33</sup>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 [ç] before close vowels.

\*hm EK ve<sup>2</sup>, WK ve<sup>1</sup>, GB ho<sup>3</sup>, PD mha<sup>2</sup>, PA va<sup>5</sup>, 'bamboo'  
(48), (B1). See also 282.

\*hl EK le<sup>3</sup>, WK le<sup>3</sup>, GB le<sup>5</sup>, PD la<sup>4</sup>, PA la<sup>1</sup>, GL hle<sup>1</sup>,  
'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 je<sup>5</sup>, WK za<sup>5</sup>, GB jho<sup>3</sup>, PD jo<sup>2</sup>, PA jo<sup>5</sup>, GL hjo<sup>2</sup>,  
'swollen' (379), (C1). See also 161, 390, 257.

The [72] instead of [73] tone on the Padaung entry was  
probably a transcription mistake.

\*hr EK rw<sup>3</sup>, WK rw<sup>3</sup>, GB ho<sup>5</sup>, PD jwa<sup>4</sup>, PA ron<sup>1</sup>, '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 mə<sup>3</sup>, WK mie<sup>3</sup>, GB mi<sup>5</sup>, PD mei<sup>4</sup>, PA mət<sup>3</sup>, GL hmi<sup>1</sup>  
 '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<sup>2</sup>, WK nwə<sup>1</sup>, GB nu<sup>5</sup>, PD nəũ<sup>2</sup>, PA num<sup>5</sup>, GL hnu<sup>1</sup>  
 '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 ŋe<sup>3</sup>, WK ŋe<sup>3</sup>, GB hɛ<sup>34</sup>, PD ŋaũ<sup>2</sup>, PA na<sup>5</sup>, '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 pwi<sup>2</sup>, WK pwi<sup>1</sup>, GB pi<sup>1</sup>, PD pwhi<sup>2</sup>, PA pwi<sup>1</sup>*, '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<sup>3</sup>, WK to<sup>3</sup>, PD tua<sup>42</sup>, PD taw<sup>3</sup>* '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 tə- found in almost ten percent of the Kayah words elicited. For example, *EK ta<sup>2</sup> ?a<sup>3</sup>, WK tə ?a<sup>5</sup>, GB θe<sup>3</sup> ?e<sup>5</sup>, PD ei<sup>42</sup>, PA eŋ<sup>1</sup>*, '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 (\*d̥) 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 \*d̥ are fully voiced, and consistently represented as /d/ in all the languages in this study.

\*c *EK cɔ<sup>3</sup> WK cɔ<sup>3</sup>, GB cɔ<sup>5</sup>, PD cəw<sup>42</sup>, PA cvŋ<sup>1</sup>, 'tie' V*  
(289) (A1). See also 356, 280, 381, 286, 241, 274.

\*k *EK kɔ<sup>5</sup>, WK kɔ<sup>5</sup>, GJ ku<sup>3</sup>, PD kɔ<sup>3</sup> '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/.



\*? (no examples)

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 [u<sup>5</sup>] is the classifier for books. The particle [u<sup>5</sup>] is a diminutive suffix. When the classifier is used in a phrase, a glottal stop is inserted: *kəjɛ<sup>2</sup> li<sup>3</sup> ?u<sup>5</sup>* 'Kayah book'. By contrast, when the particle is used, no glottal stop is inserted: *'kəjɛ<sup>2</sup> li<sup>3</sup> u<sup>5</sup>* '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 bε<sup>2</sup>, WK bja<sup>1</sup>, GB ba<sup>3</sup>, PD baŋ<sup>2</sup>, PA baŋ<sup>5</sup>, BL 6a<sup>2</sup>*  
 'bamboo shoot' (49) (B1). See also 68, 220, 347, 363, 366, 196, 65, 346, 354, 204, 53, 86.

\*d *EK di<sup>2</sup>, WK di<sup>1</sup>, GB di<sup>3</sup>, PD dei<sup>2</sup>, PA de<sup>5</sup>, BL dɪ<sup>2</sup>,*  
 '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 > b<sup>h</sup>o)
2. All voiced obstruents became voiceless. (For example: bo > p<sup>h</sup>o)
3. Glottalized consonants lost their glottalization. (For example (b<sup>h</sup>o > b<sup>h</sup>o)).

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

Expected modern tone values for *voiced consonants							
Luce	Haudri-court	EK		WK		GB	PD
I	Tone *A3	[2]		[1:]		[3:]	[2:]
IV	Tone *B3	[21]		[5:]		[3:/1:]	[3:]
VII	Tone *C3	[3]		[3:]		[3:/1:]	[?3]

### Voiced Stops

\*b *EK pɔ<sup>2</sup>, WK pɔ<sup>1</sup>, GB phu<sup>3</sup>, PD pəw<sup>2</sup>, PA phvŋ<sup>3</sup>* '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<sup>3</sup>, WK tɛ<sup>3</sup>, GB ta<sup>3</sup>, PD tɑ<sup>32</sup>, PA tha<sup>?</sup><sup>1</sup>, BL da<sup>3</sup>, GL da<sup>2</sup>* 'fish' N (101). See also 52, 72, 265, 283.

\*dʒ EK co<sup>21</sup>, WK co<sup>5</sup>, GB cwe<sup>3</sup>, PD co<sup>3</sup>, 'spoon' (209) (B3).

See also 7, 195, 197, 204, 367.

The evidences for \*dʒ 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 [dʒ] are found in Central Karen.

In Geba and Padaung the stop component of \*dʒ 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.

\*g EK ku<sup>21</sup>, WK kuh<sup>5</sup>, GB ku<sup>3</sup>, PD kəu<sup>3</sup>, PA kho<sup>42</sup>, BL go<sup>2</sup>,  
GL go<sup>2</sup>, 'hot' (382) (B3). See also 108, 7, 62, 129,  
165, 278

### Voiced Oral Sonorants

\*w EK ve<sup>2</sup>, WK vɛ<sup>1</sup>, GB wa<sup>3</sup>, PD wə<sup>21</sup>, PA v<sup>w</sup>a<sup>3</sup> 'husband'  
(176) (A3). See also 179, 353.

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

\*l EK li<sup>2</sup>, WK li<sup>1</sup>, GB li<sup>3</sup>, PD lei<sup>2</sup>, 'red' (364) (A3).  
See also 369, 382a, 190, 362, 29, 36a.

\*j EK jo<sup>21</sup>, WK zwe<sup>5</sup>, GB ju<sup>3</sup>, PD ju<sup>3</sup>, PA ju<sup>2</sup>, 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, *jo*<sup>3</sup> (103) was not affected because it is the reflex of a consonant cluster, cf. EK *jwa*<sup>3</sup>. The proof that neither of these two examples descends from \*j is that neither of the vowels are breathy.

\*r EK *ri*<sup>21</sup>, WK *ri*<sup>5</sup>, GB *wə*<sup>3</sup>, PD *ɣei*<sup>3</sup>, PA *re*<sup>2</sup> '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 *mɔ*<sup>21</sup>, WK *mɔ*<sup>5</sup>, GB *mu*<sup>3</sup>, PD *məu*<sup>32</sup>, PA *mu*<sup>42</sup> '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<sup>21</sup>, WK nε<sup>5</sup>, GB nε<sup>3</sup>, PD nā<sup>3</sup>, PA na<sup>42</sup> '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.

\*ŋ EK ŋε<sup>3</sup>, WK ŋā<sup>3</sup>, GB ʒε<sup>3</sup>, PD ŋai<sup>3</sup>, PA ŋat<sup>5</sup> 'five' (326)  
(C3). See also 244.

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

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 mɔ<sup>5</sup>, WK mɔ<sup>5</sup>, GB mɔ<sup>3</sup>, PD mɔ<sup>2</sup>, GL mɔ<sup>2</sup>.

'sit' (271) (A1) EK nε<sup>3</sup>, WK ɲja<sup>3</sup>, GB na<sup>5</sup>, PD nau<sup>42</sup>,

GJ na<sup>45</sup>.

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 \*ʂ and \*dʰ, 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 mo<sup>5</sup> le<sup>3</sup>  
 WK mo<sup>5</sup> lɛ<sup>3</sup>,  
 PD mo<sup>2</sup> la<sup>3</sup>

## 1a. sky (upper)

WK mo<sup>5</sup> khu<sup>1</sup>  
 GB mo<sup>3</sup> khu<sup>1</sup>  
 PA mo<sup>5</sup> kham<sup>42</sup> ko<sup>1</sup>

## 2. sun

EK to<sup>2</sup> mo<sup>21</sup>  
 WK tɛ mo<sup>5</sup>  
 GB lu<sup>3</sup> mu<sup>3</sup>  
 PD mɛw<sup>32</sup>  
 PA mu<sup>42</sup>

## 3. moon

EK le<sup>3</sup>  
 WK le<sup>3</sup>  
 GB le<sup>5</sup>  
 GL hle<sup>1</sup>  
 PD la<sup>42</sup>  
 PA la<sup>1</sup>

## 4. star

EK che<sup>2</sup>  
 WK she<sup>1</sup>  
 GB she<sup>3</sup>  
 PD sha<sup>71</sup>  
 PA cha<sup>5</sup>

## 5. cloud

EK ɔ<sup>5</sup> lo<sup>21</sup>  
 WK ɔ<sup>5</sup> lwe<sup>5</sup>  
 GB tɛ<sup>3</sup> to<sup>3</sup> bu<sup>3</sup>  
 PD le<sup>2</sup> ?ɛu<sup>42</sup>  
 PA tɛ<sup>3</sup> bo<sup>42</sup>, um<sup>5</sup>

## 6. mist

EK the<sup>3</sup> ?u<sup>3</sup>  
 WK thie<sup>3</sup> ?o<sup>3</sup>, thie<sup>3</sup> te  
 shi<sup>5</sup>  
 GB tɛ<sup>3</sup> shi<sup>3</sup> thi<sup>5</sup>  
 PD pe<sup>2</sup> sw<sup>3</sup> fhw<sup>42</sup>

## 7. rain (verb)

EK ke<sup>5</sup> cw<sup>2</sup>  
 WK ke<sup>5</sup> cw<sup>1</sup>  
 GB mɛ<sup>3</sup> la<sup>1</sup>  
 PD kaũ<sup>3</sup> fhwe<sup>73</sup>  
 PA kham<sup>42</sup> lok<sup>1</sup>, shən<sup>1</sup>

## 8. rainbow

EK the<sup>3</sup> lo<sup>21</sup> bo<sup>2</sup> ?o<sup>52</sup>  
 WK thie<sup>3</sup> la<sup>1</sup> mo<sup>5</sup> sha<sup>5</sup>  
 GB lu<sup>1</sup> ta<sup>1</sup> pa<sup>5</sup>  
 PD praũ<sup>1</sup> ?ɛu<sup>3</sup> fhw<sup>42</sup>

## 9. lightning

EK cha<sup>2</sup> le<sup>2</sup>  
 WK shie<sup>1</sup> lja<sup>1</sup>, ka<sup>1</sup> tɛ she<sup>3</sup>  
 GB le<sup>5</sup> wa<sup>1</sup> li<sup>1</sup>  
 PD klaũ<sup>2</sup> mɛ<sup>3</sup> laũ<sup>2</sup>

## 10. thunder

EK mo<sup>5</sup> khro<sup>3</sup>  
 WK mo<sup>5</sup> kro<sup>3</sup>  
 GB le<sup>5</sup> la<sup>3</sup> phla<sup>3</sup>  
 GL hla<sup>1</sup>  
 PD klaũ<sup>2</sup> mɛ<sup>3</sup> ja<sup>3</sup>  
 PA khrvŋ<sup>5</sup>

## 11. shadow/photo

EK jɛ<sup>21</sup> jo<sup>2</sup>  
 WK za<sup>5</sup> zo<sup>1</sup>  
 GB kɛ<sup>3</sup> lɛ<sup>1</sup>  
 PD a<sup>3</sup> jɔ<sup>2</sup>  
 PA joŋ<sup>5</sup>, ru<sup>1</sup>

## 12. night

EK mo<sup>21</sup> khi<sup>5</sup>  
 WK mo<sup>5</sup> khi<sup>5</sup>  
 GB tɛ<sup>1</sup> chi<sup>5</sup>  
 PD mɛw<sup>3</sup> khw<sup>2</sup>  
 PA mu<sup>1</sup> khi<sup>75</sup>

## 13. day

EK mo<sup>21</sup> se<sup>3</sup> kle<sup>3</sup>  
 WK mo<sup>5</sup> she<sup>3</sup> kle<sup>3</sup>  
 GB lu<sup>3</sup> mu<sup>3</sup> shi<sup>5</sup>  
 PD mɛw<sup>3</sup> sha<sup>42</sup>/cha<sup>42</sup>  
 PA mu<sup>1</sup> ja<sup>1</sup>

## 14. morning

EK mɔ<sup>21</sup> li<sup>3</sup>  
 WK mɔ<sup>5</sup> li<sup>3</sup>  
 GB lu<sup>3</sup> mu<sup>3</sup> wɔ<sup>3</sup>  
 PL məm- iei<sup>42</sup>

## 15. noon

EK mɔ<sup>21</sup> tho<sup>2</sup>  
 WK mɔ<sup>5</sup> thw(ə)<sup>1</sup>  
 GB mu<sup>3</sup> she<sup>3</sup>  
 PD məm<sup>3</sup> thi<sup>2</sup>

## 16. yesterday

EK pa<sup>3</sup> he<sup>5</sup> nw<sup>2</sup>  
 WK pa<sup>3</sup> he<sup>5</sup> nu<sup>1</sup>  
 GB mu<sup>5</sup> he<sup>3</sup>  
 PD la<sup>4</sup> mw<sup>42</sup> ha<sup>2</sup> ha<sup>3</sup>

## 17. tomorrow

EK pa<sup>3</sup> ro<sup>2</sup>  
 WK shie<sup>5</sup> pa<sup>5</sup> ro<sup>3</sup>  
 GB mɔ<sup>1</sup> pe<sup>3</sup>  
 PD məu<sup>3</sup> cəu<sup>2</sup> mə<sup>2</sup> rəu<sup>2</sup>

## 18. year

EK na<sup>2</sup>  
 WK na<sup>1</sup>  
 BL de<sup>2</sup>  
 GB de<sup>3</sup>  
 PD nei<sup>1</sup>  
 PA neŋ<sup>5</sup>

## 19. east

EK si<sup>5</sup> the<sup>2</sup>  
 WK ci<sup>5</sup> the<sup>1</sup>  
 GB lu<sup>3</sup> mu<sup>3</sup> tha<sup>3</sup>  
 PD be<sup>2</sup> thǎ<sup>1</sup>

## 20. west

EK si<sup>5</sup> no<sup>3</sup>  
 WK ci<sup>5</sup> nwə<sup>3</sup>  
 GB lu<sup>3</sup> mu<sup>3</sup> la<sup>1</sup>  
 PD phə<sup>2</sup> nə<sup>3</sup>

## 21. north

EK si<sup>5</sup> the<sup>2</sup>  
 WK ci<sup>5</sup> thja<sup>1</sup>  
 GJ su<sup>3</sup> tə se<sup>3</sup>  
 PD phə<sup>2</sup> tho<sup>42</sup>

## 22. south

EK si<sup>5</sup> le<sup>2</sup>  
 WK ci<sup>5</sup> lja<sup>1</sup>  
 GJ su<sup>3</sup> tə thwe<sup>3</sup>  
 PD phə<sup>2</sup> lǎ<sup>2</sup>

## 23. water

EK thə<sup>3</sup>  
 WK thie<sup>3</sup>  
 GB chi<sup>5</sup>  
 PD chw<sup>42</sup>  
 PA thi<sup>1</sup>

## 24. river

WK thie<sup>3</sup> klo<sup>3</sup>  
 GB chi<sup>5</sup> lɔ<sup>1</sup>  
 PD chw<sup>42</sup> lau<sup>3</sup>

## 24a. stream

WK lja<sup>3</sup> klo<sup>1</sup>  
 GJ lɔ<sup>1</sup> pho<sup>3</sup>

## 25. sea

WK pa<sup>3</sup> le<sup>3</sup>  
 GB pe<sup>3</sup> le<sup>3</sup>  
 PA paŋ<sup>5</sup> le<sup>42</sup>/lai<sup>42</sup>

## 26. soil

EK he<sup>2</sup>  
 WK he<sup>1</sup>  
 GB lū<sup>1</sup> ha<sup>3</sup>  
 PD hǎ<sup>2</sup> khlo<sup>3</sup>  
 PA ham<sup>5</sup>

## 27. mud

EK pa<sup>2</sup> ʔa<sup>5</sup>  
 WK pa<sup>1</sup> ʔa<sup>5</sup>  
 GB ha<sup>3</sup> pe<sup>3</sup> ʔe<sup>3</sup>  
 PD hǎ<sup>2</sup> phe<sup>3</sup> ʔei<sup>42</sup>  
 PA phe<sup>1</sup>

## 28. dust

EK he<sup>2</sup> mw<sup>2</sup>  
 WK he<sup>1</sup> mw<sup>1</sup>  
 GB hǎ<sup>3</sup> phi<sup>5</sup> mu<sup>3</sup>  
 PD hǎ<sup>2</sup> phəw<sup>1</sup>  
 PA ham<sup>5</sup> phun<sup>5</sup>

29. stone

EK lɔ<sup>21</sup>  
 WK lɔ<sup>5</sup>  
 GB lɔ<sup>1</sup>  
 PD ləu<sup>3</sup>  
 PA loŋ<sup>42</sup>

30. sand

EK he<sup>2</sup> so<sup>3</sup>  
 WK he<sup>1</sup> ɛo<sup>3</sup>  
 GB lɔ<sup>1</sup> ɛi<sup>5</sup> mi<sup>3</sup>  
 PD hã<sup>2</sup> sɔ̃<sup>42</sup>

31. lime

EK thwi<sup>5</sup>  
 WK thwi<sup>5</sup>  
 GB thu<sup>3</sup>  
 PD thwu<sup>3</sup>

32. gold

EK the<sup>3</sup>  
 WK the<sup>3</sup>  
 GB the<sup>5</sup>  
 PD thi<sup>42</sup>

33. silver

EK ru<sup>3</sup>  
 WK ru<sup>3</sup>  
 GB ho<sup>5</sup>  
 PD ɰwaŋ<sup>42</sup>  
 PA ron<sup>1</sup>

34. iron (metal)

EK tɔ<sup>2</sup> the<sup>5</sup>  
 WK tɔ<sup>5</sup> the<sup>5</sup>  
 GB thã<sup>3</sup> la<sup>3</sup>  
 PD tha<sup>3</sup>

35. mountain

EK cho<sup>2</sup>  
 WK sho<sup>1</sup>  
 GB kho<sup>3</sup> lɔ<sup>43</sup>  
 PD shã<sup>3</sup>

36. cave

EK la<sup>21</sup> ku<sup>3</sup>  
 WK la<sup>5</sup> ku<sup>3</sup>  
 GB hã<sup>3</sup> pu<sup>1</sup>  
 PD shã<sup>3</sup> ku<sup>42</sup>

36a. rice paddy field

WK lja<sup>5</sup>  
 GJ lɛ<sup>21</sup>  
 PA lai<sup>42</sup>

37. forest

EK mi<sup>2</sup> kle<sup>3</sup>  
 WK mi<sup>1</sup> kle<sup>3</sup>  
 GB mi<sup>3</sup> lɛ<sup>1</sup> kle<sup>3</sup>  
 GJ hme<sup>5</sup> lɛ<sup>1</sup> kle<sup>3</sup>  
 PD miu<sup>2</sup> ka<sup>42</sup>  
 PA tɛ<sup>3</sup> khra<sup>5</sup> phu<sup>1</sup>

38. tree

EK so<sup>2</sup>  
 WK ɛo<sup>1</sup>  
 GB ɛo<sup>3</sup>  
 PD ɛɛw<sup>1</sup>  
 PA neŋ<sup>5</sup>

39. branch

EK phe<sup>3</sup>  
 WK phja<sup>3</sup>  
 GB pha<sup>5</sup>  
 PD phaŋ<sup>42</sup>  
 PA pan<sup>42</sup>

40. bark of tree

EK pha<sup>5</sup>  
 WK pha<sup>5</sup>  
 GB phe<sup>5</sup>  
 PD phe<sup>3</sup>

41. thorn

EK so<sup>2</sup> che<sup>5</sup>  
 WK su<sup>1</sup> shja<sup>5</sup>  
 GB ɛa<sup>3</sup> ɛi<sup>5</sup>  
 GJ tɛ<sup>3</sup> shu<sup>3</sup>  
 PD ɛɛw<sup>1</sup> ʃhu<sup>3</sup>

42. root

EK so<sup>2</sup> rwi<sup>2</sup>  
 WK ɛo<sup>1</sup> rwi<sup>5</sup>  
 GB ɛo<sup>3</sup> kha<sup>3</sup> wi<sup>3</sup>  
 PD ɛɛw<sup>1</sup> ɰui<sup>3</sup>  
 PA rwi<sup>42</sup>, hru<sup>42</sup>



## 43. leaf

EK le<sup>2</sup>  
 WK le<sup>1</sup>  
 GB le<sup>4</sup>  
 GL hle<sup>2</sup>  
 PD la<sup>7</sup><sup>1</sup>  
 PA la<sup>5</sup>

## 44. flower

EK pho<sup>3</sup>  
 WK pho<sup>3</sup>  
 GB pho<sup>5</sup>  
 PD phəu<sup>4</sup><sup>2</sup>

## 45. fruit

EK se<sup>2</sup>  
 WK əe<sup>1</sup>  
 GB əe<sup>3</sup>  
 PD əəw<sup>1</sup>

## 45a. to be ripe

WK mi<sup>3</sup>  
 GJ hmi<sup>5</sup>  
 PA min<sup>1</sup>

## 46. seed

EK plo<sup>2</sup>  
 WK plo<sup>1</sup>  
 GB phlo<sup>3</sup>  
 PD phləu<sup>7</sup><sup>1</sup>

## 47. grass

WK mi<sup>1</sup> əe<sup>1</sup>  
 GB mi<sup>3</sup>

## 48. bamboo

EK ve<sup>2</sup>  
 WK ve<sup>1</sup>  
 GB ho<sup>3</sup>  
 PD mha<sup>7</sup><sup>1</sup>  
 PA va<sup>5</sup>

## 49. bamboo shoot

EK be<sup>2</sup>  
 WK bja<sup>1</sup>  
 BL 6a<sup>2</sup> (i<sup>1</sup>)  
 GB ba<sup>3</sup>  
 PD baŋ<sup>7</sup><sup>1</sup>  
 PA baŋ<sup>5</sup>

## 50. mushroom

EK khru<sup>2</sup>  
 WK kru<sup>1</sup>  
 GB cu<sup>3</sup>  
 PD rwā<sup>2</sup>  
 PA shun<sup>3</sup>

## 51. rattan

EK ri<sup>2</sup><sup>1</sup>  
 WK ri<sup>5</sup>  
 GB we<sup>3</sup>  
 PD ɽei<sup>3</sup>  
 PA re<sup>2</sup>

## 52. kapok

EK to<sup>2</sup>/twi<sup>2</sup> mo<sup>2</sup><sup>1</sup>  
 WK to<sup>1</sup> mo<sup>5</sup>  
 GB cwi<sup>3</sup> mu<sup>1</sup>  
 PD tui<sup>3</sup> məw<sup>2</sup>

## 53. sugar cane

EK di<sup>3</sup> kle<sup>3</sup> bo<sup>3</sup>  
 WK di<sup>3</sup> klja<sup>3</sup> bo<sup>3</sup>  
 GB da<sup>3</sup> khle<sup>4</sup> mu<sup>3</sup>  
 PD diē<sup>4</sup> khlai<sup>4</sup> bəŋ<sup>4</sup><sup>2</sup>

## 54. betal nut

EK mu<sup>5</sup> se<sup>2</sup>  
 WK me<sup>5</sup> əe<sup>1</sup>  
 BL əu<sup>1</sup> ʃu<sup>2</sup>...  
 GB kwa<sup>3</sup> əi<sup>5</sup>  
 PD məŋ<sup>1</sup> sa<sup>7</sup><sup>1</sup>  
 PA plu<sup>4</sup><sup>2</sup>..., mək<sup>1</sup> muk<sup>4</sup><sup>2</sup>

## 56. liquor

EK the<sup>3</sup> i<sup>5</sup> phre<sup>2</sup><sup>1</sup>  
 WK thie<sup>3</sup> si<sup>5</sup> pre<sup>5</sup>  
 GB əi<sup>5</sup> ra<sup>3</sup>  
 PD si<sup>3</sup> ɽw<sup>7</sup><sup>1</sup>

## 57. banana

EK di<sup>3</sup> klwi<sup>5</sup> se<sup>2</sup>  
 WK di<sup>3</sup> klwi<sup>5</sup> əe<sup>1</sup>  
 PD khlui<sup>4</sup><sup>2</sup> sa<sup>7</sup><sup>1</sup>

## 58. papaya

EK di<sup>3</sup> klwi<sup>5</sup> he<sup>3</sup> se<sup>2</sup>  
 WK di<sup>3</sup> klwi<sup>5</sup> he<sup>3</sup> əe<sup>1</sup>  
 PD khlui<sup>4</sup><sup>2</sup> khe<sup>1</sup> sa<sup>7</sup><sup>1</sup>

## 59. mango

EK tɛ² khɛ⁵ se²

WK tɛ khja⁵ ɛ¹

GB ɔ⁵ khɔ³ ɛ³

PD khau² sa?¹

## 60. jackfruit

EK mu⁵ lɛ⁵ se²

WK mɔ⁵ lja³ ɛ¹

GB ma³ na³ ɛ³

PD phɛ² laŋ¹ sa?¹

## 61. coconut

EK mi⁵ ʔu² se²

WK ma⁵ ʔu¹ ɛ¹

GB o⁵ di⁵

PD phɛ³ ʔɛu³ sa?¹

PA mak⁵ uin¹ hra⁵

## 62. eggplant

EK kɛ⁵ se²

WK kja⁵ ɛ¹

GB ka³ du⁵ ɛ³

PD kaŋ² sa?¹

## 63. peanut

EK ku⁵ bi³ su⁵ se²

WK kɔ⁵ bi³ ɛu⁵

GJ mje³ bɛ³⁴

PD bei⁴² haŋ² kaŋ⁴²

## 64. ginger

EK ta² ʔa³

WK tɛ ʔa³

GB ɛ³ ʔe⁵

PD ei⁴²

PA en¹

## 65. garlic

EK bo² ho⁵ bu³

WK pho³ ho⁵ bu³

GB cɛ⁵ to³ bo⁵

PD bɛ² həu³ bu⁴²

## 66. red pepper

EK se³ he⁵

WK ɛɛ hja⁵

PD sɛ⁴ hai?³

## 67. corn

NK ku³ khi⁵ o¹

EK ku² khi⁵²

WK ku¹ khe⁵

GB ɛ³ khwɛ²

PD kɛ³ khi?³

## 68. rice, unhusked

EK bo⁵ ʔe²

WK bwɛ⁵ ʔe¹

BL ɬu²

GB bu³

PD bɛw?³

PA bu¹

## 69. rice, cooked

EK di³

WK di³

GB di⁵

PD diaŋ⁴²

PA den¹, den¹ min⁵

## 70. rice husk

EK phi³

WK phi³ ɔ⁵

GB tho³ phje⁵

PD pheɪ⁴²

PA pla¹

## 71. salt

EK i⁵ se²

WK i¹ ɛ¹

GB di⁵ ɛ³

PD ci¹ sa?¹

PA ta sha¹

72. animals (lit., animal  
wild, animal

domestic)

EK tɛ² mi² tɛ² dɔ³

WK tɛ¹ mi¹ tɛ¹ dɔ³

GB tɛ³ pho³ tɛ³ wɛ³

PD ta¹ miɪ¹ ta¹ lɛw?³

## 73. tiger

EK pɔ³ khi³

WK phwɛ³ khi³

GB khi⁵

PD kheɪ⁴²

PA ke³

74. bear  
 EK the<sup>3</sup>  
 WK the<sup>3</sup>  
 GB the<sup>5</sup>  
 PD thaŋ<sup>42</sup>

75. deer  
 WK tə khie<sup>3</sup>  
 GB khu<sup>5</sup>  
 PD khjo<sup>3</sup>  
 PA khjo<sup>3</sup>

76. monkey  
 EK jo<sup>3</sup>  
 WK zo<sup>3</sup>  
 GB zu<sup>3</sup>  
 PD jo<sup>3</sup>  
 PA jo<sup>1</sup>

77. gibbon (lit., monkey  
 black)  
 EK jo<sup>3</sup> lo<sup>2</sup>  
 WK zo<sup>3</sup> lo<sup>1</sup>  
 GB zu<sup>3</sup> ɕi<sup>5</sup>  
 PD jo<sup>3</sup> læu<sup>2</sup>

78. rabbit  
 EK de<sup>3</sup> se<sup>2</sup>  
 WK da<sup>3</sup> ɕe<sup>1</sup>  
 BL pe<sup>2</sup> de<sup>2</sup>  
 GB de<sup>45</sup> ɕe<sup>3</sup>  
 PD dai<sup>42</sup> sa<sup>1</sup>

79. porcupine  
 EK sw<sup>2</sup>  
 WK sw<sup>1</sup>  
 GB ɕu<sup>3</sup>  
 PD sɔ<sup>1</sup>  
 PA shun<sup>5</sup>

80. rat  
 EK jo<sup>21</sup> khro<sup>5</sup>  
 WK zwe<sup>5</sup> kry<sup>5</sup>  
 GB ju<sup>3</sup>  
 PD ju<sup>3</sup> khro<sup>42</sup>  
 PA ju<sup>2</sup>

81. dog  
 EK thwi<sup>2</sup>  
 WK thwi<sup>1</sup>  
 GB thwi<sup>3</sup>  
 PD thwi<sup>1</sup>  
 PA thwi<sup>5</sup>

82. bark (verb)  
 EK ɔ<sup>2</sup>  
 WK ɔ<sup>1</sup>  
 GB ɔ<sup>3</sup>  
 PD u<sup>1</sup>  
 PA u<sup>5</sup>

83. bite (verb)  
 EK a<sup>21</sup>  
 WK a<sup>1</sup>  
 GB e<sup>1</sup>  
 PD ei<sup>1</sup>  
 PA eŋ<sup>5</sup>

84. cat  
 EK thwa<sup>5</sup>  
 WK thwo<sup>5</sup>  
 GB mi<sup>3</sup> jo<sup>3</sup>  
 PD niəu<sup>42</sup>, niəu<sup>42</sup>

85. pig  
 EK the<sup>5</sup>  
 WK thja<sup>5</sup>  
 GB tho<sup>3</sup>  
 PD thau<sup>3</sup>  
 PA tho<sup>5</sup>

86. cow  
 EK pu<sup>21</sup>  
 WK puh<sup>5</sup>  
 GB po<sup>3</sup>  
 PD peu<sup>3</sup>  
 PA pho<sup>42</sup>

87. milk (lit., breast  
 water)  
 EK i<sup>2</sup> nu<sup>5</sup> the<sup>3</sup>  
 WK nwe<sup>5</sup> thie<sup>3</sup>  
 GB nu<sup>3</sup> chi<sup>5</sup>  
 PD nu<sup>1</sup> fhw<sup>42</sup>



88. buffalo

EK pe<sup>5</sup> ne<sup>21</sup>WK pe<sup>1</sup> ne<sup>5</sup>GB pe<sup>3</sup> ne<sup>3</sup>PD me na<sup>3</sup>PA pe<sup>75</sup> na<sup>42</sup>

89. horn (of buffalo)

EK no<sup>2</sup>WK no<sup>1</sup>GB nu<sup>3</sup>PD ke nou<sup>21</sup>PA non<sup>3</sup>

90. tail

EK ku<sup>5</sup> mi<sup>21</sup>WK kha<sup>3</sup> mi<sup>5</sup>GB ka<sup>5</sup> mi<sup>3</sup>GL ka<sup>1</sup> hmi<sup>2</sup>PD ke<sup>3</sup> mei<sup>3</sup>PA me<sup>42</sup>

91. elephant

EK te<sup>2</sup> che<sup>3</sup>WK te shja<sup>3</sup>GB ka<sup>3</sup> sha<sup>5</sup>PD sha<sup>42</sup>PA cha<sup>1</sup>

92. elephant tusk

EK ple<sup>3</sup>WK plja<sup>3</sup>GB plo<sup>3</sup>PD mai<sup>73</sup>

93. bird

EK thu<sup>2</sup> u<sup>5</sup>WK thuh<sup>1</sup>GB tho<sup>5</sup>PD theu<sup>1</sup>PA v<sup>w</sup>a<sup>42</sup>, va<sup>42</sup>

94. bird nest

EK pwi<sup>2</sup>WK pwi<sup>1</sup>GB pi<sup>1</sup>PD pwhi<sup>2</sup>PA pwi<sup>1</sup>

95. wing, feather

EK da<sup>5</sup>WK da<sup>5</sup>BL de<sup>2</sup>GB de<sup>3</sup>PD de<sup>3</sup> kai<sup>2</sup>PA de<sup>75</sup>

96. down feather, whisker

EK chu<sup>2</sup>WK shu<sup>1</sup>GB sho<sup>3</sup>PD shwö<sup>71</sup>PA chon<sup>5</sup>

97. fly (verb)

EK jo<sup>2</sup>WK zwæ<sup>1</sup>GB mi<sup>3</sup>PD jæw<sup>2</sup>

98. egg

EK de<sup>2</sup>WK die<sup>1</sup>BL di<sup>2</sup>GB di<sup>3</sup>PA di<sup>1</sup>

99. chicken

EK cha<sup>3</sup>WK shie<sup>3</sup>GB shi<sup>5</sup>PD shi<sup>42</sup>PA chja<sup>1</sup>

100. duck (noun)

EK ta<sup>2</sup> sa<sup>5</sup>WK te θa<sup>5</sup>GB u<sup>3</sup> pe<sup>3</sup>PD pe<sup>32</sup>, be<sup>32</sup>

101. fish (noun)

EK te<sup>3</sup>WK te<sup>3</sup>GB ta<sup>3</sup>PD ta<sup>32</sup>PA tha<sup>71</sup>

## 102. snake

EK ru<sup>21</sup>  
 WK ru<sup>5</sup>  
 GB wu<sup>3</sup>  
 PD ɿəu<sup>32</sup>  
 PA ru<sup>2</sup>

## 103. lizard (species found indoors)

EK jwa<sup>3</sup> hi<sup>2</sup>  
 WK jo<sup>3</sup> hi<sup>1</sup>  
 GB de<sup>5</sup> li<sup>3</sup>  
 PD plai<sup>73</sup>

## 104. turtle

EK kli<sup>5</sup>  
 WK kli<sup>5</sup>  
 GB khli<sup>3</sup>  
 PD khlu<sup>73</sup>  
 PA kle<sup>75</sup>

## 105. crocodile

EK te<sup>2</sup> je<sup>21</sup>  
 WK tə zɛ<sup>5</sup>  
 GB tɛ<sup>4</sup> mɛ<sup>3</sup>  
 PD jaũ<sup>32</sup>

## 106. frog

EK di<sup>2</sup>  
 WK di<sup>1</sup>  
 BL dɿ<sup>2</sup>  
 GB di<sup>1</sup>  
 PD dei<sup>2</sup>  
 PA de<sup>5</sup>

## 107. insect

EK pho<sup>3</sup>  
 WK pho<sup>3</sup>  
 GB phu<sup>3</sup> ba<sup>5</sup>  
 PD mu<sup>4</sup> pu<sup>42</sup>

## 108. spider

EK pho<sup>3</sup> ke<sup>21</sup>  
 WK phwə<sup>3</sup> kja<sup>5</sup>  
 GB ku<sup>3</sup> ka<sup>3</sup>  
 PD kaũ<sup>3</sup>  
 PA kuŋ<sup>5</sup> kau<sup>42</sup>

## 109. spider web

EK co<sup>21</sup>  
 WK co<sup>5</sup>  
 GB the<sup>5</sup>  
 PD lu<sup>2</sup>

## 110. louse

EK so<sup>2</sup>  
 WK θwə<sup>1</sup>  
 GB θo<sup>3</sup>  
 PD θi<sup>71</sup>  
 PA sw<sup>5</sup>

## 111. termite

EK phu<sup>5</sup> wa<sup>5</sup>  
 WK pu<sup>5</sup> wo<sup>3</sup>  
 GB po<sup>3</sup> ʔo<sup>5</sup>  
 PD phə<sup>2</sup> ʔo<sup>42</sup>

## 112. cockroach

NK lo<sup>1</sup> ki<sup>5</sup> u<sup>1</sup>  
 EK lo<sup>2</sup> ki<sup>52</sup>  
 WK lo<sup>1</sup> ki<sup>5</sup>  
 GB kho<sup>5</sup> bi<sup>3</sup>  
 PD tə<sup>2</sup> kei<sup>42</sup>

## 113. snail

NK klu<sup>1</sup> de<sup>3</sup> hi<sup>5</sup> o<sup>1</sup>  
 EK klu<sup>2</sup> de<sup>5</sup> hi<sup>52</sup>  
 WK klu<sup>1</sup> da<sup>3</sup> hi<sup>5</sup>  
 GB co<sup>3</sup> mi<sup>5</sup>  
 PD khləu<sup>71</sup>  
 PA ŋwi<sup>5</sup>

## 114. mosquito

EK pho<sup>3</sup> chi<sup>5</sup>  
 WK pho<sup>3</sup> shi<sup>5</sup>  
 GJ pə so<sup>3</sup> thi<sup>45</sup>  
 PD pu<sup>2</sup> tei<sup>2</sup> jəũ<sup>2</sup>

## 115. bee

EK ti<sup>2</sup> ni<sup>3</sup>  
 WK tə ni<sup>3</sup>  
 GB ki<sup>1</sup> ni<sup>1</sup>  
 PD nei<sup>42</sup>

116. beetle, green

EK pho<sup>3</sup> so<sup>3</sup>  
 WK pho<sup>3</sup> θwə<sup>3</sup>  
 GB phu<sup>3</sup> ba<sup>5</sup> klo<sup>3</sup>  
 PD pu<sup>2</sup> mu<sup>3</sup> su<sup>4</sup><sup>2</sup>  
 PA pi<sup>7</sup><sup>5</sup> thu<sup>3</sup>

117. butterfly

EK ku<sup>5</sup> pe<sup>2</sup><sup>1</sup>  
 WK pi<sup>3</sup> pja<sup>5</sup>  
 GB kə<sup>3</sup> nə<sup>3</sup> phi<sup>5</sup>  
 PD mu<sup>4</sup> pa<sup>u</sup><sup>3</sup><sup>2</sup>  
 PA cam<sup>4</sup><sup>2</sup> phen<sup>3</sup>

118. scorpion

EK de<sup>3</sup> me<sup>2</sup>  
 WK da<sup>5</sup> mə<sup>1</sup>  
 GB də<sup>1</sup> ti<sup>1</sup>  
 PD klau<sup>2</sup> ma<sup>2</sup> tha<sup>2</sup> di<sup>7</sup><sup>3</sup>

119. head

EK ku<sup>2</sup> klo<sup>5</sup>  
 WK khu<sup>1</sup> klo<sup>5</sup>  
 GB ku<sup>3</sup>  
 PD kə<sup>3</sup> klo<sup>7</sup><sup>3</sup>  
 PA kho<sup>5</sup> (top)

120. face

EK pe<sup>5</sup> se<sup>2</sup>  
 WK me<sup>1</sup> θe<sup>1</sup>  
 PD mu<sup>4</sup> phləu<sup>7</sup><sup>1</sup>

121. brain

EK ku<sup>2</sup> klo<sup>5</sup> nə<sup>3</sup>  
 WK khu<sup>1</sup> klo<sup>5</sup> nə<sup>3</sup>  
 GB i<sup>5</sup> nu<sup>3</sup>  
 PD kə<sup>3</sup> nə<sup>7</sup><sup>3</sup>  
 PA ka nək<sup>5</sup>/nə<sup>7</sup><sup>5</sup>

122. hair

EK ko<sup>5</sup> lo<sup>2</sup>  
 WK khu<sup>1</sup> lwə<sup>1</sup>  
 GB khu<sup>3</sup> lu<sup>4</sup>  
 PD kə<sup>3</sup> lu<sup>2</sup>

123. forehead

EK ma<sup>2</sup> the<sup>5</sup>  
 WK mə<sup>3</sup> the<sup>5</sup>  
 GB mi<sup>3</sup> tha<sup>3</sup>  
 PD mu<sup>4</sup> tha<sup>1</sup> khəu<sup>7</sup><sup>1</sup>

124. eyebrow

EK ma<sup>3</sup> ko<sup>3</sup>  
 WK mə<sup>3</sup> kwə<sup>3</sup>  
 GB mə<sup>3</sup> ri<sup>3</sup> sho<sup>3</sup>  
 PD mu<sup>4</sup> rau<sup>2</sup> ʃhō<sup>7</sup><sup>1</sup>

125. eye

EK pe<sup>5</sup> se<sup>2</sup> plo<sup>2</sup>  
 WK mə<sup>1</sup> θe<sup>1</sup> plo<sup>1</sup>  
 GB kə<sup>3</sup> du<sup>5</sup> phlo<sup>3</sup>  
 PD mu<sup>4</sup> sa<sup>1</sup> phləu<sup>7</sup><sup>1</sup>  
 PA mə<sup>7</sup><sup>1</sup>

126. eyelid

EK pe<sup>5</sup> se<sup>2</sup> plo<sup>2</sup> pha<sup>5</sup>  
 WK mə<sup>1</sup> θe<sup>1</sup> pha<sup>5</sup>  
 GB kə<sup>3</sup> du<sup>5</sup> phe<sup>3</sup>  
 PD mu<sup>4</sup><sup>2</sup> sa<sup>1</sup> phləu<sup>1</sup> phe<sup>7</sup><sup>3</sup>

129. ear

EK ke<sup>5</sup> le<sup>2</sup> ko<sup>2</sup>  
 WK kha<sup>3</sup> le<sup>1</sup> kwə<sup>5</sup>  
 GB ni<sup>3</sup> kw<sup>3</sup>  
 PD lə<sup>2</sup> ku/u<sup>4</sup><sup>2</sup>  
 PA na<sup>5</sup>, nə<sup>5</sup> la<sup>5</sup>

130. mouth

EK ku<sup>5</sup> ʔu<sup>2</sup>  
 WK kha<sup>3</sup> ʔu<sup>1</sup>  
 PD kau<sup>3</sup> ku<sup>4</sup><sup>2</sup>

131. tongue

EK pli<sup>2</sup>  
 WK pli<sup>1</sup>  
 GB ple<sup>3</sup>  
 PD plei<sup>2</sup><sup>1</sup>  
 PA phre<sup>3</sup>

132. saliva (lit., tongue  
 water)

EK pli<sup>2</sup> the<sup>3</sup>  
 WK pli<sup>1</sup> thie<sup>3</sup>  
 GB pə<sup>3</sup> chi<sup>5</sup>  
 PD plei<sup>2</sup> shw<sup>4</sup><sup>2</sup>

133. tooth

EK ku(h)<sup>2</sup> khə<sup>3</sup>  
 WK ku<sup>1</sup> khie<sup>3</sup>  
 GB θo<sup>5</sup>  
 PD sə<sup>2</sup> khw<sup>4</sup><sup>2</sup>  
 PA tə<sup>7</sup><sup>5</sup> ŋa<sup>1</sup>



## 134. gums

EK ku<sup>2</sup> khə<sup>3</sup> pja<sup>5</sup>  
 WK ku<sup>1</sup> khie<sup>3</sup> plie<sup>5</sup>  
 PD sə<sup>2</sup> khw<sup>4</sup> bli<sup>7</sup><sup>3</sup>

## 135. chin

EK khe<sup>2</sup>  
 WK khe<sup>1</sup>  
 GB khe<sup>3</sup> kli<sup>3</sup>  
 PD kə<sup>2</sup> fhw<sup>1</sup>

## 136. beard (lit., chin hair)

EK khe<sup>2</sup> chw<sup>2</sup>  
 WK khe<sup>1</sup> shw<sup>1</sup>  
 GB chi<sup>3</sup> sho<sup>3</sup>  
 PD kha<sup>1</sup> fhō<sup>1</sup>

## 137. shave (verb)

EK klw<sup>2</sup>  
 WK i<sup>1</sup> klw<sup>1</sup>  
 GB kwa<sup>3</sup>  
 PD kui<sup>2</sup>

## 138. back (noun)

EK ŋe<sup>2</sup><sup>1</sup>  
 WK ŋa<sup>5</sup>  
 GB ku<sup>3</sup> khlo<sup>5</sup>  
 PD nă<sup>3</sup> dei<sup>4</sup><sup>2</sup>

## 139. abdomen

EK hō<sup>5</sup>  
 WK hō<sup>5</sup>  
 GB phu<sup>3</sup>  
 PD phu<sup>4</sup><sup>2</sup>  
 PA ho<sup>7</sup><sup>5</sup>

## 140. navel

EK di<sup>3</sup> bo<sup>3</sup>  
 WK di<sup>3</sup> bo<sup>3</sup>  
 BL dī<sup>1</sup>  
 GB di<sup>3</sup> mō<sup>5</sup>  
 GJ de<sup>3</sup> hmo<sup>5</sup><sup>4</sup>  
 PD dei<sup>4</sup> bō<sup>4</sup><sup>2</sup>  
 PA pa de<sup>1</sup>

## 141. heart

EK si<sup>5</sup>  
 WK θe<sup>5</sup>  
 GB θa<sup>3</sup>  
 PD sa<sup>3</sup>  
 PA sha<sup>7</sup><sup>5</sup>

## 142. lungs

EK su<sup>2</sup>  
 WK θu<sup>1</sup>  
 GB θo<sup>5</sup> θa<sup>3</sup>  
 PD səu<sup>7</sup><sup>1</sup>

## 143. liver

EK so<sup>2</sup>  
 WK θwə<sup>1</sup>  
 GB θa<sup>3</sup> bu<sup>3</sup>  
 PD səw<sup>7</sup><sup>1</sup>

## 144. intestines

EK phra<sup>3</sup>  
 WK pra<sup>3</sup>  
 GB pwi<sup>1</sup>  
 PD pre<sup>3</sup><sup>2</sup>  
 PA phre<sup>7</sup><sup>1</sup>

## 145. hand

EK ku<sup>5</sup> khu<sup>2</sup>  
 WK tē khu<sup>1</sup>  
 GB cu<sup>3</sup> khō<sup>3</sup> le<sup>3</sup>  
 PD ci<sup>1</sup> khəu<sup>7</sup><sup>1</sup>

## 146. elbow

EK cu<sup>5</sup> ma<sup>3</sup> ke<sup>3</sup>  
 WK tē ma<sup>3</sup> kja<sup>3</sup>  
 GB cu<sup>3</sup> li<sup>3</sup> mi<sup>3</sup>  
 PD ci<sup>1</sup> dei<sup>1</sup> kaŋ<sup>4</sup><sup>2</sup>

## 147. armpit

EK pla<sup>3</sup> le<sup>3</sup>  
 WK pla<sup>3</sup> le<sup>3</sup>  
 GB pli<sup>5</sup> li<sup>3</sup>  
 PD di<sup>3</sup> la<sup>7</sup><sup>3</sup>

## 148. palm

EK ku<sup>5</sup> ja<sup>3</sup> ku<sup>3</sup>  
 WK tē khu<sup>3</sup> ku<sup>3</sup>  
 GB cu<sup>3</sup> ?i<sup>5</sup> ta<sup>3</sup>  
 PD ci<sup>1</sup> ja<sup>1</sup> kəu<sup>4</sup><sup>2</sup>

149. finger

EK kɔ<sup>2</sup> nɔ<sup>3</sup>WK kə nɔ<sup>3</sup>GB cu<sup>3</sup> mu<sup>3</sup>PD ci<sup>1</sup> məw<sup>3</sup>

150. finger nail

EK ku<sup>5</sup> mə<sup>2</sup><sup>1</sup>WK kə nɔ<sup>3</sup> ba<sup>1</sup>GB cu<sup>3</sup> mu<sup>3</sup> piPD ci<sup>1</sup> mŭ<sup>1</sup>

151. buttocks

EK ku<sup>2</sup> pja<sup>5</sup>WK kha<sup>3</sup> plie<sup>5</sup>GB ka<sup>3</sup> tho<sup>5</sup>PD ka<sup>4</sup> kŋ<sup>7</sup><sup>1</sup>

152. leg

EK khe<sup>2</sup>WK khja<sup>1</sup>GB ka<sup>3</sup> kho<sup>3</sup>PD hã<sup>1</sup> dei<sup>4</sup><sup>2</sup>

153. thigh

NK khe<sup>1</sup> da<sup>3</sup> (inner thigh)EK khe<sup>5</sup> kə<sup>2</sup>WK kha<sup>3</sup> kie<sup>1</sup>BL kha<sup>2</sup> du<sup>2</sup>GB kha<sup>3</sup> du<sup>3</sup>PD hã<sup>1</sup> du<sup>1</sup>PA ki<sup>5</sup>, tji<sup>5</sup>

154. knee

EK khe<sup>2</sup> ma<sup>3</sup>WK kha<sup>1</sup> ma<sup>3</sup>GB kha<sup>3</sup> le<sup>3</sup> mi<sup>3</sup>PD hã<sup>1</sup> lei<sup>7</sup><sup>3</sup>

155. calf (of leg)

EK khe<sup>5</sup> do<sup>2</sup> plo<sup>2</sup>WK kha<sup>3</sup> dwə<sup>1</sup> plo<sup>1</sup>GB kha<sup>3</sup> de<sup>5</sup> ɕe<sup>3</sup>PD hã<sup>1</sup> phu<sup>4</sup> phləu<sup>7</sup><sup>1</sup>

156. shin

EK khe<sup>5</sup> khi<sup>2</sup>WK kha<sup>3</sup> khi<sup>1</sup>GJ kha<sup>3</sup> kho<sup>3</sup> khwi<sup>3</sup>PD ŋa<sup>4</sup> kã<sup>4</sup><sup>2</sup>

157. foot

EK khe<sup>5</sup> le<sup>2</sup> / ku<sup>5</sup> le<sup>1</sup>WK kha<sup>3</sup> dwə<sup>1</sup>GB kha<sup>3</sup> kho<sup>3</sup> le<sup>3</sup>PD ka<sup>3</sup> khəu<sup>1</sup> la<sup>7</sup><sup>1</sup>

158. heel

EK khe<sup>5</sup> no<sup>2</sup> ke<sup>3</sup>WK kha<sup>3</sup> nwə<sup>1</sup> kja<sup>3</sup>GB sha<sup>3</sup> fhe<sup>5</sup> du<sup>3</sup> ka<sup>5</sup>PD ka<sup>3</sup> dei<sup>1</sup> kã<sup>4</sup><sup>2</sup>

159. bone

EK khrwi<sup>5</sup>WK krwi<sup>5</sup>GB khwi<sup>3</sup>PD rmi<sup>7</sup><sup>2</sup>/fhwi<sup>1</sup>PA chut<sup>5</sup>

160. rib

EK ro<sup>3</sup> khrwi<sup>5</sup>WK ro<sup>3</sup> krwi<sup>5</sup>GB ru<sup>3</sup> khwi<sup>3</sup>PD ɕe<sup>3</sup> rmi<sup>7</sup><sup>2</sup>PA re<sup>7</sup><sup>1</sup>, khrwt<sup>1</sup>

161. flesh

EK ja<sup>2</sup>WK zie<sup>1</sup>GB he<sup>3</sup>PD ja<sup>7</sup><sup>1</sup>PA ja<sup>5</sup>

162. fat, oil (noun)

EK su<sup>5</sup>WK ɕu<sup>5</sup>GB ju<sup>3</sup> pho<sup>5</sup> fhi<sup>3</sup>

163. skin

EK pha<sup>5</sup>WK pha<sup>5</sup>GB phe<sup>3</sup>PD phe<sup>3</sup><sup>2</sup>PA phe<sup>7</sup><sup>5</sup>

164. blood

EK swi<sup>2</sup>WK ɕwi<sup>1</sup>GB ɕwi<sup>1</sup>PD swi<sup>7</sup><sup>1</sup>PA shwi<sup>5</sup>

165. sweat  
 EK ku<sup>2</sup> sa<sup>3</sup>  
 WK ku<sup>5</sup> θa<sup>3</sup>  
 GB chwi<sup>5</sup> tha<sup>3</sup>  
 PD kə<sup>3</sup> sei<sup>42</sup>

166. pus  
 EK mi<sup>3</sup>  
 WK mi<sup>3</sup>  
 GB mi<sup>5</sup>  
 GL hmi<sup>1</sup>  
 PD kwhi<sup>1</sup>, whi<sup>1</sup>  
 PA mi<sup>1</sup>

167. excrement  
 EK i<sup>21</sup>  
 WK i<sup>1</sup>  
 GB i<sup>1</sup>  
 PD ei<sup>71</sup>  
 PA e<sup>1</sup>

168. urine  
 EK i<sup>5</sup> chə<sup>2</sup>  
 WK i<sup>1</sup> shie<sup>1</sup>  
 GB fhi<sup>3</sup>  
 PD θe<sup>1</sup> fhw<sup>71</sup>  
 PA chi<sup>5</sup>

169. man  
 EK phre<sup>2</sup> khu<sup>3</sup>  
 WK prɛ<sup>1</sup> khu<sup>3</sup>  
 GB mi<sup>3</sup> kho<sup>5</sup>  
 PD pra<sup>2</sup> khəu<sup>42</sup>  
 PA kho<sup>1</sup>

170. woman  
 EK phre<sup>2</sup> mɔ<sup>2</sup>  
 WK prɛ<sup>1</sup> mɔ<sup>1</sup>  
 GB mi<sup>3</sup> mu<sup>5</sup>  
 PD pra<sup>2</sup> mɔ<sup>72</sup>  
 PA lɔ<sup>5</sup> mŭŋ<sup>5</sup>

171. person  
 EK phre<sup>2</sup> (classifier for  
 person)  
 WK prɛ<sup>1</sup>  
 GB pja<sup>1</sup>  
 PD pra<sup>2</sup>  
 PA phra<sup>3</sup>

171b. you (singular)  
 WK nɛ<sup>1</sup>  
 GJ nɛ<sup>3</sup>  
 PA na<sup>3</sup>

172. father  
 EK phe<sup>3</sup>  
 WK phɛ<sup>3</sup>  
 GB pa<sup>4</sup>  
 PD pha<sup>42</sup>  
 PA pha<sup>1</sup>

173. mother  
 EK mo<sup>21</sup>  
 WK mwe<sup>5</sup>  
 GB mɔ<sup>3</sup>  
 PD mɛw<sup>3</sup>  
 PA mɪ<sup>42</sup>

174. child  
 EK phu<sup>5</sup>  
 WK phu<sup>5</sup>  
 GB phi<sup>5</sup> se<sup>5</sup> pho<sup>3</sup>  
 PD pho<sup>73</sup>  
 PA pho<sup>1</sup>

175. son-in-law  
 EK me<sup>3</sup> phre<sup>2</sup> khu<sup>3</sup>  
 WK mɛ<sup>3</sup> prɛ<sup>1</sup> khu<sup>3</sup>  
 GB cha<sup>3</sup> ma<sup>3</sup>  
 PD mə<sup>3</sup> phre<sup>2</sup> khəu<sup>42</sup>

176. husband  
 EK ve<sup>2</sup>  
 WK vɛ<sup>1</sup>  
 GB wa<sup>3</sup>  
 PD wa<sup>21</sup>  
 PA va<sup>3</sup>, v<sup>w</sup>a<sup>3</sup>

177. wife  
 EK me<sup>3</sup>  
 WK me<sup>3</sup>  
 GB mɛ<sup>5</sup>  
 PD ma<sup>42</sup>  
 PA ma<sup>1</sup>

178. widow  
 EK phre<sup>2</sup> mɔ<sup>2</sup> ʔo<sup>2</sup> khre<sup>5</sup>  
 WK prɛ<sup>1</sup> mɔ<sup>1</sup> ʔo<sup>1</sup> krja<sup>5</sup>  
 GB mɔ<sup>3</sup> sho<sup>5</sup> ma<sup>3</sup>  
 PD pra<sup>2</sup> mɔ<sup>2</sup> shai<sup>73</sup>



## 179. elder sibling

EK me<sup>2</sup><sub>1</sub>  
 WK vja<sup>5</sup>  
 GB me<sup>1</sup>  
 PD kwe<sup>3</sup>  
 PA ve<sup>4</sup><sub>2</sub>

## 180. younger sibling

EK po<sup>2</sup><sub>1</sub>  
 WK pwe<sup>5</sup>  
 GB pi<sup>3</sup> kc<sup>5</sup> eε<sup>5</sup> de<sup>3</sup>  
 PD pu<sup>3</sup>  
 PA phu<sup>4</sup><sub>2</sub>

## 181. friend

EK kho<sup>3</sup> be<sup>5</sup> swa<sup>5</sup>  
 WK kho<sup>3</sup> ba<sup>5</sup> owo<sup>5</sup>  
 GB eɔ<sup>3</sup>  
 PD ŋɔ<sup>1</sup> tɕəw<sup>3</sup>

## 182. name

EK mi<sup>2</sup>, mui<sup>3</sup>  
 WK mwi<sup>1</sup>  
 GB mi<sup>3</sup>  
 PD mi<sup>2</sup>  
 PA mjɪn<sup>3</sup>

## 183. village

EK dɔ<sup>3</sup>  
 WK dɔ<sup>3</sup>  
 BL dɔ<sup>1</sup>  
 GB du<sup>5</sup>  
 GL dɔ<sup>1</sup>  
 PD dəu<sup>4</sup><sub>2</sub>  
 PA doŋ<sup>1</sup>

## 184. road, path

EK kle<sup>5</sup>  
 WK klja<sup>5</sup>  
 GB kle<sup>3</sup>  
 PD khlai<sup>3</sup>  
 PA klai<sup>1</sup> (location)

## 185. boat

EK so<sup>2</sup> kle<sup>3</sup>  
 WK eɔ<sup>1</sup> klie<sup>3</sup>  
 GB khli<sup>5</sup>  
 PD tɛ khliw<sup>4</sup><sub>2</sub>  
 PA phri<sup>1</sup>

## 186. house

EK hi<sup>2</sup>  
 WK hi<sup>1</sup>  
 GB fi<sup>3</sup>  
 GJ hi<sup>3</sup>  
 PD eɪtʰ<sup>1</sup>

## 187. door

EK ka<sup>2</sup> da<sup>3</sup> du<sup>2</sup>  
 WK kə da<sup>3</sup>  
 GB kha<sup>3</sup> kle<sup>3</sup>  
 PD kə da<sup>4</sup><sub>2</sub>

## 188. window

EK ka<sup>2</sup> da<sup>3</sup> hu<sup>5</sup>  
 WK kə da<sup>3</sup> phu<sup>5</sup>  
 GB kha<sup>3</sup> kle<sup>3</sup> phu<sup>3</sup>  
 PD kə da<sup>4</sup><sub>2</sub> phɔ<sup>2</sup>

## 189. roof

EK khu<sup>2</sup>  
 WK khu<sup>1</sup>  
 GB khu<sup>3</sup>  
 PD khəu<sup>1</sup>

## 190. space under house

EK dle<sup>3</sup>  
 WK le<sup>3</sup>  
 GB le<sup>3</sup>  
 PD la<sup>3</sup>

## 191. wall (of house)

EK dɔ<sup>5</sup>  
 WK dɔ<sup>5</sup>  
 GJ tɔ<sup>3</sup>  
 PD dɔ<sup>2</sup>

## 192. mat

EK le<sup>2</sup><sub>1</sub> de<sup>3</sup>  
 WK le<sup>5</sup> de<sup>3</sup>  
 GJ khlo<sup>3</sup>  
 PD nu<sup>3</sup> da<sup>4</sup><sub>2</sub>

## 193. pillow

EK mwa<sup>5</sup>  
 WK mwo<sup>5</sup>  
 PD mwā<sup>2</sup>

194. blanket

EK i<sup>2</sup> ke<sup>3</sup>  
 WK hi<sup>5</sup> ke<sup>3</sup>  
 GB mi<sup>5</sup> ja<sup>3</sup>  
 PD mhã<sup>42</sup>  
 PA hcm<sup>1</sup>

195. clothing

EK hæ<sup>2</sup> ca<sup>2</sup>  
 WK hie<sup>1</sup> ca<sup>1</sup>  
 PD mu<sup>4</sup> cai<sup>21</sup>

196. weave (cloth)

EK bɔ<sup>5</sup> the<sup>5</sup>  
 WK bɔ<sup>5</sup> the<sup>5</sup>  
 GB bu<sup>3</sup> the<sup>3</sup>  
 PD bi<sup>3</sup> tha<sup>3</sup>  
 PA tha<sup>5</sup>

197. dye, soak (cloth)

EK ce<sup>2</sup>  
 WK ce<sup>1</sup>  
 GB tru<sup>3</sup> la<sup>3</sup>  
 PD cu<sup>2</sup> fhu<sup>42</sup>

199. trousers

EK hæ<sup>2</sup> khe<sup>2</sup> pha<sup>3</sup> la<sup>3</sup>  
 WK hie<sup>1</sup> khja<sup>1</sup> thu<sup>3</sup>  
 PD nu<sup>2</sup> læu<sup>3</sup> bǎi<sup>42</sup>/bai<sup>42</sup>

200. sew

EK che<sup>5</sup>  
 WK i<sup>1</sup> she<sup>5</sup>  
 GB sha<sup>3</sup>  
 PD sha<sup>3</sup> mhã<sup>42</sup>  
 PA cha<sup>75</sup>

201. needle

EK the<sup>5</sup>  
 WK the<sup>5</sup>  
 GB na<sup>5</sup> de<sup>3</sup>  
 GJ hna<sup>5</sup> de<sup>3</sup>  
 PD ci<sup>1</sup> tu<sup>3</sup>  
 PA tɛ<sup>71</sup> tha<sup>75</sup>

202. comb (noun)

EK ku<sup>5</sup> sæ<sup>2</sup>  
 WK kɔ<sup>5</sup> ɕie<sup>1</sup>  
 GB ti<sup>5</sup>  
 PD kɛ<sup>3</sup> ɕw<sup>1</sup>  
 PA pa shi<sup>5</sup>

203. ring (for finger)

EK to<sup>2</sup> plo<sup>5</sup>  
 WK tɛ plwo<sup>5</sup>

204. paper

EK ce<sup>2</sup> ba<sup>2</sup>  
 WK ce<sup>1</sup> ba<sup>1</sup>  
 GB se<sup>5</sup> ku<sup>3</sup>  
 PD si<sup>4</sup> bei<sup>71</sup>

205. cooking/rice pot

EK di<sup>3</sup> pɔ<sup>2</sup>  
 WK di<sup>3</sup> pɔ<sup>1</sup>  
 GB ku<sup>3</sup> phu<sup>3</sup>  
 PD dia<sup>4</sup> pɛw<sup>2</sup>  
 PA phvɔ<sup>3</sup>

206. ladle

EK the<sup>3</sup> e<sup>5</sup> dw<sup>2</sup>  
 WK thie<sup>3</sup> dwɛ<sup>1</sup>  
 PD fhu<sup>4</sup> nɛ<sup>4</sup> dɛw<sup>2</sup>

209. spoon

EK di<sup>3</sup> co<sup>21</sup> (lit., rice  
 spoon)  
 WK di<sup>3</sup> cɔ<sup>5</sup>  
 GB cwe<sup>3</sup>  
 PD cɔ<sup>3</sup>

210. plate

EK di<sup>3</sup> be<sup>3</sup> lɔ<sup>21</sup> (lit.,  
 rice plate)  
 WK di<sup>3</sup> be<sup>3</sup> lɔ<sup>5</sup>  
 GB la<sup>1</sup> pa<sup>1</sup>  
 PD dia<sup>42</sup> bǎ<sup>42</sup>

211. firewood

EK khru<sup>21</sup>  
 WK kru<sup>1</sup>  
 GB ho<sup>3</sup>  
 PD cɛu<sup>71</sup>  
 PA so<sup>5</sup>

212. fire

EK mi<sup>2</sup>  
 WK mi<sup>1</sup>  
 GB mi<sup>5</sup>  
 GL hmi<sup>2</sup>, mi<sup>2</sup>  
 PD mǎi<sup>71</sup>  
 PA me<sup>5</sup>

## 213. ashes

EK ku<sup>5</sup> phe<sup>2</sup>  
 WK kɔ<sup>5</sup> phe<sup>1</sup>  
 GB phe<sup>3</sup> fhe<sup>5</sup>  
 PD pha?<sup>1</sup>  
 PA pha<sup>3</sup>

## 214. smoke

EK kho<sup>2</sup>  
 WK khwə<sup>1</sup>  
 GB khu<sup>3</sup>  
 PD khu?<sup>1</sup>  
 PA khu<sup>5</sup>

## 215. candle

EK te<sup>2</sup> re<sup>5</sup> bo<sup>3</sup>  
 WK tə re<sup>5</sup> bo<sup>3</sup>  
 PD phe<sup>1</sup> jɔ<sup>3</sup> tēi?<sup>1</sup>

## 216. drum

EK tho<sup>3</sup>  
 WK tho<sup>3</sup>  
 GB tho<sup>5</sup>  
 PD theu<sup>42</sup>  
 PA thoŋ<sup>1</sup>

## 217. gong

EK mo<sup>2</sup>  
 WK mɔ<sup>1</sup>  
 GB mɔ<sup>3</sup>  
 PD paŋ<sup>21</sup>  
 PA mɔŋ<sup>5</sup>

## 218. crossbow

EK klə<sup>2</sup>  
 WK klie<sup>1</sup>  
 GB fhi<sup>3</sup>  
 PD fhw?<sup>1</sup>  
 PA khri<sup>5</sup>

## 219. arrow

EK ple<sup>21</sup>  
 WK ple<sup>5</sup>  
 GB pli<sup>3</sup>  
 PD pla<sup>32</sup>  
 PA pla<sup>1</sup>

## 220. spear (noun)

EK te<sup>2</sup> be<sup>3</sup>  
 WK tə bja<sup>3</sup>  
 BL ɛa<sup>1</sup> ɛa<sup>1</sup>  
 GB ɛa<sup>3</sup> ba<sup>5</sup>  
 PD baŋ<sup>42</sup>  
 PA baŋ<sup>1</sup>

## 221. knife

EK i<sup>2</sup> tho<sup>52</sup>  
 WK di<sup>1</sup> tho<sup>5</sup>  
 GB da<sup>3</sup>  
 PD do<sup>42</sup>

## 222. hear

EK ni<sup>21</sup> ho<sup>3</sup>  
 WK ni<sup>5</sup> xwə<sup>3</sup>  
 GB ɛi<sup>3</sup> he<sup>5</sup>  
 PD na<sup>3</sup> hw<sup>42</sup>  
 PA hwn<sup>1</sup>

## 223. sniff

EK no<sup>2</sup> vi<sup>2</sup>  
 WK nwə<sup>1</sup> ɛja<sup>3</sup>  
 GB le<sup>3</sup> nu<sup>5</sup>  
 GL hnu<sup>1</sup>  
 PD nəŋ<sup>2</sup> ?wi?<sup>1</sup>  
 PA num<sup>5</sup>

## 224. see

EK me<sup>5</sup> thə<sup>2</sup>  
 WK mja<sup>5</sup> thie<sup>1</sup>  
 GB ca<sup>3</sup>  
 PD u<sup>2</sup> fhw?<sup>1</sup>

## 225. wink (verb)

EK bɔ<sup>2</sup> kle<sup>5</sup>  
 WK bɔ<sup>1</sup> kle<sup>5</sup>  
 GB bi<sup>3</sup> co<sup>3</sup>  
 PD bei<sup>1</sup> khw?<sup>1</sup>

## 226. weep

EK ŋo<sup>21</sup>  
 WK ŋwə<sup>5</sup>  
 GB ha<sup>3</sup>  
 PD ŋəw<sup>32</sup>  
 PA ŋv<sup>42</sup>



227. eat  
 EK e<sup>2</sup>  
 WK e<sup>1</sup>  
 GB a<sup>3</sup>  
 PD aũ<sup>1</sup>/aũ?<sup>1</sup>  
 PA am<sup>1</sup>

228. swallow (in) (verb)  
 EK ju<sup>2</sup> klu<sup>3</sup> (no<sup>3</sup>)  
 WK zu<sup>5</sup> klu<sup>3</sup>  
 GB jho<sup>5</sup> ni<sup>3</sup>  
 PD tē klu<sup>4</sup> (na<sup>3</sup>)

229. hungry  
 EK si<sup>5</sup> ʔe<sup>2</sup> di<sup>3</sup>  
 WK θe<sup>5</sup> e<sup>1</sup> di<sup>3</sup>  
 GB θa<sup>3</sup> wi<sup>3</sup>  
 PD sa<sup>1</sup> ʔãũ<sup>1</sup> diã<sup>42</sup>

230. full (stomach)  
 EK kɔ<sup>5</sup>  
 WK kɔ<sup>5</sup>  
 GJ ku<sup>3</sup>  
 PD kɔ<sup>3</sup> hu<sup>42</sup>

231. thirsty (lit., desire  
 drink water)  
 EK si<sup>5</sup> ʔo<sup>3</sup> thə<sup>3</sup>  
 WK θe<sup>5</sup> o<sup>3</sup> thje<sup>3</sup>  
 GB θa<sup>3</sup> ʔo<sup>5</sup> chi<sup>5</sup>  
 PD sa<sup>3</sup> ʔo<sup>4</sup> jhu<sup>42</sup>

232. drink (verb)  
 EK o<sup>3</sup>  
 WK o<sup>3</sup>  
 GB o<sup>5</sup>  
 PD o<sup>4</sup>  
 PA ɔk<sup>5</sup>, ʔwa<sup>75</sup>

233. to be drunk  
 EK mu<sup>2</sup>  
 WK o<sup>3</sup> mu<sup>1</sup>  
 GB o<sup>5</sup> mu<sup>3</sup>  
 GL θe<sup>3</sup> hmu<sup>2</sup>  
 PD məũ<sup>2</sup> si<sup>73</sup>  
 PA mun<sup>3</sup>

234. vomit (verb)  
 EK phre<sup>5</sup>  
 WK prja<sup>5</sup>  
 GB pɔ<sup>5</sup>  
 PD prau<sup>32</sup>  
 PA phrɔ<sup>75</sup>, phrɔk<sup>5</sup>

235. spit (verb)  
 EK thu<sup>2</sup> pla<sup>5</sup>  
 WK thu<sup>1</sup> pla<sup>5</sup>  
 GB thui<sup>3</sup> pɛ<sup>3</sup> chi<sup>5</sup>  
 PD ci<sup>1</sup> thwi<sup>42</sup>

236. cough (verb)  
 EK tw<sup>2</sup> khw<sup>5</sup>  
 WK tē khw<sup>5</sup>  
 GB θu<sup>5</sup> khu<sup>3</sup>  
 PD sɛ<sup>4</sup> khu<sup>73</sup>

237. sneeze (verb)  
 EK tɛ<sup>2</sup> che<sup>5</sup>  
 WK kə shja<sup>5</sup>  
 GB ko<sup>5</sup> she<sup>5</sup>  
 PD kə<sup>1</sup> shai<sup>73</sup>

238. yawn (verb)  
 EK ta<sup>2</sup> kha<sup>3</sup>  
 WK tē kha<sup>3</sup>  
 GB la<sup>3</sup> ta<sup>3</sup>  
 PD sɛ<sup>4</sup> hai<sup>42</sup>

239. breathe  
 EK se<sup>5</sup>  
 WK θe<sup>5</sup>  
 GB θe<sup>3</sup>  
 PD sa<sup>4</sup>  
 PA sha<sup>1</sup>

240. whistle  
 EK i<sup>5</sup> vi<sup>3</sup>  
 WK θwi<sup>5</sup>  
 GB mi<sup>3</sup>  
 PD mhi<sup>72</sup>/ hui  
 PA hyu<sup>1</sup>

241. suck  
 EK cwi<sup>5</sup>  
 WK cwi<sup>5</sup>  
 GB ʔo<sup>3</sup> ʔo<sup>5</sup>  
 PD cwi<sup>73</sup>  
 PA tyup<sup>1</sup>

242. lick  
 EK ja<sup>21</sup>  
 WK i<sup>1</sup> lie<sup>1</sup>  
 GB li<sup>3</sup> ?a<sup>3</sup>  
 PD lii<sup>?</sup><sup>1</sup>/ liə<sup>?</sup><sup>1</sup>

244. laugh  
 EK na<sup>3</sup>  
 WK ɲe<sup>3</sup>  
 GB ʒe<sup>3</sup>  
 PD ɲa<sup>32</sup>  
 PA ɲa<sup>?</sup><sup>1</sup>

245. speak  
 EK i<sup>5</sup> be<sup>2</sup>  
 WK he<sup>5</sup> be<sup>1</sup>  
 PD ni<sup>2</sup> ʃhwi<sup>42</sup>

246. tell  
 EK de<sup>5</sup> cho<sup>2</sup>  
 WK he<sup>5</sup> sho<sup>1</sup> (dv<sup>5</sup> na<sup>3</sup>)  
 GB do<sup>3</sup>  
 PD tai<sup>3</sup> ba<sup>?</sup><sup>1</sup>

247. shout  
 EK e<sup>5</sup> tho<sup>3</sup>  
 WK e<sup>5</sup> tho<sup>3</sup>  
 PD ka<sup>3</sup>

248. answer (verb)  
 EK i<sup>5</sup> be<sup>2</sup> chw<sup>2</sup>  
 WK he<sup>5</sup> sho<sup>1</sup> ka<sup>1</sup> khie<sup>3</sup> shw<sup>1</sup>  
 PD ni<sup>4</sup> ʃhwi<sup>4</sup> jw<sup>3</sup>

249. lie, fib (verb)  
 EK le<sup>2</sup> ho<sup>3</sup>  
 WK la<sup>1</sup> ho<sup>3</sup>  
 GB ple<sup>5</sup>  
 PD lau<sup>?</sup><sup>1</sup>  
 PA len<sup>1</sup>

250. sing  
 EK i<sup>5</sup> ro<sup>3</sup>  
 WK he<sup>5</sup> ro<sup>3</sup>, ɔa<sup>5</sup> wi<sup>3</sup>  
 GB ta<sup>3</sup> po<sup>1</sup>  
 PD se<sup>4</sup> pi<sup>3</sup> klaŋ<sup>?</sup><sup>1</sup>  
 PA ɲa<sup>3</sup> do<sup>?</sup><sup>5</sup> ta<sup>3</sup>

251. think  
 EK te<sup>2</sup> ne<sup>2</sup>  
 WK tə ne<sup>1</sup>  
 GB ku<sup>1</sup> mu<sup>1</sup>  
 PD ni<sup>4</sup> sw<sup>?</sup><sup>3</sup>

252. know  
 EK si<sup>5</sup> ɲe<sup>3</sup>  
 WK ɔe<sup>5</sup> ɲe<sup>3</sup>  
 GB ɔi<sup>3</sup> he<sup>5</sup>  
 PD sei<sup>4</sup> ɲaŋ<sup>?</sup><sup>2</sup>  
 PA she<sup>1</sup> na<sup>5</sup>

253. forget  
 EK cho<sup>3</sup> ta<sup>2</sup> pa<sup>2</sup>  
 WK sho<sup>3</sup> tə pa<sup>1</sup>  
 GB sho<sup>3</sup> to<sup>5</sup> pho<sup>3</sup> ne<sup>3</sup>  
 PD se<sup>4</sup> pei<sup>2</sup>

254. choose  
 EK la<sup>2</sup> phja<sup>5</sup>, me<sup>5</sup> phja<sup>5</sup>  
 WK nwo<sup>5</sup> phie<sup>5</sup>  
 GB le<sup>3</sup> phi<sup>3</sup>  
 PD jwe<sup>3</sup> phi<sup>?</sup><sup>2</sup>

255. love, want (verb)  
 EK si<sup>5</sup> jw<sup>21</sup>  
 WK ɔe<sup>5</sup> zɰ<sup>5</sup>  
 GB be<sup>3</sup> lo<sup>3</sup>  
 PD ɔe<sup>1</sup> jw<sup>?</sup><sup>3</sup>

256. hate (verb)  
 EK si<sup>5</sup> to<sup>2</sup> kho<sup>3</sup>, si<sup>5</sup> the<sup>1</sup>  
 WK ɔe<sup>5</sup> the<sup>1</sup>  
 GB te<sup>3</sup> we<sup>3</sup> ce<sup>3</sup> no<sup>3</sup>  
 PD ɲo<sup>1</sup> cw<sup>4</sup> ʔo<sup>?</sup><sup>1</sup>

257. wait (verb)  
 EK o<sup>21</sup> po<sup>21</sup>  
 PD o<sup>1</sup> pi<sup>?</sup><sup>3</sup>  
 PA oŋ<sup>1</sup> pe<sup>42</sup>

257a. wait (a request)  
 NK jwa<sup>3</sup>  
 WK o<sup>1</sup> ʒwo<sup>3</sup>  
 GB o<sup>3</sup> sho<sup>5</sup>

258. count

EK dɛ<sup>5</sup>  
 WK dja<sup>5</sup>  
 GB dɔ<sup>3</sup>  
 PD dau<sup>3</sup>  
 PA dɔ<sup>1</sup>

259. afraid

EK si<sup>5</sup> i<sup>2</sup> che<sup>3</sup>  
 WK ɛɛ<sup>5</sup> i<sup>1</sup> she<sup>3</sup>  
 GB si<sup>3</sup> sa<sup>5</sup>  
 PD sa<sup>2</sup> rau<sup>2</sup>

260. angry

EK si<sup>5</sup> plɔ<sup>2</sup> du<sup>2</sup>  
 WK ɛɛ<sup>5</sup> plɔ<sup>1</sup> du<sup>1</sup>  
 GB ɛɛ<sup>3</sup> the<sup>3</sup>  
 PD sa<sup>42</sup> thǎ<sup>2</sup> dəu<sup>2</sup>

261. sleep (verb)

EK o<sup>2</sup> mə<sup>3</sup> ta<sup>2</sup> pa<sup>2</sup>  
 WK o<sup>1</sup> mie<sup>3</sup>  
 GB shɔ<sup>3</sup> mi<sup>5</sup>  
 GL shɔ<sup>2</sup> hmi<sup>1</sup>  
 PD ɔ<sup>1</sup> mei<sup>4</sup> khlu<sup>42</sup>  
 PA mət<sup>3</sup> beŋ<sup>3</sup>; beŋ<sup>5</sup> (lie)

262. snore

EK o<sup>2</sup> mə<sup>3</sup> se<sup>5</sup> phra<sup>2</sup>  
 WK o<sup>1</sup> mie<sup>3</sup> ɛɛ<sup>5</sup> pra<sup>1</sup>  
 GB shɔ<sup>3</sup> mi<sup>5</sup> ɛɛ<sup>3</sup> hɔ<sup>3</sup>  
 PD mei<sup>42</sup> sa<sup>1</sup>

263. dream (verb)

EK mə<sup>21</sup>  
 WK mja<sup>5</sup>  
 GB ma<sup>3</sup>  
 GL hma<sup>2</sup>  
 PD mei<sup>42</sup> maŋ<sup>3</sup>  
 PA maŋ<sup>42</sup>

264

EK che<sup>3</sup>  
 WK she<sup>3</sup>  
 GB she<sup>5</sup>  
 PD sha<sup>42</sup>

265. medicine

EK te<sup>3</sup> khuh<sup>2</sup>  
 WK tɛ<sup>1</sup> khu<sup>1</sup>  
 GB ti<sup>3</sup> mi<sup>3</sup>  
 PD cw<sup>1</sup> sw<sup>1</sup>

266. itch (verb)

EK ke<sup>2</sup> se<sup>5</sup>  
 WK kə ɛɛ<sup>5</sup>  
 GB ɛa<sup>3</sup>  
 PD kə<sup>4</sup> sa<sup>1</sup>

267. scratch (verb)

EK ku<sup>5</sup> va<sup>21</sup>  
 WK kɔ<sup>5</sup> pra<sup>1</sup>  
 GB wə<sup>3</sup>  
 PD bəu<sup>2</sup>

268. shiver

EK te<sup>2</sup> ne<sup>3</sup>  
 WK tɛ ɲa<sup>3</sup>  
 GB ka<sup>3</sup> na<sup>3</sup>  
 PD kə<sup>2</sup> nau<sup>1</sup>

269. die

EK sə<sup>3</sup>  
 WK ɛie<sup>3</sup>  
 GB ɛi<sup>5</sup>  
 PD sw<sup>42</sup>  
 PA shi<sup>1</sup>

270. ghost

EK lo<sup>3</sup> ne<sup>5</sup>  
 WK lwe<sup>3</sup> ne<sup>5</sup>  
 GB tɛ<sup>3</sup> shi<sup>3</sup> tɛ<sup>3</sup> ne<sup>3</sup>  
 PD lə<sup>2</sup> nau<sup>42</sup> phɔ<sup>1</sup>  
 PA lu<sup>3</sup>

271. sit

EK o<sup>2</sup> ne<sup>3</sup>  
 WK o<sup>1</sup> ɲja<sup>3</sup>  
 GB sha<sup>3</sup> na<sup>5</sup>  
 PD nau<sup>42</sup> ʔɔ<sup>1</sup>  
 PA oŋ<sup>5</sup> laŋ<sup>5</sup>

272. stand

EK kɔ<sup>5</sup> thɔ<sup>2</sup>  
 WK kə thɔ<sup>1</sup>  
 GB wɛ<sup>3</sup> thɔ<sup>3</sup>  
 PD sə<sup>4</sup> thəw<sup>1</sup>  
 PA oŋ<sup>1</sup> thəŋ<sup>42</sup>



273. kneel  
 EK de<sup>5</sup> ɲw<sup>2</sup>  
 WK da<sup>5</sup> ɲw<sup>3</sup>  
 GB tɯ<sup>3</sup> nu<sup>5</sup> la<sup>3</sup>  
 GL tɛ hnu<sup>5</sup> la<sup>3</sup>  
 PD thu<sup>3</sup> kwɛ<sup>3</sup> nwe<sup>7</sup>3/nœ<sup>7</sup>3

274. walk  
 EK cwa<sup>5</sup>  
 WK cwɛ<sup>5</sup>  
 GB he<sup>3</sup>  
 PD tɛu<sup>2</sup>  
 PA thɔŋ<sup>1</sup>

275. crawl  
 EK hu<sup>5</sup> ɲɔ<sup>2</sup> cwa<sup>5</sup>  
 WK pɯ<sup>5</sup> ɲɔ<sup>1</sup> cwɛ<sup>5</sup>  
 GB po<sup>3</sup> co<sup>3</sup> ko<sup>3</sup>  
 PD kœ<sup>2</sup> tɛu<sup>2</sup>

276. come  
 EK he<sup>2</sup> ?  
 WK hja<sup>3</sup>  
 GB lɛ ba<sup>3</sup>  
 PD lai<sup>2</sup>

277. enter  
 EK no<sup>3</sup>  
 WK nɯɛ<sup>3</sup>  
 GB lɛ<sup>3</sup>  
 PD nɛ<sup>3</sup> kœu<sup>4</sup>2  
 PA nv<sup>1</sup>, lon<sup>1</sup>

278. return  
 EK ka<sup>2</sup>  
 WK kɛ<sup>3</sup>  
 GB ki<sup>3</sup> ba<sup>3</sup> kɛ<sup>3</sup>  
 PD shai<sup>1</sup> dɛ<sup>4</sup> dœu<sup>4</sup>2  
 PA sen<sup>1</sup>

279. push  
 EK che<sup>2</sup>  
 WK shja<sup>1</sup>  
 GB sha<sup>3</sup>  
 PD shaŋ<sup>1</sup> lɔ<sup>1</sup>

280. pull  
 EK cwi<sup>2</sup>  
 WK cwi<sup>1</sup>  
 GB cwi<sup>3</sup>  
 PD cui<sup>1</sup> lɔ<sup>1</sup>  
 PA thv<sup>7</sup>5

281. kick  
 EK te<sup>2</sup> pe<sup>3</sup>  
 WK tɛ pe<sup>3</sup>  
 PD tɛ pa<sup>7</sup>3

282. throw  
 EK vi<sup>5</sup> ke<sup>3</sup>  
 WK vi<sup>3</sup> kja<sup>3</sup>  
 GB me<sup>5</sup>  
 PD mhi<sup>4</sup>/hui<sup>4</sup> kai<sup>4</sup>2  
 PA wan<sup>5</sup>, vɔt<sup>5</sup>

283. fall  
 EK ta<sup>3</sup>  
 WK lɛ ta<sup>3</sup>  
 GB la<sup>3</sup> dɛ<sup>3</sup>  
 PD lɛ<sup>2</sup> tai<sup>7</sup>3  
 PA lan<sup>3</sup>, thet<sup>1</sup>

284. swim  
 EK te<sup>2</sup> je<sup>2</sup>1 the<sup>3</sup>  
 WK tɛ zɛ<sup>5</sup> thie<sup>3</sup>  
 GB wa<sup>1</sup> chi<sup>5</sup>  
 PD kwaŋ<sup>3</sup> jhu<sup>4</sup>2

285. float  
 EK lo<sup>2</sup>  
 WK lo<sup>1</sup>  
 GB la<sup>3</sup> pli<sup>3</sup>  
 PD lɛ<sup>2</sup> jœu<sup>2</sup>  
 PA ɛ<sup>3</sup> phu<sup>3</sup>

286. sink  
 EK ta<sup>3</sup> cw<sup>5</sup>  
 WK ta<sup>3</sup> cw<sup>5</sup>  
 GB la<sup>3</sup> ʒɔ<sup>1</sup>  
 PD lɛ<sup>1</sup> prœw<sup>7</sup>1

287. flow  
 EK thwi<sup>5</sup>  
 WK thwi<sup>5</sup>  
 GB chi<sup>5</sup> lɔ<sup>1</sup> la<sup>1</sup>  
 PD thwi<sup>7</sup>3

287a. take (to pass from  
one to another?)

WK phie<sup>5</sup>  
GJ phi<sup>3</sup>  
PD phe<sup>1</sup> (give)  
PA phe<sup>5</sup> (give)

288. give

EK de<sup>5</sup>  
WK die<sup>5</sup>  
GB i<sup>3</sup>

289. tie

EK co<sup>3</sup>  
WK co<sup>3</sup>  
GB co<sup>5</sup>  
PD cəw<sup>42</sup>  
PA cvŋ<sup>1</sup>

290. wipe, scrub

EK thw<sup>5</sup>  
WK thw<sup>5</sup>  
GB thɔ<sup>5</sup>  
PD thəw<sup>3</sup>

292. wash

EK su<sup>5</sup> pli<sup>3</sup>  
WK shi<sup>3</sup> pli<sup>3</sup>  
GB su<sup>5</sup> sa<sup>3</sup> ba<sup>5</sup>  
PD c/shəu<sup>42</sup>

293. launder

EK i<sup>5</sup> cho<sup>2</sup>  
WK i<sup>1</sup> shwə<sup>1</sup>  
GB shi<sup>5</sup> pə<sup>1</sup> tɛ<sup>1</sup>  
PD fhu<sup>7</sup> (laŋ<sup>42</sup>)

294. bathe

EK i<sup>5</sup> lo<sup>2</sup> thə<sup>3</sup>  
WK i<sup>1</sup> lwə<sup>5</sup> thie  
GB u<sup>5</sup> sa<sup>3</sup> chi<sup>5</sup>  
PD wəu<sup>2</sup> fhw<sup>42</sup>/fhu<sup>42</sup>?

295. hit

EK mw<sup>3</sup>  
WK mw<sup>3</sup>  
GB thɔ<sup>3</sup>  
PD pəu<sup>2</sup>, tei<sup>3</sup>

297. cut (hair)

EK ci<sup>2</sup>  
WK i<sup>1</sup> ci<sup>1</sup>  
GB di<sup>3</sup>  
PD ʔi<sup>7</sup> tu<sup>42</sup>

298. stab

EK chw<sup>5</sup>  
WK shw<sup>3</sup>  
GB phlo<sup>5</sup>  
PD shai<sup>73</sup> pəu<sup>2</sup>

299. grind, stir

EK te<sup>2</sup> ri<sup>3</sup>, nw<sup>5</sup>  
WK tɛ ri<sup>3</sup>  
GB pi<sup>1</sup> rɛ<sup>1</sup>  
PD ɛə<sup>4</sup> fhw<sup>73</sup> pəu<sup>2</sup>

300. plant (verb)

EK chɔ<sup>5</sup>  
WK i<sup>1</sup> sho<sup>5</sup>  
GB sho<sup>3</sup>  
PD sho<sup>7</sup>

301. dig

EK khw<sup>2</sup>  
WK i<sup>1</sup> khw<sup>1</sup>  
GB khu<sup>3</sup>  
PD kho<sup>7</sup>

302. bury (a corpse)

EK plw<sup>3</sup>  
WK i<sup>1</sup> plw<sup>3</sup>  
BL ɬu<sup>1</sup> la<sup>1</sup>  
GB bu<sup>5</sup> la<sup>5</sup>  
PD bw<sup>42</sup> (bw<sup>3</sup>?)  
PA bim<sup>1</sup>

303. winnow (rice)

EK i<sup>2</sup> khre<sup>5</sup>  
WK i<sup>1</sup> kre<sup>5</sup>  
GB me<sup>3</sup> ba<sup>5</sup>  
PD ki<sup>4</sup> khlai<sup>3</sup>?

304. dry (verb)

EK lu<sup>3</sup>  
WK luh<sup>3</sup>  
GB lo me<sup>5</sup>  
GL hlo<sup>1</sup>  
PD lu<sup>4</sup> fhei<sup>42</sup>  
PA lo<sup>1</sup>

305. pound (rice)

EK i<sup>2</sup> cha<sup>5</sup>WK i<sup>1</sup> sha<sup>5</sup>GB tɔ<sup>3</sup>PD tǎu<sup>3</sup>PA thoŋ<sup>5</sup>

306. cook, boil

EK pho<sup>3</sup>WK i<sup>1</sup> pho<sup>3</sup>GB pha<sup>5</sup>PD phǎu<sup>42</sup>308. burn (transitive  
verb)EK chw<sup>5</sup>WK i<sup>1</sup> shw<sup>5</sup>GB ke<sup>3</sup>PD cu<sup>3</sup>

309. extinguish

EK me<sup>2</sup> pi<sup>3</sup>WK me<sup>1</sup> pi<sup>3</sup>GB me<sup>3</sup> la<sup>3</sup> pi<sup>3</sup>PD mei<sup>1</sup> pu<sup>3</sup>

310. do, cause, make,

EK me<sup>2</sup>WK me<sup>1</sup>GB me<sup>3</sup>PD ma<sup>2</sup>PA ma<sup>3</sup>

311. play

EK ko<sup>5</sup> no<sup>21</sup>WK la<sup>1</sup> vɔ<sup>3</sup>GB ka<sup>3</sup> ja<sup>3</sup>PD klaũ<sup>?</sup>

312. dance (verb)

EK le<sup>3</sup> phre<sup>21</sup>WK pa<sup>1</sup> ja<sup>5</sup>GB pja<sup>3</sup> sa<sup>3</sup>PD liǎ<sup>3</sup> (klaũ<sup>?</sup>)

313. shoot

EK khe<sup>5</sup>WK khe<sup>5</sup>GB khe<sup>3</sup>PD kha<sup>?</sup>PA kha<sup>?</sup>

314. hunt

EK he<sup>3</sup> o<sup>2</sup> le<sup>3</sup> khe<sup>5</sup> te<sup>2</sup> mi<sup>2</sup>WK hja<sup>3</sup> lo<sup>3</sup> khe<sup>5</sup> tɛ<sup>1</sup> mi<sup>1</sup>,hja<sup>3</sup> o<sup>1</sup> le<sup>3</sup> khe<sup>5</sup> tɛ<sup>1</sup>mi<sup>1</sup>GB he<sup>3</sup> khe<sup>3</sup> a<sup>3</sup> tɛ<sup>1</sup>PD lai<sup>1</sup> lei<sup>4</sup> kha<sup>2</sup> ta<sup>1</sup> mi<sup>1</sup>

315. kill

EK me<sup>2</sup> sə<sup>3</sup>WK me<sup>1</sup> ɕie<sup>3</sup>GB me<sup>3</sup> ɕi<sup>5</sup>PD ma<sup>2</sup> sw<sup>42</sup>PA ma<sup>3</sup> si<sup>1</sup>

316. fight, argue

EK kja<sup>5</sup> lu<sup>3</sup>WK klie<sup>5</sup> lu<sup>3</sup>PD lə<sup>1</sup> thei<sup>3</sup> ju<sup>3</sup>

317. buy

EK i<sup>5</sup> phri<sup>2</sup>WK i<sup>1</sup> pri<sup>1</sup>GB pwi<sup>3</sup>PD a<sup>1</sup> prei<sup>2</sup>PA phre<sup>3</sup>

318. sell

EK i<sup>5</sup> che<sup>3</sup>WK i<sup>1</sup> she<sup>3</sup>GB she<sup>5</sup>PD ǎ<sup>1</sup> sha<sup>42</sup>PA tja<sup>1</sup>

319. exchange

EK bu<sup>2</sup> le<sup>2</sup> lu<sup>3</sup>WK ph/thu<sup>1</sup> lja<sup>1</sup> lu<sup>3</sup>GB ba<sup>5</sup> kle<sup>3</sup>PD lə<sup>1</sup> lai<sup>1</sup> ju<sup>3</sup>

320. pay

EK pla<sup>5</sup>; ca<sup>21</sup> ɛ<sup>21</sup> (Shan)WK ɛ<sup>1</sup> e<sup>1</sup>GB i<sup>3</sup> ke<sup>3</sup>PD ǎ<sup>1</sup> kha<sup>?</sup>



321. steal  
 EK e<sup>2</sup> ho<sup>2</sup>  
 WK e<sup>1</sup> xwə<sup>1</sup>  
 GB i<sup>5</sup> hu<sup>3</sup>  
 PD a<sup>1</sup> hu?<sup>1</sup>  
 PA ta khun<sup>3</sup>

322. one person  
 EK te<sup>2</sup> phre<sup>2</sup>  
 WK tə prə<sup>1</sup>  
 GB tɛ<sup>3</sup> pwɛ<sup>3</sup>  
 PD la<sup>2</sup> pra<sup>2</sup>

323. two  
 EK nə<sup>3</sup>  
 WK niɛ<sup>3</sup>  
 PD nu<sup>4</sup>  
 PA ni<sup>1</sup>

324. three  
 EK so<sup>3</sup>  
 WK swə<sup>3</sup>  
 GB θo<sup>5</sup>  
 PD θw<sup>4</sup>  
 PA shom<sup>1</sup>

325. four  
 EK lwi<sup>3</sup>  
 WK lwɪ<sup>3</sup>  
 GB lwɪ<sup>3</sup>  
 PD lui<sup>3</sup>  
 PA lit<sup>5</sup>

326. five  
 EK ɲɛ<sup>3</sup>  
 WK ɲa<sup>3</sup>  
 GB ʒɛ<sup>3</sup>  
 PD ɲai<sup>3</sup>  
 PA ɲat<sup>5</sup>

328. seven  
 WK nwc<sup>5</sup>  
 PD noe<sup>4</sup>

331. ten  
 EK chə<sup>5</sup>  
 WK shie<sup>5</sup>  
 GB fhi<sup>3</sup>  
 PD fhw<sup>4</sup><sup>2</sup>  
 PA chi<sup>1</sup>

332. hundred  
 EK je<sup>2</sup>  
 WK zɛ<sup>1</sup>  
 GB jɛ<sup>3</sup>  
 PD ja<sup>1</sup>  
 PA arya<sup>3</sup>

333. thousand  
 EK ri<sup>5</sup>  
 WK ri<sup>5</sup>  
 PD rei?<sup>3</sup>  
 PA tɛ?<sup>1</sup> reŋ<sup>1</sup>

334. many (persons)  
 EK o<sup>2</sup> ro<sup>2</sup><sup>1</sup>  
 WK o<sup>1</sup> ro<sup>5</sup>  
 GB ɔ<sup>3</sup> ke<sup>5</sup>  
 PD ɔ<sup>1</sup> ʔa?<sup>3</sup>  
 PA a<sup>1</sup>

335. all  
 EK lo<sup>3</sup> pli<sup>3</sup>  
 WK lo<sup>3</sup> pli<sup>3</sup>  
 GB ʔo<sup>3</sup> ʔɛ<sup>3</sup>  
 PD lo<sup>3</sup> lă<sup>4</sup><sup>2</sup>

336. some  
 EK te<sup>2</sup> he<sup>2</sup>  
 WK te<sup>1</sup> he<sup>1</sup>  
 GB to<sup>3</sup> co<sup>3</sup>  
 PD la<sup>2</sup> hă<sup>2</sup>

337. few  
 EK pi<sup>2</sup> ti<sup>5</sup> (cf. 340)  
 WK tɛ ki<sup>1</sup>  
 GB ɔ<sup>3</sup> fhi<sup>3</sup>  
 GJ ti<sup>4</sup> ki<sup>3</sup>  
 PD lɛ<sup>1</sup> ki?<sup>1</sup>

339. big  
 EK du(h)<sup>2</sup>  
 WK duh<sup>1</sup>  
 BL do<sup>2</sup>  
 GB du<sup>3</sup>  
 PD dəu<sup>2</sup>  
 PA tan<sup>4</sup><sup>2</sup> na<sup>5</sup>

340. small  
 EK pi<sup>2</sup> ti<sup>5</sup>  
 WK pə ti<sup>5</sup>  
 GB ʃhi<sup>3</sup> phu<sup>3</sup>  
 PD phoʔ<sup>3</sup> (tiʔ<sup>3</sup>)

341. long  
 EK thu<sup>3</sup>  
 WK thuh<sup>3</sup>  
 GB tho<sup>5</sup>  
 PD thou<sup>42</sup>  
 PA tho<sup>1</sup>

342. short (length)  
 EK pho<sup>2</sup>  
 WK phwə<sup>1</sup>  
 GB pi<sup>5</sup> phu<sup>3</sup>  
 PD phəw<sup>1</sup>

343. tall  
 EK the<sup>2</sup> lo<sup>3</sup>  
 WK thja<sup>1</sup> lə<sup>5</sup>  
 GB tha<sup>3</sup> ji<sup>3</sup>  
 PD thā<sup>1</sup> lw<sup>42</sup>

344. short (height)  
 EK le<sup>2</sup> jw<sup>21</sup>  
 WK tə rw<sup>5</sup>  
 GB bo<sup>3</sup> la<sup>3</sup>  
 PD la<sup>1</sup> phəw<sup>1</sup> (cf. 342)

345. thick  
 WK dwə<sup>3</sup>  
 GB ti<sup>4</sup>  
 PD dw<sup>42</sup>  
 PA dwn<sup>1</sup>

346. thin  
 EK bw<sup>3</sup>  
 WK bw<sup>3</sup>  
 GB pu<sup>5</sup>  
 PD bi<sup>42</sup>  
 PA bə<sup>3</sup>

347. fat, plump  
 EK bw<sup>2</sup>  
 WK bw<sup>1</sup>  
 BL ʃu<sup>2</sup>  
 GB bo<sup>3</sup>  
 PD bwā<sup>1</sup>  
 PA plən<sup>5</sup>

348. skinny  
 EK khre<sup>3</sup>  
 WK krja<sup>3</sup>  
 GB che<sup>3</sup> wə<sup>1</sup>  
 PD cai<sup>3</sup>

349. wide, broad  
 EK le<sup>21</sup>  
 WK lja<sup>5</sup>  
 PD lai<sup>3</sup>

350. narrow  
 NK i<sup>3</sup> pi<sup>5</sup> o<sup>1</sup>  
 EK i pi<sup>51</sup>  
 WK i<sup>1</sup>  
 GB i<sup>3</sup> nu<sup>5</sup> pho<sup>3</sup>  
 PD iā<sup>1</sup>

351. deep  
 EK je<sup>3</sup>  
 WK za<sup>3</sup>  
 GB jə<sup>1</sup>  
 PD cau<sup>3</sup>  
 PA jə<sup>1</sup>

352. shallow  
 EK tw<sup>2</sup> lw<sup>21</sup>  
 WK tə lw<sup>5</sup>  
 GB la<sup>3</sup> da<sup>3</sup>  
 PD phju<sup>42</sup>

353. round ?  
 EK tw<sup>2</sup> βw<sup>2</sup>  
 WK tə vw<sup>1</sup>  
 GB du<sup>3</sup> lu<sup>5</sup> (wə<sup>1</sup>)  
 PD ti<sup>4</sup> ləu<sup>42</sup>  
 PA kə<sup>1</sup> du<sup>3</sup>

354. full  
 EK ba<sup>3</sup>  
 WK ba<sup>3</sup>  
 GB pi<sup>5</sup>  
 PD boe<sup>42</sup>  
 PA bwe<sup>1</sup>

355. rightside  
 EK thwa<sup>5</sup>  
 WK thwo<sup>5</sup>  
 GB thwe<sup>3</sup>  
 PD thwe<sup>3</sup>  
 PA thwe<sup>1</sup>

356. leftside

EK ci<sup>2</sup>WK ci<sup>1</sup>GB ci<sup>3</sup>PD cei<sup>?</sup>1PA tje<sup>5</sup>, cje<sup>5</sup>

357. straight

EK co<sup>5</sup>WK co<sup>5</sup> rə ne<sup>5</sup>GB ta<sup>3</sup> na<sup>3</sup>PD cəw<sup>3</sup> coã<sup>?</sup>1

358. far

EK ja<sup>2</sup>WK ʒie<sup>1</sup>GB ɔ<sup>3</sup> ʒi<sup>3</sup>PD ji<sup>2</sup>PA ja<sup>3</sup> (Old Mon = jirney)

359. near

EK phw<sup>2</sup>WK phw<sup>1</sup>BL ʃu<sup>2</sup>GB ɔ<sup>3</sup> bo<sup>3</sup>PD phəw<sup>?</sup>1PA bo<sup>?</sup>5

360. this

EK ə<sup>3</sup>WK je<sup>3</sup>GB bi<sup>5</sup> ju<sup>1</sup>PD ba<sup>4</sup> ʔw<sup>4</sup>2

361. that

EK nə<sup>2</sup>WK nwe<sup>1</sup>GB do<sup>5</sup> ba<sup>3</sup> di<sup>3</sup> nu<sup>3</sup>PD təw<sup>4</sup> do<sup>4</sup>2

362. black

EK lo<sup>2</sup>WK lo<sup>1</sup>PD ləu<sup>2</sup>PA sin<sup>3</sup>

363. white

EK bu<sup>3</sup>WK bu(h)<sup>3</sup>BL ʃu<sup>1</sup> ʃa<sup>1</sup>GB bo<sup>5</sup>PD bu<sup>4</sup>2PA bwa<sup>1</sup>

364. red

EK li<sup>2</sup>WK li<sup>1</sup>GB li<sup>3</sup>PD lei<sup>2</sup>PA tɛ<sup>?</sup>5 nja<sup>5</sup>

365. green

EK so<sup>3</sup>WK swə<sup>3</sup>PD sw<sup>4</sup>2

366. yellow

EK be<sup>3</sup>WK bja<sup>3</sup>GB ba<sup>5</sup>PD baŋ<sup>4</sup>2PA baŋ<sup>3</sup>

367. dirty

EK i<sup>5</sup> ʔɛ<sup>2</sup>1WK ra<sup>1</sup> cja<sup>5</sup>PD ci<sup>4</sup> phu<sup>?</sup>3

368. new

EK se<sup>3</sup>WK ʃe<sup>3</sup>GB ʃe<sup>5</sup>PD si<sup>4</sup>2PA sha<sup>1</sup>

369. old

EK le<sup>2</sup>WK lie<sup>1</sup>GB li<sup>3</sup> la<sup>3</sup>PD lw<sup>2</sup>PA li<sup>3</sup>



370. dark

EK khi<sup>5</sup>  
 WK khi<sup>5</sup>  
 GB khi<sup>3</sup>  
 PD khw<sup>3</sup>  
 PA khe<sup>5</sup>

371. bright

EK li<sup>3</sup>  
 WK li<sup>3</sup>  
 GB li<sup>5</sup>  
 PD kha<sup>42</sup> (fhai<sup>2</sup> raũ<sup>1</sup>)

372. same

EK se<sup>51</sup> lu<sup>3</sup>  
 WK əja<sup>5</sup> lu<sup>3</sup>  
 GB la<sup>3</sup> lɔ<sup>3</sup>  
 PD cwe<sup>3</sup>/coe<sup>3</sup> jw<sup>2</sup>

373. different

EK kɔ<sup>2</sup> dɯ<sup>2</sup>  
 WK khɔ<sup>1</sup> dɯ<sup>1</sup>  
 PD kho<sup>3</sup> jw<sup>2</sup>

374. sweet

EK chw<sup>3</sup>  
 WK shw<sup>3</sup>  
 PD fhw<sup>42</sup>

375. sour

EK cha<sup>2</sup>  
 WK shie<sup>1</sup>  
 GB fhi<sup>3</sup>  
 PD fhi<sup>1</sup>  
 PA chja<sup>5</sup>

376. bitter

EK khe<sup>2</sup>  
 WK khe<sup>1</sup>  
 GB khe<sup>3</sup>  
 PD kha<sup>1</sup>  
 PA kha<sup>1</sup>

377. spicy hot

EK he<sup>5</sup>  
 WK hja<sup>5</sup>  
 GB he<sup>3</sup>  
 PD hai<sup>3</sup>  
 PA hat<sup>5</sup>

378. rotten

EK sɔ<sup>3</sup>  
 WK ɔɔ<sup>3</sup>  
 GB ɔw<sup>5</sup>  
 PD səw<sup>42</sup>  
 PA sen<sup>3</sup>

379. swollen

EK jɛ<sup>5</sup>  
 WK za<sup>5</sup>  
 GB fho<sup>3</sup>  
 GL hjo<sup>2</sup>  
 PD jo<sup>2</sup>  
 PA jo<sup>5</sup>

380. dry (adjective)

EK khra<sup>3</sup>  
 WK kra<sup>3</sup>  
 GB me<sup>5</sup>  
 PD fhei<sup>42</sup>  
 PA shen<sup>1</sup>

381. wet

EK co<sup>2</sup>  
 WK co<sup>1</sup>  
 GB ɔu<sup>5</sup>  
 PD co<sup>1</sup>  
 PA tjau<sup>5</sup>

382. hot

EK ku<sup>21</sup>  
 WK kuh<sup>5</sup>  
 GB ku<sup>3</sup>  
 PD kəu<sup>3</sup>  
 PA kho<sup>42</sup> lja<sup>42</sup>

382a. warm

WK le<sup>1</sup>  
 GJ le<sup>3</sup>  
 PA lom<sup>3</sup>, kho<sup>42</sup> lja<sup>42</sup> (hot)

383. cold

EK ke ro  
 WK ro<sup>1</sup>

383a. cool

EK də<sup>2</sup> ca<sup>5</sup>  
 WK klu<sup>1</sup>  
 GB cu<sup>3</sup> (cold)  
 PD khu<sup>42</sup>

384. sharp

EK the<sup>3</sup>WK thja<sup>3</sup>GB tha<sup>5</sup>PD thaŋ<sup>42</sup>PA cja<sup>1</sup>

385. blunt

EK dw<sup>3</sup>WK dw<sup>3</sup>

386. heavy

EK tho<sup>2</sup>WK thwe<sup>1</sup>GB thu<sup>3</sup>PD thew?<sup>1</sup>PA thw<sup>5</sup>

387. hard

EK phre<sup>3</sup>WK prie<sup>3</sup>GB sha<sup>3</sup>PD shäü?<sup>2</sup>

388. smooth

EK kla<sup>2</sup>WK kla<sup>1</sup>

388b. easy

WK zu

GJ jho<sup>4</sup>PA jo<sup>1</sup>

388c. loose

WK te klja

GJ khla<sup>5</sup>

389. fast

EK phre<sup>3</sup>WK prja<sup>3</sup>GB plä<sup>3</sup>PD phrar<sup>42</sup>

390. slow

EK jo<sup>3</sup>WK zo<sup>3</sup>PD jəu<sup>42</sup>. jue<sup>42</sup>

391. strong

EK chwa<sup>2</sup>WK shwo<sup>1</sup>PD khro?<sup>3</sup>

392. faint

EK le<sup>2</sup> de<sup>5</sup>WK le<sup>1</sup> dja<sup>5</sup>GB la<sup>3</sup> ta<sup>3</sup> (tired)PD sa<sup>1</sup> təw<sup>3</sup> (tired)

393. tired

EK si<sup>5</sup> phra<sup>5</sup>WK ʰe<sup>5</sup> pra<sup>5</sup>PD phli?<sup>3</sup> (faint)

394. blind

EK pe<sup>5</sup> se<sup>2</sup> khi<sup>5</sup>WK me<sup>1</sup> ʰe<sup>1</sup> khi<sup>5</sup>PD mo<sup>4</sup> sa<sup>1</sup> khw?<sup>3</sup>

395. deaf

EK ku<sup>5</sup> le<sup>2</sup> ko<sup>2</sup> ɔ<sup>3</sup>WK kha<sup>3</sup> le<sup>1</sup> ko<sup>1</sup> ʔɔ<sup>3</sup>GB ni<sup>1</sup> ku<sup>1</sup> tə<sup>3</sup> ʔu<sup>5</sup>PD la<sup>1</sup> ku<sup>4</sup> ʔəw<sup>42</sup>

396. bald

EK ku<sup>2</sup> klo<sup>5</sup> la<sup>21</sup>WK khu<sup>1</sup> klo<sup>5</sup> de<sup>3</sup>BL da<sup>2</sup> gla<sup>3</sup>GB mi<sup>3</sup> pɔ<sup>3</sup> tə kla<sup>3</sup>GL da gla<sup>2</sup>PD ka<sup>3</sup> klo<sup>2</sup> klä?<sup>1</sup>

397. naked

EK o<sup>2</sup> kla<sup>21</sup> klo<sup>2</sup>WK o<sup>1</sup> kha<sup>3</sup> klo<sup>1</sup>PD o<sup>1</sup> cw<sup>1</sup> kwä<sup>42</sup>

398. good

EK re<sup>5</sup>WK rja<sup>5</sup>GB e<sup>3</sup>PD rau?<sup>2</sup>

399. bad

EK re<sup>5</sup> to<sup>2</sup>WK rja<sup>5</sup> to<sup>1</sup>GB tɛ<sup>3</sup> no<sup>3</sup>PD cw<sup>4</sup> rau?<sup>2</sup>

400. correct  
 EK to<sup>3</sup> e<sup>5</sup>  
 WK to<sup>3</sup> ho<sup>5</sup>  
 GB be<sup>3</sup>  
 PD tuə<sup>42</sup> hi<sup>42</sup>

401. wrong  
 EK sw<sup>5</sup>  
 WK əw<sup>5</sup>  
 PD læu<sup>2</sup> hi<sup>42</sup>

### 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).

abdomen T139, L293  
 afraid T259  
 all T335  
 angry T260  
 animals T72  
 answer (verb) T248  
 argue, fight T316  
 armpit T147  
 arrow T219, L47  
 ashes T213, J363  
 back (noun) T138  
 bad T399  
 bald T396  
 bamboo T48, L71  
 bamboo shoot T49, LE48  
 banana T57  
 bark (verb) T82, J325  
 bark of tree T40  
 bathe T294  
 bear T74  
 beard (chin hair) T136  
 bee T115  
 beetle green T116, H72  
 betal nut T54, LE30, H179  
 big T339, H225  
 bird T93, L94  
 bird nest T94, J609  
 bite (verb) T83, J76  
 bitter T376, L66  
 black T362, J608

blanket T194, J694  
 blind T394  
 blood T164, L85  
 blunt T385  
 boat T185, L24  
 body hair T96, L114  
 bone T159, L61  
 brain T121, L121, J189  
 branch T39, H37  
 breathe T239, L60  
 bright T371  
 buffalo T88, J22  
 burn (transitive verb)  
 T308  
 bury (a corpse) T302, L151  
 butterfly T117, J470  
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