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How did Haudricourt reconstruct Proto-Karen tones?

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Abstract

The reconstruction of Proto-Karen by Haudricourt is one of the most important contributions to Southeast Asian historical linguistics. However, the details of the process whereby he reconstructed the Proto-Karen tones are not well known. This paper considers how Haudricourt reconstructed Proto-Karen tones in a 1946 paper. In addition to this, I argue that his idea of reconstructing one more proto-tone presented in the 1975 paper is appropriate. Based on these discussions, I share my own view of the pitches of the plain tones in Proto-Karen.

0. Introduction

Among the historical studies of the Karenic languages, the contribution of the French scholar Haudricourt (1946, 1953, 1975) is of highest significance. An especially important point is that he reconstructed Proto-Karen tones. However, we cannot say that Haudricourt's idea of Proto-Karen tones is understood in a proper way by all scholars even 70 years after his first paper was published. Other studies on reconstruction of Proto-Karen include Jones (1961), Burling (1969), Solnit (2001, 2013), Shintani (2003), Manson (2009), and Luangthongkum (2013, 2014a, 2014b). Among these, Solnit, Shintani, and Manson's works show a good understanding of Haudricourt's reconstruction of Proto-Karen tones, but Jones and Burling did not pay

the slightest attention to Haudricourt's reconstruction (for criticism against Jones 1961, see e.g., Nishida (西田) 1964; Matisoff 2003). Luangthongkum's studies are based on the idea of Haudricourt's (1946) Proto-Karen tones, but she does not seem to pay sufficient attention to Haudricourt's (1975) important suggestions. The reason that Haudricourt's reconstruction of Proto-Karen tones is not fully understood could be ascribed to the following three points: (a) in Haudricourt (1946), the process whereby he reconstructed Proto-Karen tones is not explained in detail, and only the results of his consideration are shown; (b) an important modification of the system of proto-tones was made in Haudricourt (1975), about 30 years after the first paper was published; and (c) the papers are written in French. Therefore, in the present paper, I will attempt to reproduce the process that Haudricourt must have conducted in reconstructing the Proto-Karen tones in the 1946 and 1975 papers, in the hope that this will help facilitate people's understanding of Haudricourt's work. Moreover, I will also show my own views on the proto-tones. Section 1 will treat the 1946 paper, and section 2 will treat the 1975 paper. The 1953 paper will not be considered because it is concerned with modifications to the reconstruction of consonants. In section 3, I will state my views on the process of tonal merger in Proto-Karen and on the pitches of Proto-Karen tones.

One of the big problems in considering the history of Karenic languages used to be the genealogical positioning of them within Sino-Tibetan languages. The Karenic languages show high lexical similarity with Tibeto-Burman languages, but they have SVO word order while most of the Tibeto-Burman languages have SOV word order. Thus, Benedict (1972) treated the Karenic languages separately from Tibeto-Burman, postulating that the split of "Sino-Tibetan > Tibeto-Karen + Chinese" occurred first, and the split of "Tibeto-Karen > Karen + Tibeto-Burman" occurred later. Nowadays, however, they are generally recognized as constituting one group of Tibeto-Burman. Comparative studies with Tibeto-Burman languages have also been conducted from that perspective (e.g. Mazaudon 1985; Weidert 1987; Matisoff 2003). Concerning their peculiarity in word order, the Karenic languages are considered to have changed

from SOV to SVO because of the influence of some Mon-Khmer language. Matisoff (1991) suggests Mon influence, and Manson (2009) suggests a greater connection with the Palaungic branch of Mon-Khmer.

1. Haudricourt's (1946) hypothesis and reproducing the process of his reconstruction of proto-tones

One of the most important points of Haudricourt's (1946) ideas is that he hypothesized that Proto-Karen tones were split according to three types of initial consonants, as is the case for the Tai languages. Haudricourt compared Sgaw Karen and Pwo Karen words using Purser and Saya Tun Aung's (1922) dictionary, entitled *A Comparative Dictionary of the Pwo-Karen Dialect*[1], and attempted to reconstruct Proto-Karen phonology. In this dictionary, Pwo Karen words are written with a writing system that I call the Christian Pwo Karen Script (Kato (加藤) 2001b, 2006), and the corresponding Sgaw Karen words are shown in parentheses with a writing system that I call the Christian Sgaw Karen Script (Kato (加藤) 2006). Take one word as an example from the first page:

ကဆါ (ကစၢ်) *n*. lord, master.

The leftmost item ကဆါ is a Pwo Karen word, and the item in parentheses ကစၢ် is the corresponding Sgaw Karen form. There is no phonetic notation for each word. Only a brief explanation on Pwo Karen pronunciation is shown in the appendix. Based on

1 There are several dialect groups unintelligible to each other in Pwo Karen (Kato 1995, 2009; Phillips 2000; Dawkins and Phillips 2009a, 2009b). Christian Pwo Karen Script, which is used in Purser and Saya Tun Aung's dictionary, is based on the pronunciation of Eastern Pwo Karen (i.e., the dialect group spoken around Karen State), but when we observe the words recorded in this dictionary, they are found mainly to be those of Western Pwo Karen (i.e., the dialect group spoken in the Ayarwaddy delta). Because tones 1h and 2h in Table 4 are merged in Western Pwo, if one makes a comparative study based on its pronunciation, reconstructing proto-tones would not be successful. One of the reasons that Haudricourt succeeded in reconstructing proto-tones is that Christian Pwo Karen Script is made based on the pronunciation of Eastern Pwo Karen (see Kato 2001b). In Western Pwo, the Christian Pwo Karen Script is read in a modified form according to Western Pwo pronunciation (see Kato (加藤) 2006).

these pieces of information, Haudricourt made a lexical comparison between Pwo Karen and Sgaw Karen[2].

Some explanation would be required as to the writing systems used in this dictionary. The Christian Sgaw Karen Script was created in the 1830s by the American missionary Wade. The Christian Pwo Karen Script was also created by Wade in the 1840s, and soon after that, it was modified by the American missionary Brayton. Both writing systems were based on the pronunciation of some dialects spoken in eastern Burma. Besides these, there are also other Karen writing systems, such as Buddhist Pwo Karen Script, Buddhist Sgaw Karen Script, and Leke script, as is shown in Kato (加藤) (2006). In the present paper, the Pwo Karen and Sgaw Karen forms are presented with Christian Pwo Karen Script and Christian Sgaw Karen Script respectively, which Haudricourt utilized in his comparative study. After the forms presented with these Karen scripts, I will show their pronunciation in modern dialects in phonemic transcription. The Pwo Karen pronunciation is that of the Hpa-an dialect, and the Sgaw Karen pronunciation is also that of the Hpa-an dialect. Transcription for Pwo Karen follows Kato (2009, 2017), and that for Sgaw Karen follows Kato (加藤) (2002).

In both Christian Pwo Karen Script and Christian Sgaw Karen Script, tones are represented with tonal signs that are exclusively used for transcribing tones. Table 1 shows the correspondences between the tonal signs of Christian Pwo Karen Script and the tones in the Hpa-an dialect of Pwo Karen[3]. Here, I take the case with the initial

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2 Haudricourt (1946) misrecognized some phonetic values of the scripts because he had not heard actual sounds, and they were corrected later in Haucricourt (1953).

3 The Pwo Karen writing system which is now most popularly used in Hpa-an, the capital of Karen State, is the one that I call Buddhist Pwo Karen Script. This writing system appeared, so to speak, spontaneously at latest in the first half of the 19th century, along with the adoption of Buddhism from Mon. For detail, see Kato (加藤) (2001a, 2006). The word denoting 'lord' is written as ကိုဆါ၊ in this script. Meanwhile, Christian Pwo Karen Script is now mainly used in the Ayarwaddy delta where Western Pwo Karen is spoken (see Kato (加藤) 2001b). Eastern Pwo Karen can be written using either Christian Pwo Karen Script or Buddhist Pwo Karen Script. For example, /nə ʔáɴ mì ɣòɴ jàʊ ʁâ/ (you / eat / rice / finish / PERFECTIVE / QUESTION) 'Have

consonant /m/ and the vowel /a/ as an example.

Table 1: Tonal signs of Christian Pwo Karen Script

1 မ၁	2 မ (zero marking)	3 မ၂	4 မ၃	5 မ၄	6 မ၅
/má/	/mā/	/mà/	/mâ/	/má/	/mà/

The Hpa-an dialect has four tones: /má/[55] (high-level), /mā/[33(4)] (mid-level), /mà/[11] (low-level), /mâ/[51] (falling) (see Kato 1995, 2009, 2017). The five tonal signs ◌၁, ◌၂, ◌၃, ◌၄, ◌၅ are placed at the right side of the consonant letters. The vowel sign designating /a/ is ◌ါ, but it is omitted when a tonal sign is used. Thus, this vowel sign is written only when the tonal sign is "zero", that is, in the case of '2' in Table 1. Originally, the tonal signs from '1' to '4' indicated plain tones, and '5' and '6' indicated the checked tones that had a glottal stop at the end. In the Hpa-an dialect, however, the final glottal stop has recently been dropped and the original checked tones '5' and '6' are merged with the plain tones '1' and '3' respectively. Therefore, the phonetic values of '5' and '6' are also the same, respectively, as those of '1' and '3'. Although there is an unsystematic aspect like this, Christian Pwo Karen Script fits relatively well with the phonemic system of the modern Hpa-an dialect, probably because this writing system was based on the phonology of the Hpa-an dialect.

Next, Table 2 shows how the tonal signs of Christian Sgaw Karen Script correspond to the tones in the Hpa-an dialect of Sgaw Karen. Here also, the initial consonant is /m/ and the vowel is /a/.

Table 2: Tonal signs of Christian Sgaw Karen Script

1 မ၌	2 မ (zero marking)	3 မ၊	4 မ၍	5 မ၎	6 မး
/mâ/	/má/	/mā/	/mà/	/màʔ/	/máʔ/

you finished eating?' is written as နအာ့မ့ၢဂီ့ယ္ဝၤဇၢ. in Christian Pwo Karen Script, and as ဏ်ိုအင်းမေဝ်ဟုံင်ယုဂ်ဟာ့။ in Buddhist Pwo Karen Script.

If we consider the checked tones to be phonologically separate from the plain tones, the Hpa-an dialect has six tones: /má/[55] (high-level), /mā/[33] (mid-level), /mà/[11] (low-level), /mâ/[51] (falling), /má?/[44?] (high-checked), /mà?/[11?] (low-checked) (see Kato (加藤) 1993, 2002). These tones are designated with five tonal signs: -ၣ -ၤ -ၢ -ၥ -း. In Christian Sgaw Karen Script as well, the sign denoting /a/ is ၣ, and it is omitted when a tonal sign co-occurs. This means that the vowel sign denoting /a/ appears only when the tone is high-level, that is, in the case of '2' in Table 2, where the tonal sign is unmarked. It is unknown on which dialect Christian Sgaw Karen Script was based. I assume that it was a dialect somewhere in Mon State or around Hpa-an of Karen State.

How did Haudricourt reconstruct the tones of Proto-Karen? I assume that he carried out his work in the steps shown in (1) to (9):

(1) Between Pwo Karen and Sgaw Karen, seven patterns of regular correspondences in tone can be observed, as shown below. I chose example words at random. The numbering in Roman numerals placed at the beginning of each pattern is the one used by Luce (1959, 1991). Because Haudricourt used Luce's numbering in his 1975 paper, it is also employed in the present paper for easy identification. The reason that the number 'V' is skipped is that Haudricourt regarded the pattern where Luce would later use number 'V' as an exception when he published the 1946 paper, as will be discussed in Section 2.

I. Pwo -ꤢ : Sgaw -ၤ

Pwo ခꤢ /khè/ : Sgaw ကဲၤ /kē/ 'to shine'

Pwo ဆꤢꤟ /chə̀ɴ/ : Sgaw ရူၤ /sū/ 'to rain'

Pwo ဆꤟ /chàɴ/ : Sgaw ပစီၤ /pəsɔ̄/ 'dew'

Pwo ထီꤟ /thòɴ/ : Sgaw တိၤ /tō/ 'bridge'

Pwo နꤢ /nə̀/ : Sgaw နၤ /nā/ 'you (sg.)'

Pwo ဖꤢꤟ /phə̀ɴ/ : Sgaw ပူၤ /pū/ 'inside'

Pwo ဖျၤ /phlì/ : Sgaw ပျၢ /plē/ ‘tongue’

Pwo မၤ /mà/ : Sgaw မၢ /mā/ ‘to do’

Pwo ယဲၣ် /jàiɴ/ : Sgaw ယံၢ /jī/ ‘to be far’

Pwo ယၢၤ /jà/ : Sgaw ယၢ /jā/ ‘I’

Pwo လၣ် /làɴ/ : Sgaw လီၢ /lī/ ‘to fall’

II. Pwo -ၤ : Sgaw -ø

Pwo ကူၤ /kù/ : Sgaw ကု /kú/ ‘shell’

Pwo ကီၣ် /kòɴ/ : Sgaw ကူ /kú/ ‘to wear (as sarong)’

Pwo စ့ၤ /cì/ : Sgaw စ့ /sé/ ‘silver’

Pwo တဲၣ် /tàiɴ/ : Sgaw တ့ /té/ ‘to create’

Pwo ဒီၤ /dò/ : Sgaw ဒီ /dó/ ‘knife’

Pwo ပျၣ် /plàɴ/ : Sgaw ပျိ /pló/ ‘to be clear’

Pwo ဘၤ /bà/ : Sgaw ဘါ /bá/ ‘to worship’

Pwo ဘီၣ် /bòɴ/ : Sgaw ဘိ /bó/ ‘numeral classifier (long objects)’

Pwo ဒံၣ် /ʔèiɴ/ : Sgaw သဒ့ /θəʔé/ ‘ginger’

Pwo ဒိၤ /ʔò/ : Sgaw ဒိ /ʔó/ ‘to drink’

III. Pwo -ၢ : Sgaw -ø

Pwo ခၢ /khâ/ : Sgaw ခါ /khá/ ‘to step’

Pwo ဝံၢ /xî/ : Sgaw ဃံ /xí/ ‘to be beautiful’

Pwo ဆၣၢ် /châɴ/ : Sgaw ဆၢ /shá/ ‘to be sweet’

Pwo ထံၢ /thî/ : Sgaw ထံ /thí/ ‘water’

Pwo နၣၢ် /nâɴ/ : Sgaw နၢ /nə́/ ‘to have a smell’

Pwo ဖီၢ /phɔ̂/ : Sgaw ဖီ /phɔ́/ ‘flower’

Pwo မံၢ /mî/ : Sgaw မံ /mí/ ‘to sleep’

Pwo ဃီၢ /jɔ̂/ : Sgaw ညီ /ɲɔ́/ ‘to be easy’

Pwo လၢ် /lâɴ/ : Sgaw လီ /lɔ́/ ‘thunder’

Pwo ဝံၢ /θî/ : Sgaw သံ /θí/ ‘to die’

IV. Pwo -ø : Sgaw -ါ်

Pwo ခိ /khō/ : Sgaw ကိ်ါ် /kò/ ‘to be hot’

Pwo ဂဲး /ɣāiɴ/ : Sgaw ဂံ်ါ် /ɣì/ ‘strength’

Pwo ဆံ /chī/ : Sgaw စံ်ါ် /sì/ ‘to mix’

Pwo ထီး /thōɴ/ : Sgaw တိ်ါ် /tò/ ‘to pound with pestle’

Pwo နှ /nī/ : Sgaw နှ်ါ် /nè/ ‘to get’

Pwo ဖါ /phā/ : Sgaw ပ်ါ် /pà/ ‘father’

Pwo မိ /mō/ : Sgaw မိ်ါ် /mò/ ‘mother’

Pwo ယဲ /jē/ : Sgaw ယဲ်ါ် /jè/ ‘five’

Pwo လး /lāɴ/ : Sgaw လိ်ါ် /lò/ ‘place’

Pwo ဝဲ /wē/ : Sgaw ဝဲ်ါ် /wè/ ‘elder brother or sister’

VI. Pwo -ɹ : Sgaw -ဉ်

Pwo ကိ်ɹ /kó/ : Sgaw ကိဉ် /kô/ ‘confectionary’

Pwo ခိ်ɹ /khó/ : Sgaw ခိဉ် /khô/ ‘head’

Pwo ဆဲ်ɹ /cháiɴ/ : Sgaw ဆံဉ် /shî/ ‘to be sour’

Pwo တ်ɹ /táɴ/ : Sgaw တီဉ် /tô/ ‘to be thick’

Pwo ထိ်ɹ /thó/ : Sgaw ထိဉ် /thô/ ‘bird’

Pwo ဒိ်ɹ /dí/ : Sgaw ဒီဉ် /dî/ ‘to lay eggs’

Pwo ဖိ်ɹ /phóɴ/ : Sgaw ဖီဉ် /phô/ ‘to catch’

Pwo ဘ်ɹ /bá/ : Sgaw ဘဉ် /bâ/ ‘to be right’

Pwo မ့်ɹ /mí/ : Sgaw မ့ဉ် /mê/ ‘fire’

Pwo ယ်ɹ /já/ : Sgaw ညဉ် /ɲâ/ ‘fish’

Pwo လ်ɹ /lá/ : Sgaw လဉ် /lâ/ ‘leaf’

Pwo ဝ်ɹ /wá/ : Sgaw ဝဉ် /wâ/ ‘bamboo’

Pwo သ်ɹ /θá/ : Sgaw သဉ် /θâ/ ‘to bear a fruit’

Pwo အ်ɹ /ʔáɴ/ : Sgaw အီဉ် /ʔô/ ‘to eat’

VII. Pwo -ꩫ : Sgaw -ʔ

Pwo ခိꩫ /khó/ : Sgaw ကိʔ /kòʔ/ ‘neck’

Pwo ဆိꩫ /chó/ : Sgaw စိʔ /sòʔ/ ‘to carry’

Pwo ထုꩫ /thé/ : Sgaw တဲʔ /tɛ̀ʔ/ ‘to break off’

Pwo ဖံꩫ /phái/ : Sgaw ပံʔ /pìʔ/ ‘to be quenched, extinguished’

Pwo ဖျꩫ /pháʊ/ : Sgaw ပှʔ / pùʊʔ/ ‘to be soft’

Pwo မ့ꩫ /mé/ : Sgaw မဲʔ /mɛ̀ʔ/ ‘eye, face’

Pwo ယꩫ /já/ : Sgaw ညʔ /ɲàʔ/ ‘to be torn’

Pwo ယံꩫ /jái/ : Sgaw ယံʔ /jìʔ/ ‘to be long in time’

Pwo လံꩫ /lái/ : Sgaw လံʔ /lìʔ/ ‘alphabet’

VIII. Pwo -ꩬ : Sgaw -း

Pwo ကိꩬ /kò/ : Sgaw ကိး /kóʔ/ ‘to call’

Pwo ခꩬ /khà/ : Sgaw ခး /kháʔ/ ‘to shoot’

Pwo စိꩬ /cò/ : Sgaw စိး /sóʔ/ ‘to peck’

Pwo ဆ့ꩬ /chè/ : Sgaw ဆဲး /shɛ́ʔ/ ‘to stab’

Pwo တၚꩬ /tì/ : Sgaw တၢး /táʔ/ ‘building’

Pwo ထꩬ /thà/ : Sgaw ထး /tháʔ/ ‘iron, needle’

Pwo နိꩬ /nò/ : Sgaw နိး /nóʔ/ ‘mouth’

Pwo ဖံꩬ /phài/ : Sgaw ဖံး /phíʔ/ ‘skin’

Pwo ဘံꩬ /bài/ : Sgaw ဘံး /bíʔ/ ‘to get stuck’

Pwo မ့ꩬ /mè/ : Sgaw မဲး /méʔ/ ‘sand’

Pwo လိꩬ /lò/ : Sgaw လိး /lóʔ/ ‘to repay’

Pwo ဝိꩬ /θò/ : Sgaw သိး /θóʔ/ ‘to wear (as shirt)’

(2) When we observe the corresponding consonants, some kinds of distributional imbalance are found in the initial stops. If we represent voiceless unaspirated stops as /P/ and voiceless aspirated stops as /PH/,

(a) The correspondence of ‘Pwo /PH/ : Sgaw /P/’ occurs only in I, IV, VII.

(b) The correspondence of 'Pwo /P/ : Sgaw /P/' occurs only in II, VI, VIII.
(c) The correspondence of 'Pwo /PH/ : Sgaw /PH/' occurs only in III, VI, VIII.

(3) The correspondence of Pwo /P/ : Sgaw /P/ can be traced back to Proto-Karen voiceless unaspirated stops, and that of Pwo /PH/ : Sgaw /PH/ can be traced back to Proto-Karen voiceless aspirated stops. The problem to be considered is what the initial stops that show the correspondence of Pwo /PH/ : Sgaw /P/ were in Proto-Karen. From the analogy of Tai comparative linguistics, it can be assumed that they were voiced stops in the proto-language[4].

(4) From (2) and (3) above, the kinds of initial stops in Proto-Karen and the seven patterns of tonal correspondences are found to be in the following relation:

*voiced stops	----------	I, IV, VII
*voiceless unaspirated stops	----------	II, VI, VIII
*voiceless aspirated stops	----------	III, VI, VIII

(5) When arranged in this way, it can be seen that some of the seven tonal correspondence patterns are in complementary distribution as regards the initial consonant types. For example, because each of patterns I, II, and III occurs only in one type of initial stops, they are in complementary distribution with each other. Moreover,

4 Haudricourt's assumption that the proto-Karen had voiced stops was attested by the reports of Luce (1959) and Henderson (1961, 1979) on Bwe Karen. Bwe Karen preserves the series of voiced stops. For example, as a proto-form for Pwo /khō/ and Sgaw /kò/ 'hot', we can assume a form like *gɒ^{2}. The corresponding Bwe Karen (Blimaw dialect) form is /gɒ^{2}/ 'hot' (Henderson 1979: 321), which supports Haudricourt's hypothesis. In Jones' (1961) reconstruction, no consideration is made about the Proto-Karen voiced stops, and this is the biggest weak point of his work. According to Shintani (新谷) (2002) and Shintani (2003), Karenic languages that preserve voiced stops are four: Geba, Bwe, Paku, and Monebwa. For details on Bwe, see Henderson (1997), and for more information on Geba, see Kato (加藤) (2008). Moreover, according to my recent fieldwork, Palaychi also preserves voiced stops.

it is possible that some of the correspondence patterns in such complementary distribution can be traced back to a single tone in the proto-language. Patterns VII and VIII, among the seven patterns, are in complementary distribution and both have or used to have a glottal stop as a final; therefore, we can reconstruct a single tone for them at the proto-language stage with no problem.

(6) Given the distribution of the remaining patterns I, II, III, IV, and VI, we have two possibilities for grouping them. One possibility is grouping them into {I, II, III} and {IV, VI}, and the other is {I, VI} and {IV, II, III}. To solve this issue, we need to look at each tone in Pwo Karen and Sgaw Karen. The Pwo Karen tone marked with the sign -ꩲ appears in patterns I and II, and the Sgaw Karen tone marked with "zero" appears in II and III. Because both these tones commonly appear in pattern II, we should treat all of the correspondence patterns where these two appear, that is, I, II, and III, as one group. Thus, a single tone should be reconstructed for I, II, and III, and another single tone should be reconstructed for IV and VI.

(7) Consequently, three tones (represented as *1, *2, *3 in the present paper) can be reconstructed for Proto-Karen, and they are assumed to have been succeeded by Pwo Karen and Sgaw Karen as regards the three initial consonant types of the proto-language as is shown in Table 3. In the table, "B" represents série basse, "M" série moyenne, and "H" série haute. As far as stops are concerned, it can be regarded that "B" represents voiced stops, "M" non-aspirated voiceless stops, and "H" aspirated voiceless stops.

Table 3: Proto-Karen tones and the tones of Pwo Karen and Sgaw Karen

	*1	*2	*3
*B	I: Pwo -ꩲ:Sgaw -ꩱ	IV: Pwo -ø:Sgaw -ꩵ	VII: Pwo -ꩱ:Sgaw -ꩶ
*M	II: Pwo -ꩲ:Sgaw -ø	VI: Pwo -ꩳ:Sgaw -ꩶ	VIII: Pwo -ꩬ:Sgaw -꩷
*H	III: Pwo -ꩵ:Sgaw -ø	VI: Pwo -ꩳ:Sgaw -ꩶ	VIII: Pwo -ꩬ:Sgaw -꩷

(8) As far as syllables beginning with stops are concerned, there is no problem. When we also take syllables beginning with other types of consonants into consideration, we have two problems. The first is that syllables with sonorant initials including nasals, liquids, and semivowels sometimes show correspondence patterns of *H, that is, III (Pwo -ɿ : Sgaw -ø), VI (Pwo -ɹ : Sgaw -ɲ̊), and VIII (Pwo -ɾ : Sgaw -ːˑ), not patterns of *B, that is, I (Pwo -ɻ : Sgaw -ɽ), IV (Pwo -ø : Sgaw -ɲ́), and VII (Pwo -ɽ : Sgaw -ɲ̀). An example of such patterns is Pwo မ့ɹ /mí/ : Sgaw မ့ɲ̊ /mê/ 'fire'. The second is that the initial consonants /b/ and /d/ in modern Pwo Karen and Sgaw Karen show the correspondence patterns of *M, that is, II (Pwo -ɻ : Sgaw -ø), VI (Pwo -ɹ : Sgaw -ɲ̊), and VIII (Pwo -ɾ: Sgaw -ːˑ), not patterns of *B, that is, I (Pwo -ɻ: Sgaw -ɽ), IV (Pwo -ø : Sgaw -ɲ́), and VII (Pwo -ɽ : Sgaw -ɲ̀). An example of such patterns is Pwo ဘɻ /bà/ : Sgaw ဘ /bá/ 'to worship'.

The first problem can be solved by reconstructing voiceless sonorants for the proto-language. For example, *hme2 'fire' (*ʻme' with Haudricourt's transcription)[5].

For the second problem, *p and *t are reconstructed for modern /b/ and /d/, and *pp and *tt are arbitrarily (arbitrairement) reconstructed for modern /p/ and /t/[6].

(9) From the observations above, consonants shown below can be reconstructed for Proto-Karen. The tones of the proto-language split into the modern tones, conditioned by these three groups of consonants. Note that with IPA symbols, ' is ʔ, pʻ is p^h, and ʻm is m̥.

*low series (série basse)

ɡ j d b ṅ ñ(or y) n m l r w gr br ɣ

*mid series (série moyenne)

k c tt t pp p '

5 Luce (1959) reported that Geba preserved voiceless sonorants, attesting Haudricourt's hypothesis. For example, the Geba word for 'fire' is /m̥ī/ (see Kato (加藤) 2008).

6 To the best of my knowledge, the sounds corresponding to Haudricourt's *p and *t in the modern Karenic languages are basically implosives. Therefore, I think that we should reconstruct *ɓ and *ɗ instead of Haudricourt's *p and *t. For his *pp and *tt, we can reconstruct *p and *t.

*high series (série haute)

kʿ cʿ tʿ pʿ ʿń ʿñ ʿn ʿm ʿl ʿw s kʿr pʿr x

What has been shown above is the process that Haudricourt must have followed in reconstructing the Proto-Karen tones for his 1946 paper. This would have been quite a laborious work, but in his paper, he only makes a brief explanation showing the table cited in Table 4.

Table 4: The table of tonal correspondences shown in Haudricourt (1946)

série basse (sonore)	pwo	1b	2b	3b
	sgaw	1b	2b	3b
série moyenne (non aspirée)	pwo	1b	2h	3h
	sgaw	1h	2h	3h
série haute (aspirée)	pwo	1h	2h	3h
	sgaw	1h	2h	3h

Haudricourt stated that the numbering of the tones is not arbitrary. In the first tone, Pwo Karen and Sgaw Karen behave in a different manner: “série moyenne” behaves together with “série basse” in Pwo, and together with “série haute” in Sgaw. This resembles the Tai languages, where the first tone (le 1er ton) split in a similar way (see Haudricourt 1961). Thus, Haudricourt numbered it “1”. Meanwhile, the third tone is considered to have had final stops, and this is the same as the Chinese last tone Rù Shēng (入声); therefore, Haudricourt placed it at the end, numbering it “3”. Today, the labeling of tones 1, 2, and 3 that Haudricourt (1946) reconstructed and the tone added later (represented as 2’ in the present paper) differs among scholars: Solnit (2001, 2013) and Luangthongkum (2013, 2014a, 2014b) represent them as A, B, D, B’, Manson (2009) and Weidert (1987) as A, B, C, B’, and Shintani (2003) as 1, 2, 3, 2’.

2. Modification in Haudricourt (1975)

Haudricourt claimed in his 1975 paper that one more tone should be added to the

tonal system of Proto-Karen. He added it because apart from the seven tonal correspondence patterns that we have seen in the previous section, one more tonal correspondence pattern numbered 'V' by Luce (1959) was found. Examples are shown below:

V. Pwo -ɔ : Sgaw -ø

Pwo ကဲɔ /kɛ́/ : Sgaw ကဲ /kɛ́/ 'to become'

Pwo ဒိɔ /dɔ́/ : Sgaw ဒိ /dɔ́/ 'to strike'

Pwo ဖိɔ /phɔ́/ : Sgaw ဖိ /phɔ́/ 'child'

Pwo မဲɔ /mɛ́/ : Sgaw မဲ /mɛ́/ 'tooth, fang ; to sprout'

Pwo ၑ့ɔ /θí/ : Sgaw သ့ /θé/ 'to be capable'

Pwo အɔ /ʔá/ : Sgaw အါ /ʔá/ 'to be numerous'

Besides these, Haudricourt lists the following forms:

Pwo ကဆ့ɔ /kəchí/ : Sgaw ဆဲ /shɛ́/ 'to sneeze', Pwo ကွံɔ /kwí/ : Sgaw ကွံ /kwí/ 'to be ticklish', Pwo ကျိ့ /klɔ́ɴ/ : Sgaw ကျိ /klɔ́/ 'to cut (with axe)', Pwo ဂɔ /ɣá/ : Sgaw ဟါ /há/ 'evening', Pwo ဂဲɔ /ɣɛ́/ : Sgaw ဟဲ /hɛ́/ 'to be spicy', Pwo ၑံɔ /xí/ : Sgaw ဆုံ /shɣí/ 'to be pure', Pwo ဝိɔ /xɔ́/ : Sgaw ဃိ /xɔ́/ 'to roast', Pwo ၑွံɔ /xwí/ : Sgaw ဃံ /xí/ 'bone', Pwo ပွံɔ /xwí/ : Sgaw ဖုံ /phɣí/ 'to sow', Pwo ပွဲɔ /xwɛ́/ : Sgaw ဃဲ /xɛ́/ 'rainfall', Pwo စူɔ /cú/ : Sgaw စု /sú/ 'hand', Pwo ဆဲɔ /chɛ́/ : Sgaw ဆဲ /shɛ́/ 'to set a trap', Pwo ဖံɔ /phí/ : Sgaw ဖံ /phí/ 'pus', Pwo ဖျɔ /phlí/ : Sgaw ဖျ /phlɛ́/ 'to whip', Pwo ဘုɔ /bú/: Sgaw ဘု /bú/ 'paddy', Pwo ဝိɔ /θɔ́/ : Sgaw သိ /θɔ́/ 'oil', Pwo အူɔ /ʔú/ : Sgaw အူ /ʔú/ 'to blow', Pwo အွံɔ /ʔwí/ : Sgaw ဝံ /wí/ 'carry on one's back'

In addition to Haudricourt's list, others include:

Pwo ကျဲ့ /kláiɴ/ : Sgaw ကျဲ /klɛ́/ 'to roll eyes sideways', Pwo ဝုɔ /ɣú/ : Sgaw ဖွ /phɣú/ 'to besmear', Pwo ဝူɔ /ɣú/ : Sgaw ဟု /hú/ 'to brood'

Haudricourt (1975) stated that he did not mention this correspondence in his 1946 paper because he considered it to be an exception. However, in the 1975 paper, having changed his mind, he claims that this tonal correspondence pattern should be explained by reconstructing another tone in the proto-language. In the present paper, I represent this tone as 2'. Strangely enough, in pattern V, no example of the correspondence Pwo /PH/ : Sgaw /P/ can be found. This means that tone *2' lacks an example of *B (série basse). According to this new hypothesis, the Proto-Karen tones were succeeded by Pwo Karen and Sgaw Karen, as is shown in Table 5.

Table 5: Modified Proto-Karen tones and the tones of Pwo and Sgaw

	*1	*2	*2'	*3
*B	I: Pwo -ɤ:Sgaw -ɬ	IV: Pwo -ø:Sgaw -ʔ		VII: Pwo -ʟ:Sgaw -ʔ
*M	II: Pwo -ɤ:Sgaw -ø	VI: Pwo -ɹ:Sgaw -ʔ	V: Pwo -ɹ:Sgaw -ø	VIII: Pwo -ɹ:Sgaw -ɜ
*H	III: Pwo -ɪ :Sgaw -ø	VI: Pwo -ɹ:Sgaw -ʔ	V: Pwo -ɹ:Sgaw -ø	VIII: Pwo -ɹ:Sgaw -ɜ

Haudricourt believed that Tone *2' lacked an example of *B (série basse) because syllables with Tone *2' and a voiced initial merged with Tone *2 and are presently mixed with pattern IV (Pwo -ø : Sgaw -ʔ). Then, he suggested that this is the same as Chinese, where "le ton *shang*" (上声 Shǎng Shēng) merged with "le ton *qiu*" (去声 Qù Shēng) under a certain condition. In this regard, Tone *2 of Proto-Karen corresponds to Qù Shēng of Middle Chinese and Tone *2' to Shǎng Shēng.

The Chinese phenomenon that Haudricourt pointed out is called 浊上归去(Zhuó Shǎng Guī Qù) in Chinese phonology. It is a phenomenon where Shǎng Shēng of the syllables with voiced stops (浊 Zhuó) merged with Qù Shēng (see e.g., Wang (王) 2010: 293-294, Norman 1988: 194-195, Zhang 2014: 20-27). It is considered to have begun, at the latest, in the beginning of the eighth century, and can be observed in many dialects including Mandarin Chinese (see e.g., Ho (何) 1988). Although in Chinese, this phenomenon did not occur in the syllables with Cìzhuó (次浊: nasals, liquids, and semivowels) consonants, in Karen, if Haudricourt's hypothesis holds true, it occurred in all of the Tone *2' syllables with voiced initials.

This hypothesis that assumes Tone *2' is accepted by Solnit (2001, 2013), Shintani (新谷) (2002), Shintani (2003), and Manson (2009), but Luangthongkum (2013) claims that it is unnecessary to reconstruct Tone *2'. She says that "The reconstruction of the *-s seems to help solve some problems of the irregular tone correspondences", claiming that the correspondence of pattern V can be ascribed to *-s in the Proto-Karen stage. The main point of her hypothesis is to ascribe the reason of the presence of pattern V to a segment[7].

Actually, Haudricourt himself suggested in the 1975 paper the possibility that Tone *2' originates from a segment. According to Haudricourt, out of the thirty-three words that show this correspondence, only two can be considered to have had a nasal final consonant in the proto-language. This is contrastively different from the other patterns, for example, pattern I, where over half of all 110 words, that is, 60, are nasal-final. Table 6 is the one that Haudricourt himself showed, and revising this table according to the proto-tones gives us Table 7.

Table 6: Correspondence patterns and nasalized rhymes

catégories de Luce	I	II	III	IV	V	VI
finales orales	50	51	80	79	31	122
finales nasales	60	70	79	59	2	80

Table 7: Proto-Karen tones and nasalized rhymes

	*1	*2	*2'
oral rhymes	181(46%)	201(59%)	31(94%)
nasalized rhymes	209(54%)	139(41%)	2(6%)
total	390	340	33

7 Weidert's (1987) book, which researched tones of Tibeto-Burman languages, says in the chapter on the Karenic languages that it is unnecessary to reconstruct another proto-tone, and that this corresondence "can be traced to morphological complexities of Proto-Karen in connection with *B-tone or the nontonal predecessor of *B (p. 331)". No alternative hypothesis is stated. His opinion is in line with Luangthongkum's hypothesis that ascribes the "irregularity" to a segment. Weidert (1987: 237) says "For simplicity's sake, Haudricourt assumed complete tonal merger of the *B'-voiced with the *B-voiced tone-pattern", but Haudricourt's hypothesis is not so simple that the words "for simplicity's sake" can describe it.

Based on this fact, Haudricourt suggests that Tone *2' originates from a final glottal stop. At the same time, he also gives the suggestion that Tone *2 originates from a final *-s. However, because he reconstructed three plain tones for Proto-Karen, Haudricourt should have considered that these final consonants had already disappeared at the Proto-Karen stage and the tones had been established in compensation for that.

I would prefer to support Haudricourt's hypothesis that reconstructs Tone *2' rather than Luangthongkum's hypothesis. There are two reasons. First, no segment or segmental remnant has been found that explains pattern V in any modern Karenic languages. Second, if pattern V originates from a segment like *-s, forms that used to have voiced initials ought to have been found. However, there is no such example (except the word meaning 'tooth, fang; sprout' which will be referred to later). The fact that there has been found no form that used to have voiced initials can be reasonably explained by assuming that there was another proto-tone and that its pitch was lowered by voiced initial consonants, as will be discussed in the next section. Haudricourt's hypothesis seeking the origin of pattern V in a proto-tone has an advantage in that it can reasonably explain the absence of samples with voiced initials.

3. The process of the tonal merger and the pitches of the proto-tones

In this section, I will present my own views on the process where Tone *2' partially merged with Tone *2 and on the pitches of the Proto-Karen tones. Before discussing these issues, let us consider what the relative difference in pitch between Tones *1 and *2 was. Shintani (2003) assumes that Tone *1 was higher than Tone *2. The reasons for this are the following. First, in Geba, Bwe, and Paku, where initial voiced consonants have not been devoiced—in other words, in the Karenic languages where tonal splits did not need to occur—the tones originating from Tone *1 are generally higher than those of Tone *2 (for Geba, see Table 11). Second, in Geba, Bwe, and Paku, while Tone *1 has been split, Tone *2 has not been split. Shintani says

that this is because Tone *1 was more susceptible than Tone *2 to lowering pressure in the case of voiced initials because it was higher. Because Shintani's theory seems reasonable enough, I will advance my discussion on the premise of his theory.

I assume the process where Tone *2' merged with Tone *2 in the syllables with voiced initials as follows. Tone *2' had a higher pitch than Tone *2. Syllables with voiced initials and Tone *2' gradually lowered their pitch, and so the pitch difference between the two tones became smaller, and finally, Tone *2' merged with Tone *2 in syllables with voiced initials. This change was brought about at the stage of Proto-Karen. It is necessary to consider that Tone *2' had a higher pitch than Tone *2. If this is not the case, we cannot explain the process of merger where Tone *2' was lowered by voiced initials and mixed with Tone *2.[8]

Next, let us observe what happened later to syllables with Tone *2' and voiceless initials, which did not merge with Tone *2. See Tables 8 to 11. In Pwo Karen, as is seen from the tonal pitches of the Hpa-an dialect shown in Table 8 and those of the Kyonbyaw dialect (one of the western dialects; see Kato 1995, 2009) shown in Table 9, the pitches of M2' and H2' are the same as those of M2 and H2. In Sgaw Karen, as is seen from Table 10, which shows the tones of the Hpa-an dialect, the pitches of M2' and H2' are the same as those of M1 and H1. In the Leiktho dialect of Geba (see Kato (加藤) 2008), as is shown in Table 11,[9] the pitches of M2' and H2' are the same as those of M2 and H2, as is the case for Pwo Karen. Thus, Tone *2' merged with Tone

8 Shintani (新谷) (2002) says that Haudricourt considered Tones *1, *2, and *2' to be level, falling, and rising tones respectively in the 1975 paper. However, Haudricourt himself did not go so far as to say so. Haudricourt only likened Tones *2 and *2' to Qù Shēng and Shǎng Shēng in Zhuó Shǎng Guī Qù in Chinese. Shintani (新谷) (2002) also says that when syllables with voiced initials parted from Tone *2' and merged with Tone *2, voiced initials were devoiced. However, we do not need to consider that devoicing occurred. Were there no devoicing, lowering pressure would continue and merger would easily happen. According to Ballard (1988: 14-15), tonal splits can take place without loss of voicing, which is attested in some languages such as Chinese dialects of the Wu and Xiang areas. Considering this, it is not surprising if devoicing did not take place when Tone *2' merged with Tone *2.

9 In Geba, L2 is generally [33], but may be [11] in some words. The conditioning factor is not clear.

*2 in Pwo Karen and Geba, and merged with Tone *1 in Sgaw Karen. In the same way, Tone *2' is merged with other tones in all of the modern Karenic languages. No language has been found in which the remnant of Tone *2' takes a distinctive pitch from any other tones (see Shintani's 2003 diagrams). It must be noted that Tone *2' merged with Tone *2 in the syllables with voiced initials (i.e., L2') at the Proto-Karen stage, while it is in each language after the Proto-Karen that M2' and H2' merged with other tones.

Table 8 : Tones of Pwo (Hpa-an)

	1	2	2'	3
B	[11]	[33(4)]		[55]
M	[11]	[55]	[55]	[11]
H	[51]	[55]	[55]	[11]

Table 9 : Tones of Pwo (Kyonbyaw)

	1	2	2'	3
B	[55]	[51]		[51ʔ]
M	[55]	[11]	[11]	[51ʔ]
H	[11]	[11]	[11]	[51ʔ]

Table 10 : Tones of Sgaw (Hpa-an)

	1	2	2'	3
B	[33]	[11]		[11ʔ]
M	[55]	[51]	[55]	[44ʔ]
H	[55]	[51]	[55]	[44ʔ]

Table 11: Tones of Geba (Leiktho)

	1	2	2'	3
B	[33]	[33]([11])		[11]
M	[55]	[33]	[33]	[33(ʔ)]
H	[55]	[33]	[33]	[33(ʔ)]

According to the diagrams of the tonal correspondences to the proto-tones of sixteen Karenic languages in Shintani (2003), there are nine languages where M2' and H2' merged with M1 and H1 (i.e., Pao, Padaung, Gekho [1], Gekho [2], Blimaw, Paku, Monebwa, Thalebwa, Sgaw), five languages where they merged with M2 and H2 (i.e., Geba, Bwe, Kayo, Mopwa, Pwo), one language where they merged with M3 and H3 (i.e., Kayah), and one language where they merged with B2 (i.e., Thaidai). As is seen from this, in most cases Tone *2' (i.e., M2' and H2') is merged with either of Tone *1 or Tone *2. Judging from this, I assume that the pitch of Tone *2' was somewhere between Tone *1 and Tone *2. In other words, the pitch of Tone *2' was higher than Tone *2 and lower than Tone *1.

Based on what we have seen above, in this paper, I estimate that the pitches of

Proto-Karen[10] were Tone *1=high-level, Tone *2'=mid-level, and Tone *2=low-level. The reason I consider that all the tones were level is that level tones rather than contour tones are predominantly observed across all of the Karenic languages. Shintani (新谷) (2002) also points out the same tendency. Even if a tone is accompanied by a falling or rising contour, it is quite moderate. Sharp falling tones with a pitch like [51], as is found in the Hpa-an and Kyonbyaw dialects of Pwo and the Hpa-an dialect of Sgaw, are rather exceptional. If we suppose that the Proto-Karen tones are all level tones, that Tone *1 was higher than Tone *2, and that Tone *2' was higher than Tone *2 and lower than Tone *1, we need to assume the tones as estimated above. Moreover, considering that Tone *2' with voiced syllables merged with Tone *2, the pitch of Tone *2' would have been very close to that of Tone *2. It follows from what has been said above that the pitches of the three Proto-Karen plain tones would have been for example, Tone *1 [55], Tone *2' [22], and Tone *2 [11] or Tone *1 [44], Tone *2' [22], and Tone *2 [11]. Of course, in the same way as level tones in the modern Karenic languages are often accompanied by a slight falling or rising contour according to the environment, these proto-tones might also have had such slight contours.

It would be worth noting that there is only one exception to the merger of Tone *2' with voiced initials to Tone *2. That is the form meaning 'tooth, fang' or 'to sprout', that is, Pwo /mɛ́/ : Sgaw /mɛ́/. Haudricourt (1975) considered this form to have had a voiceless initial *hm-. Nevertheless, according to my data of Geba, which preserves voiceless nasals (cf. Note 5), morphemes meaning 'fang' and 'to sprout' are both /mɛ̀/ beginning with a voiced nasal. Therefore, it is necessary to consider that the corresponding proto-form also had a voiced nasal initial. This means that Tone *2' of this form exceptionally did not merge with Tone *2. Because the corresponding Western Pwo Karen form is /mài/ 'fang; sprout' (see Kato 2009), in Proto-Karen this

10 The Proto-Karen tonal system that I assume here is similar on the surface to that of the Irrawaddy Delta dialects of Sgaw Karen in that there are three plain tones and they are high-level, mid-level, and low-level. For example, the Hinthada dialect of Sgaw Karen has three plain tones: high-level [55], mid-level [33], and low-level [11]. In estimating the pitches of Proto-Karen, I referenced Rai's (賴) (1968, 1989) discussions on the tones of Ancient Chinese.

form probably used to have a diphthong in a shape like *mai2'. It might be the influence of this diphthong that prevented the merger.

4. Summary

In this paper I showed the process whereby Haudricourt reconstructed Proto-Karen tones in the 1946 paper, and the reason that he added another proto-tone in the 1975 paper. The modification in the 1975 paper is highly important. Correspondence pattern V can be well explained by assuming this additional tone. Furthermore, based on Haudricourt's hypothesis, I estimated that the Proto-Karen tones were Tone *1=high-level, Tone *2'=mid-level (with a pitch close to Tone *2), and Tone *2=low-level.

What was fortunate for the discussion of Haudricourt is that both Pwo Karen and Sgaw Karen have six tones (four plain tones and two checked tones), which is more than usual among the Karenic languages. Other languages ordinarily have two or three plain tones, with the exception of a few languages, including Pao. In addition to this, another important factor is that Pwo and Sgaw show the /PH/ vs. /P/ correspondence in série basse. Furthermore, we should not forget that the writing systems created by American missionaries that reflect precisely the phonology of both languages contributed a lot to Haudricourt's study.

I hope that this paper will contribute to a deeper understanding of Haudricourt's reconstruction.

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