

A PRELIMINARY TYPOLOGY OF TONE SHAPES
AND TONAL SOUND CHANGES IN TAI: THE LĀN NĀ A-TONES¹

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1. Introduction

In historical linguistics, there are two styles of reconstruction. In one style, the phonemes of the proto-language are regarded as mere formulas, without phonetic content. In the other style, the proto-language is regarded as a real language subject to the same phonological constraints as modern languages. One tries to reconstruct the actual pronunciation of the proto-phonemes and sees whether the resulting system looks reasonable and pronounceable in terms of what we know about the phonetics and phonology of living languages.

Now, most reconstructions of the tones of Proto-Tai have been of the formulaic type. Tai specialists such as William Gedney and Fang Kuei Li speak of the four Proto-Tai tones A, B, C, and D, but do not give any sort of phonetic content to these letters.

There is good reason for this. Whereas the phonetics of the vowel and consonant correspondences among Tai languages are--for the most part--fairly straightforward, the phonetics of the tonal correspondences are very diverse and puzzling. Take, for example, the word for "paddy field". In formulaic terms this word can be said to have the tone "A-voiced", that is, it has whatever tone in each particular dialect developed from Proto-Tai tone A after Proto-Tai voiced initial consonants. In scores of Tai dialects, extending from Assam to Kwangsi, from Kweichow to the Malay peninsula, this word invariably has the segmental shape [na:]. But what about the tone? Here we find great variety, for instance: (the name of the locality is given, followed by the name of the language in parentheses and capital letters)²

High falling, as in Mān Chong Kham (KHAMTI)

na: ʃ 52

High falling and glottalized, as in That-Khe (THO)

na: ʃ' 53'

Mid falling, as in Lungchow (THO)

na: ʃ 31

Mid rising, as in Chiengrāi (KAM MUANG)

na: 𠂆 334

High level, as in Hsi Paw (SHAN)

na: 𠂇 55

Fairly high level and followed by a glottal stop, as in Lai Chau (WHITE TAI)

na: 𠂈? 44?

Mid level, as in Xieng Khouang (lang. name not stated)

na: 𠂉 33

Low level, as in Lu-jung (PU-I)

na: 𠂊 11

and so forth.

It is relatively easy to argue that the Proto-Tai word for "paddy field" was probably pronounced something like *[na:] as far as the segmentals go. But what sort of tone can we reconstruct to account for such a diverse set of reflexes as that given above? Not to mention the different reflexes of Proto-Tai tone A with non-voiced initials! It is no wonder that two generations of Tai scholars have constrained themselves to simply reconstructing the word thus: *na:^A

Nonetheless, this state of affairs can hardly be satisfying to Professor Henderson, who has enriched us all with her interest in the actual phonetic shapes of things, and in the interaction of these shapes in coherent systems. In this paper I hope to make a small contribution to the problem of assigning some phonetic content to Proto-Tai *A, *B, *C and *D.

2. Explanation of terms and concepts

Before going any further it will be necessary to say a few words about the Great Tone Split and about the relationship between consonant types and tones in Tai. Proto-Tai is reconstructed as having had three tones on syllables ending in a vowel, semi-vowel, or nasal. These tones are conventionally referred to as A, B, and C.

Syllables ending in a stop had no tonal contrasts, and it is convenient to refer to these as a fourth tonal class, conventionally called

tone D. Thus we can, for example, reconstruct minimal sets such as Proto-Tai.

- *pan^A 'to divide into shares'
 *pan^B 'to turn around, spin'
 *pan^C 'to mold (clay), clench, wring'
 *pat^D 'to brush off, wipe, sweep'

(Li 1977, pp. 61-62)

Syllables ending in a vowel, semi-vowel, or nasal (tones A, B, and C) are called kham pen or and syllables ending in a stop (tone D) are called kham ta:j or "dead syllables". In the present study I have only attempted to deal with live syllables, and shall not have anything more to say about tone D. (Eventually it will of course be necessary to deal with tone D, not only because of its intrinsic interest, but also because the reconstruction of tone D is relevant to the reconstruction of the live tones--perhaps especially tone B, since reflexes of tones B and D are very often phonetically similar in modern dialects.)

In each Tai dialect tones developed different allotones conditioned by the manner of articulation of the initial consonant of the syllable. Then certain consonants fell together so that these originally allophonic tonal distinctions became contrastive, as for example in the words for "thick" and "paddy field" in the dialect of Siamese spoken in Bangkok:

	Proto-Tai		Modern Bangkok
"thick"	*ŋa: ^A	> *ŋa: ^{A'}	na: ㄣ
"paddy field"	*na: ^A	> *na: ^{A''}	na: ㄤ

Notice that in Proto-Tai, "thick" and "paddy field" had the same tone but different initials, whereas in modern Bangkok they have the same initial but different tones. This sequence of events, which generally resulted in an increase in the number of tones and a decrease in the number of consonants is called the Great Tone Split and was an areal sound change affecting not only Tai, but also Chinese, many Tibeto-Burman languages, Hmong-Mien and Viet-Muong. In the non-tonal Mon-Khmer languages there was an analogous split producing what is called "register", a bundle of features involving such things as vowel quality and voice quality, the details varying from language to language. (See Matisoff 1973a for a useful review of the literature on the Great Tone Split.)

In order to account for the tonal developments in the various Tai languages it is necessary to divide the Proto-Tai initial consonant inventory into four classes (See Gedney 1964 pp. 25-26; 1967 pp. 12-19; 1970b; 1972; Li 1977 pp. 43-53) approximately as follows (scholars vary as to the exact details of the Proto-Tai initial consonant inventory:

given below is a fairly conservative reconstruction that will be adequate for present purposes):

1. *ph *th *kh
 *f *s *x *h
 *ɱ *ŋ *ŋ *ŋ
 *w *l/*ɾ
2. *p *t *c *k
3. *ʔb *ʔd *ʔj *ʔ
4. *b *d *ɟ *g
 *v *z *ɣ
 *m *n *ɲ *ŋ
 *w *l/*r *j

The effect of initial clusters on tones is determined by the first member of the cluster. For example, *pl belongs to the same class as *p. Since we will be referring to the above four classes of consonants frequently, it will be convenient to have some sort of shorthand device for doing so. I will let the labial stop member of each class stand as a representative for the whole class. Thus I will designate the four classes as the *ph-class, the *p-class, the *ʔb-class, and the *b-class respectively. The notation A-*ph means the reflex, in a particular dialect, of tone A after initials of the *ph-class; A-*ph*p means the reflex of tone A after initials of both the *ph-class and the *p-class; and so forth.

In many Tai dialects, each of the three Proto-Tai tones has split in exactly the same way, with one set of tones developing after the *ph-, *p-, and *ʔb- classes, and another set developing after the *b-class, resulting in six tones in all.³ This situation may be diagrammed as follows:

		Proto-Tai tone		
		*A	*B	*C
Proto-Tai initial	*ph	1	2	3
	*p	1	2	3
	*ʔb	1	2	3
	*b	4	5	6

In many other dialects, however, one or more of the tones has split in a

different way, resulting in a great variety of patterns of which the following is merely a sample (dialects are identified by locality followed by LANGUAGE NAME in parentheses):

Muong Hum
(YAY)

1	2	3
1	2	3
1	2	6
4	5	6

Chiang Mai
(KAM MUANG)

1	2	3
1	2	3
4	2	3
4	5	6

Ū Thōng
(SIAMESE)

1	3	4
2	3	4
2	3	4
5	4	6

Bangkok
(SIAMESE)

1	2	3
4	2	3
4	2	3
4	3	5

Rōi-et
(LAO)

1	3	4
2	3	7
2	3	7
5	6	7

Luang Prabang
(LAO)

1	2	3
4	2	5
4	2	5
4	2	5

Songkhla
(S. THAI)

1	1	2
3	3	4
3	3	4
5	6	7

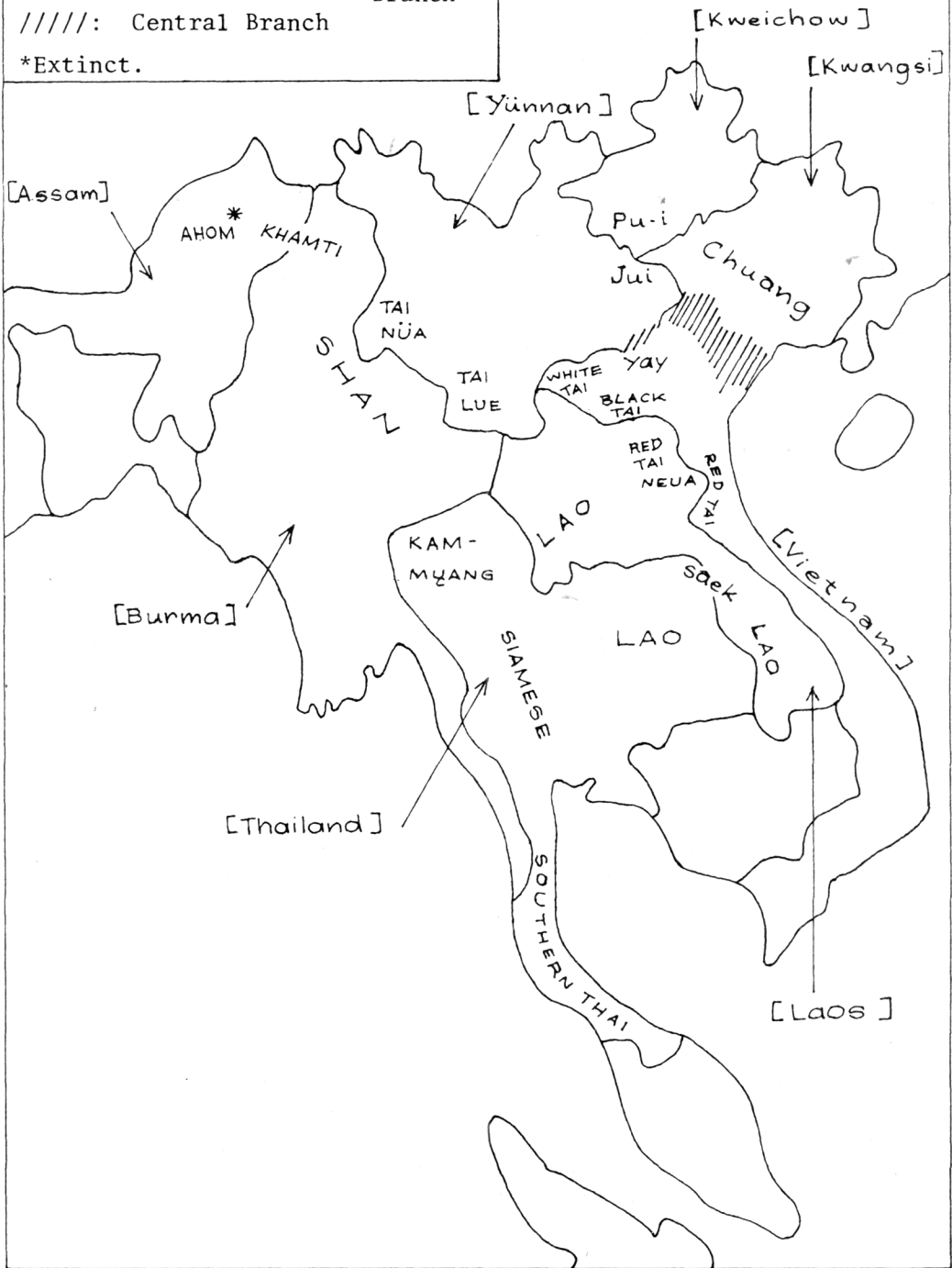
There is unfortunately no space to go into a discussion of possible explanations for this diversity in patterns of splits and mergers.

I should also say something about the classification of Tai dialects. On the basis of lexical and phonological differences the Tai family may be divided into three branches, Northern, Central and Southwestern (See figure 1). This tripartite classification was originally proposed by F.K. Li (1959, 1960) and is accepted by most people working in Tai dialectology. In the present study, I have restricted myself to the Southwestern and Central branches, which some scholars think form a natural grouping (Haudricourt's *Thai proprement dit* or "Tai proper") in opposition to the somewhat more distantly related Northern branch. (See Gedney 1967 pp. 71-76). I have also looked at a couple of Northern languages (Yay, Saek), which are in contact with the Southwestern and Central languages, but I have not included them in this paper.

Finally, I should mention that in the present study I have only looked at tones on citation forms of words pronounced in isolation. For a few Tai languages there exist descriptions of tones in connected speech, and at least two Tai languages (Tai Lue and Southern Thai) also have tone sandhi. In future research it will be necessary to extend the theories proposed here to account for tone sandhi and tones in connected speech.

Figure 1: Approximate general locations of some Tai languages.

CAPITALS: Southwestern Branch
 Capital and Lower Case: Northern Branch
 /////: Central Branch
 *Extinct.



There is, however, one important intonational consideration which affects some of the claims made in this paper. In many languages--including, I think, many Tai languages--declarative sentences tend to have a falling final intonational contour. This often also applies to single words in citation form. This falling contour may be superimposed on tones: thus it has often been reported that in Siamese the *sɿaŋ sə:man* or mid tone (A-*p*?b*b) is level phrase internally but has a slight terminal fall before a pause. For most of the dialects discussed in this paper there is no information on pre-pausal versus non-pre-pausal allo-tones, but the considerations outlined above should be kept in mind when evaluating the data presented in this paper.

3. Scope and goals of the paper

This paper aims to lay some of the groundwork for a reconstruction of the tone shapes of Proto-Tai by working back in time from the tone shapes in modern dialects. The tone shapes of Tai dialects are very diverse. I have tried to bring some order out of that diversity by reducing the dozens of different Tai tone-shape systems to a small number of basic types.

Each type represents a hypothetical set of tone shapes from which the actual tone shapes of the different dialects assigned to that type can be derived by various sound changes.

I believe that these types are due to areal convergence rather than genetic inheritance and that they may represent the way the tones were actually pronounced in different portions of the Tai-speaking domain at the time of the Great Tone Split. If we accept these reconstructions--perhaps we can call them "proto-areas"--then we can use them as a basis to reconstruct the tone shapes of Proto-Tai, since the tone shapes of each proto-area must represent a local modification of the tones which that locality inherited from Proto-Tai and which then spread to contiguous dialects.

I have relied extensively on the work of J. Marvin Brown (1962, 1965, 1975), who is a pioneer in the historical-comparative reconstruction of Tai tone shapes.⁴ Brown (1962, 1965) proposed various changes in the heights and contours of tones to connect his reconstructed ancestral tone shapes with the modern attested shapes. But he did not systematically discuss these changes and he did not systematically present evidence for their plausibility.

Brown (1975) remedies this lack with regard to changes in pitch height, but not with regard to changes in contour. Brown's notions of "gravity" and "tonal repulsion", and his explanation for tone changes, based on the dynamic interplay of tones in an integrated system (see especially Brown 1975, pp. 40-42), inspired this paper. I hope to add to Brown's work both by presenting a large amount of additional evidence

which puts his theory on a much firmer basis, and by expanding the theory in new directions.

In the present paper I am concerned with changes in contour. In particular, I am concerned with changes in contour affecting tone A. I want to hypothesize that in certain dialects tone A was originally a rising tone. In many of these same dialects some of the modern reflexes of tone A are not rising. So in order to save my hypothesis I must give evidence for a tone change that changes a rising tone to a non-rising one. This is the topic of this paper.

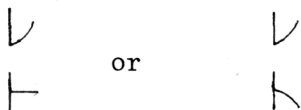
This proposed tone change is as follows: the higher of two rising tones becomes level or falling, and the lower of two falling tones becomes level or rising.⁵



This change is not a language universal. It is a language-specific change, characteristic especially of Tai dialects in Burma, in northern, central and northeastern Thailand, and in central and southern Laos.

Why should this tonal change occur? It might be because the lower a tone starts, the more room there is for it to rise; conversely, the higher a tone starts, the more room there is for it to fall. A listener, hearing a rise, may therefore think of the tone as starting low, even in cases (such as the Shan and Khün dialects spoken in Kengtung or the Lue dialect spoken in Houei Lao) where it actually starts at around mid. Conversely, hearing a fall, a listener may think of the tone as starting high. Thus, in order to make two tones which originally had the same contour but which differed in height sound as different as possible, the speaker may add a difference in contour. Even when two tones differ in both height and contour, the speaker may still add further contour differences to reinforce the height differences, for example, changing a high slightly falling tone to a high sharply falling one. This explanation was first proposed to me by Brenda Johns. A similar phenomenon might be the glottalization associated with low pitch in, for example, certain varieties of Chinese and English, which perhaps helps to reinforce the impression of lowness. Here I will present comparative evidence for the sound change postulated above.

I will discuss dialects in which the lower of the two A-tones is rising but the higher of the two A-tones is level or falling:







In some cases these dialects will be shown to be closely similar to dialects in which both A-tones are rising which I claim was the original state of

✓
✓

affairs. A similar line of argumentation can be followed for dialects in which the higher of the two B or C tones is falling but the lower is level or rising, but there is not space for it here.

I have assumed two hypotheses. The first is that tone systems which are somewhat similar now were more similar in the past. For example, compare the A-tones of Chiang Mai and Chiang Rāi:

	Chiang Mai	Chiang Rāi
A-*ph*p		
A-*ʔb*b		

Why does A-*ph*p have the same shape in Chiang Mai and Chiang Rāi? Coincidence? Possibly, but when one considers that A-*ph has approximately this shape in dozens of dialects from Yünnan to Bangkok, and when one considers that these dozens of tone systems are similar to each other in other ways as well, coincidence as the sole explanation seems unlikely.

This leaves three possible explanations: 1) naturalness, 2) genetic inheritance and 3) areal convergence. Naturalness seems very unlikely because there are also dozens of Tai dialects where A-*ph is not low rising at all but something totally different such as mid level or high falling. On the other hand both genetic inheritance and areal convergence are possible: as it happens, there is evidence which suggests that the main explanation is areal convergence, although a certain amount of independent parallel evolution may have occurred as well. Genetic inheritance seems less likely. This issue will be discussed briefly in the last section of this paper.

But then it seems very strange that the A-*ph tones would converge and not the A-*b tones. Tone systems, after all, are coherent wholes: tones are perceived in terms of their relationships to other tones in the system. It seems much more plausible that at one time the whole tone system of Chiang Mai was similar to the whole tone system of Chiang Rāi and that in one or the other language certain sound changes have occurred making them less similar. This paper will deal with the sort of sound changes that might have been involved.

My second hypothesis is that the Great Tone Split initially affected mainly the height of the pitch rather than the shape of the pitch. That would mean that Chiang Rāi in which both A-tones are rising is closer to the situation at the time right after the tone split than is Chiang Mai.

This is perhaps the weakest point in my whole theory; the hypothesis was adopted faute de mieux in the absence of any clear evidence to the contrary. Until this hypothesis can be proven or disproven, the ideas in this paper have to be regarded as a provisional typology. It will be necessary to examine some of the acoustic and physiological evidence bearing on this hypothesis and also the evidence from tone splitting in non-Tai, non-East-Asian languages such as Punjabi.

If we accept these two hypotheses, then the tone systems under consideration here can be classified into several groups. I have set up twelve groups, whose probable approximate distribution is shown in figure 2.

The remainder of this paper is devoted to presenting the evidence for these groups. Here I have chosen to present a portion of the evidence concerning the Lān Nā group. I chose this group because there is a lot of data available for it and because it is one of my strongest examples. The focus will be on the reflexes of Proto-Tai tone A, with some discussion of B and C tones insofar as they provide evidence bearing on the A-tones.

4. The Lān Nā group

This group comprises primarily the Kam Muang (also called Tai Yuan, Northern Thai) dialects of Northern Thailand, the old kingdom of Lān Nā. But there are outliers to the east and to the south. The following are the tone systems which I put in the Lān Nā group (see figure 3):

KAM MUANG: Chiang Saen, Bān Dū, Chiang Rāi, rural Chiang Rāi Province (district of the city of Chiang Rāi, and Mae Chan district), Chiang Kham, Nān, tambon Na Luang (Sā district), Phrae, Lampāng, Lamphūn, Chiang Mai, Hēt.

Language name not stated: Phayao, Tāk

TĀK DIALECT:⁶ Hua Diat, Wat Phrāo, Chiang Thōng, and villages in Tāk district.

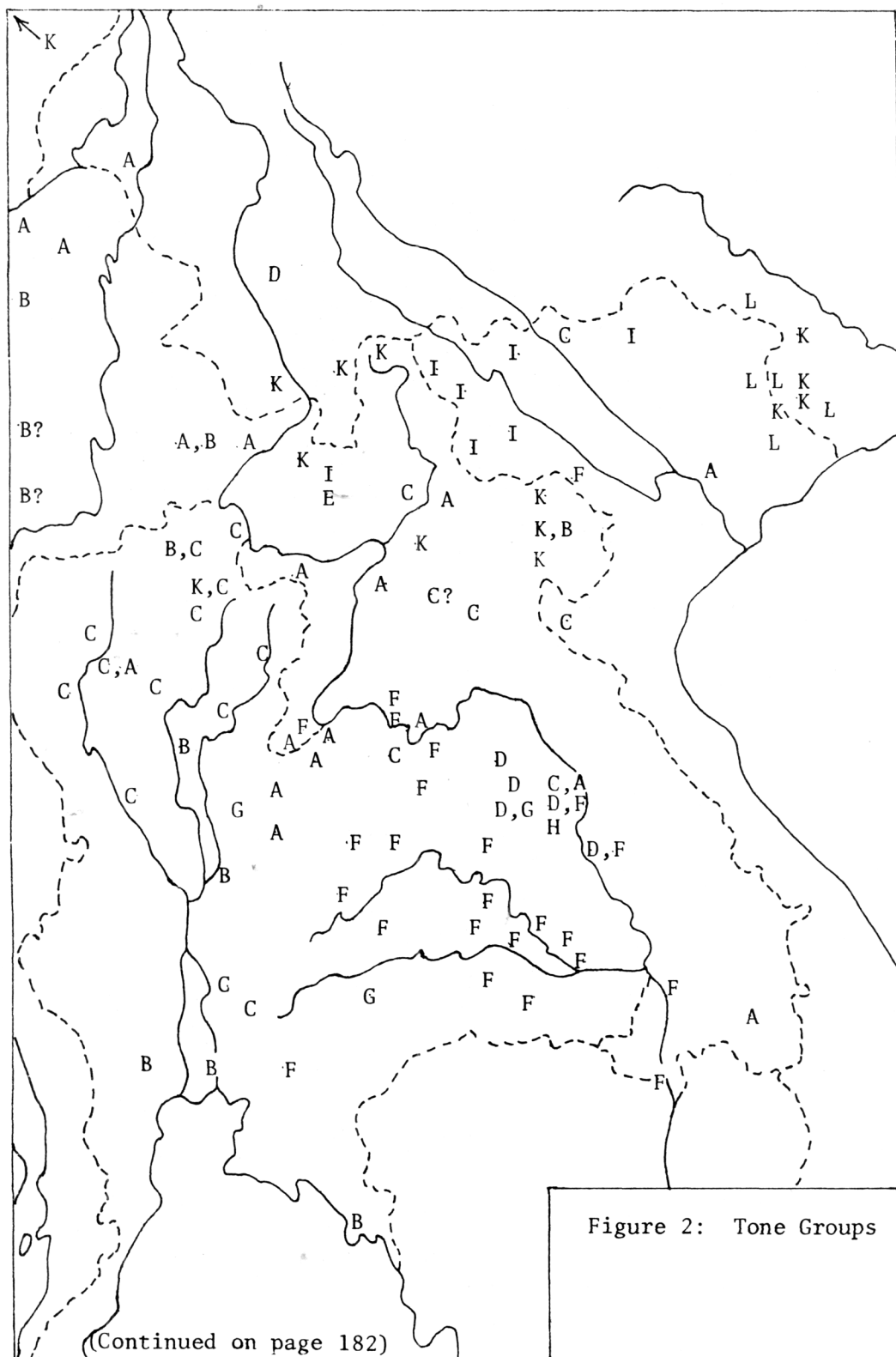
LAO YUAN: Lopburī and Saraburī provinces.

PHUAN: Lopburī and Saraburī provinces, Xieng Khouang, Bān Khō, Bān Mī, and probably also Tran Ninh.⁷

Language name not stated: Xieng Khouang

LAO: Xieng Khouang

NYŌ: Thā Uthēn⁸





KEY

- A Mau-Kengtung
- B Shan-Siamese
- C Lān Nā
- D Phūthai-Mengvo
- E Yai Nam Fa
- F Southern Lao
- G Yo-Kaleung-Khōrāt-Wangthōng
- H Saek
- I Sip Song Chu Tai
- J Southern Thai
- K Kwangsi-Sipsongpanna-Assam
- L Kwangsi-Langson

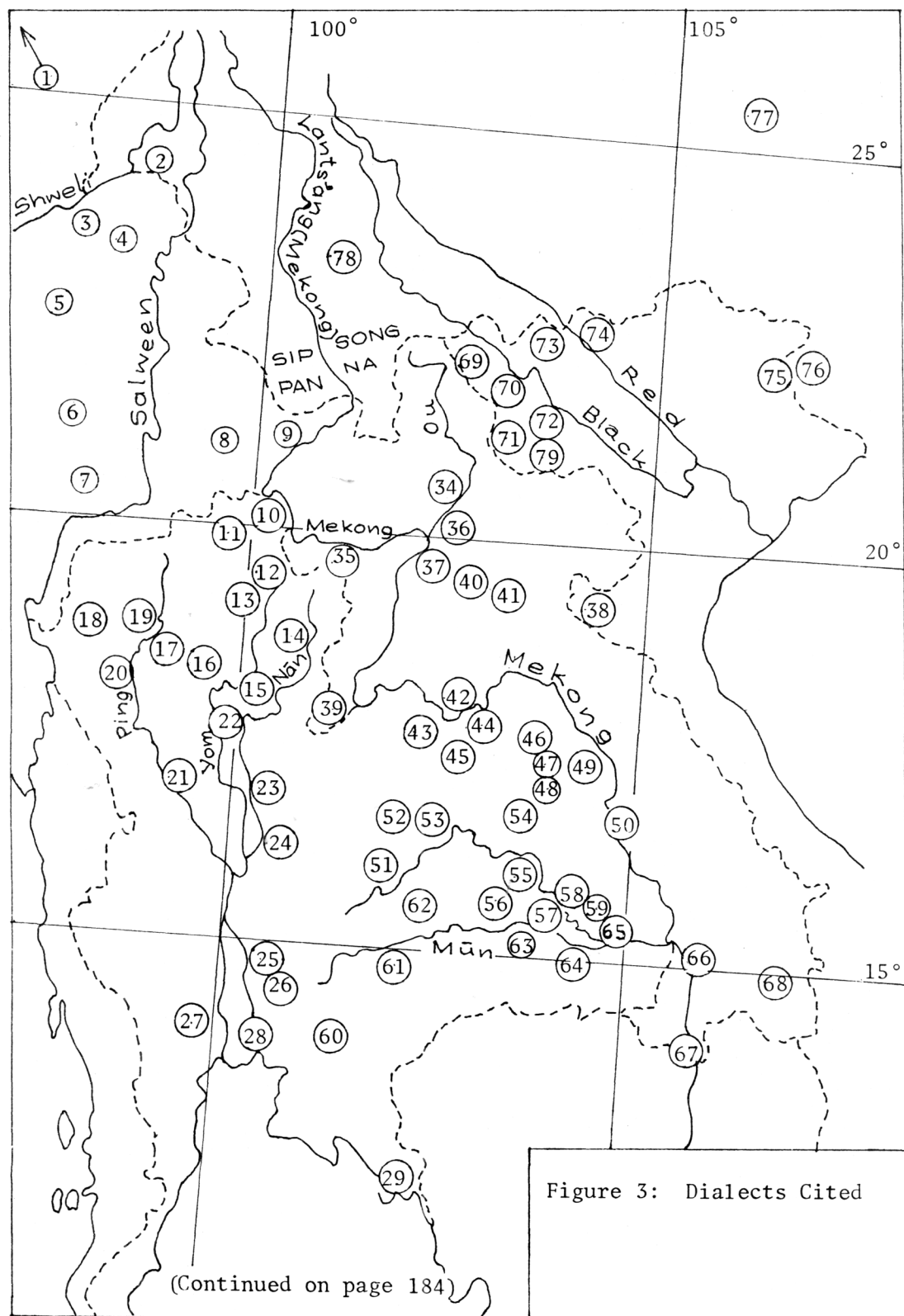
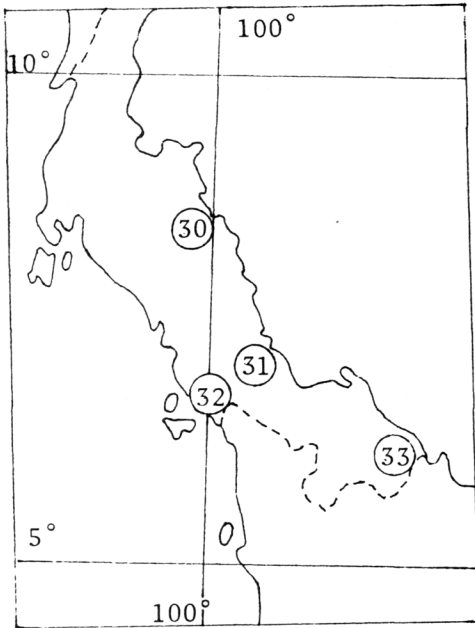


Figure 3: Dialects Cited



Numerical Key

1. Mān Chong Kham
2. Chefang
3. Nam Hkam
4. Hsen Wi
5. Hsi Paw
6. Lāi Hkā
7. Mǒng Nāi
8. Kengtung, Bān Veng
9. Mǒng Yawng
10. Chiang Saen
11. Mae Chan district, district of the city of Chiang Rāi, Bān Dū, Chiang Rāi
12. Chiang Kham
13. Phayao
14. Nān, tambon Na Luang
15. Phrae
16. Lampāng
17. Lamphūn, Pāsāng, Bān Sī Bun Yūn
18. Mae Hōng Sōn
19. Chiang Mai
20. Hōt
21. Hua Diat, Wat Phrāo, Chiang Thōng, villages in Tāk district, Tāk
22. Uttaradit
23. Wang Thōng
24. Taphān Hin
25. Bān Mī, Lopburī province
26. Saraburī province
27. Ū Thōng
28. Bangkok
29. Trāt
30. Nakhōn Sī Thammarāt
31. Songkhālā
32. Satūn
33. Tāk Bai
34. Nam Bac
35. Houei Lao
36. Pak Seng
37. Luang Prabang
38. Muong Sen
39. Kene Thao
40. Tran Ninh
41. Xieng Khouang
42. Vientiane
43. Bān Khō
44. Nōng Khāi
45. Udōn (Udōn Thānī)
46. Wanōn Niwāt
47. Waritchaphum, Phannanānikhom (Phannānikhom)
48. Sakon Nakhōn
49. Thā Uthēn, Nakhōn Phanom
50. Pak Sébang Fai, Savannakhet, Dong Keun
51. Chaiyaphūm, Khōn Sawan
52. Ban Nong Na Kham
53. Khōn Kaen
54. Sahatsakhan
55. Rōi-et, Thawatburī
56. Wāpīpathum
57. Phanom Phrai
58. Yasōthōn, Kham Khuan Kao
59. Muang Sām-sip
60. Pračhantakhām
61. Khōrāt (Nakhōn Rāтчasīma)
62. Bua Yai, Non Phet
63. Thā Tūm
64. Sī Sakēt
65. Ubon (Ubon Rāтчathānī)

(Continued on page 185)

Numerical Key

66. Pakse
67. Sithandone province, Khong
68. Attopeu
69. Mong Te (Muong Te)
70. Mong Lai (Lai Chau)
71. Muong Theng (Dien Bien Phu)
72. Muong Pieng, Ban Chieng Di, Muong Muoi (Thuan Chau)
73. Cha Pa, Muong Hum
74. Ban Lao, Muong Khuong
75. That-Khe
76. Lungchow
77. Lu-jung
78. Meng Vo
79. Sop Cop

Alphabetical Key

(including approximate longitude and latitude)

Attopeu: 68 (107E, 15N)
Ban Chieng Di: 72 (104E, 22N)
Bān Dū: 11 (100E, 20N)
Bangkok: 28 (100E, 14N)
Ban khō: 43 (103E, 18N)
Ban Lao: 74 (104E, 23N)
Bān Mī: 25 (101E, 15N)
Ban Nong Na Kham: 52 (102E, 17N)
Ban Plai Klong: 29 (103E, 12N)
Bān Sī Bun Yūn: 17 (99E, 19N)
Bān Veng: 8 (100E, 21N)
Bua Yai: 62 (102E, 16N)
Chaiyaphūm: 51 (102E, 16N)
Cha Pa: 73 (104E, 22N)
Chefang: 2 (98E, 24N)
Chiang Kham: 12 (100E, 20N)
Chiang Mai: 19 (99E, 19N)
Chiang Rāi: 11 (100E, 20N)

Chiang Rāi province (dist. of the city of Chiang Rāi and Mae Chan dist.): 11 (100E, 20N)
Chiang Saen: 10 (100E, 20N)
Chiang Thōng: 21 (99E, 17N)
Chieng Pōc: probably near 71 or 72
Dien Bien Phu (Muong Theng): 71 (103E, 21N)
Dong Keun: 50 (105E, 17N)
Hōt: 20 (99E, 18N)
Houei Lao: 35 (101E, 20N)
Hsen Wi: 4 (98E, 23N)
Hsi Paw: 5 (97E, 23N)
Hua Diat: 21 (99E, 17N)
Kaleung: vicinity of 48 (104E, 17N)
Kene Thao: 39 (101E, 18N)
Kengtung: 8 (100E, 21N)
Kham Khuan Kaeo: 58 (104E, 16N)
Khong: 67 (106E, 14N)
Khōn Kaen: 53 (103E, 16N)
Khōn Sawan: 51 (102E, 16N)
Khōrāt (Nakhōn Rāṭhasīmā): 61 (102E, 15N)
Koh Khwaang: 29 (103E, 12N)
Lai Chau (Mong Lai): 70 (103E, 22N)
Lai Chau province: 69, 70 (103E, 22N)
Lāi Hkā: 6 (98E, 21N)
Lampāng: 16 (100E, 18N)
Lamphūn: 17 (99E, 19N)
Lao Ngao: 25, 26 (101E, 15N)
Lao Yuan: 25, 26 (101E, 15N)
Lopburī province: 25 (101E, 15N)
Luang Prabang: 37 (102E, 20N)
Lu-jung: 77 (106E, 25N)
Lungchow: 76 (107E, 22N)
Mae Chan district: 11 (100E, 20N)
Mae Hōng Sōn: 18 (98E, 19N)
Mān Chong Kham: 1 (96E, 28 or 29N: not on map)
Meng Vo: 78 (101E, 23N)
Minot's Thay Blanc: NW Vietnam or adjacent areas of Yūnnan: exact locality not specified.

(Continued on page 186)

Alphabetical Key

- Mong Lai (Lai Chau): 70
 (103E, 22N)
 Mōng Nāi: 7 (98E, 20N)
 Mong Te (Muong Te): 69 (103E, 22N)
 Mōng Yawng: 9 (100E, 21N)
 Muang Sām-sip: 59 (105E, 16N)
 Muong Hum: 73 (104E, 23N)
 Muong Khuong: 74 (104E, 23N)
 Muong Muoi (Thuan Chau): 72
 (104E, 21N)
 Muong Pieng: 72 (104E, 22N)
 Muong Sen: 38 (104E, 19N)
 Muong Te (Mong Te): 69 (103E, 22N)
 Muong Theng (Dien Bien Phu): 71
 (103E, 21N)
 Nakhōn Phanom: 49 (105E, 17N)
 Nakhōn Rāṭchasiṁā (Khōrāt):
 61 (102E, 15N)
 Nakhōn Sī Thammarāt: 30
 (100E, 8N)
 Na Luang: 14 (101E, 19N)
 Nam Bac: 34 (103E, 21N)
 Nam Hkam: 3 (98E, 24N)
 Nān: 14 (101E, 19N)
 Nōng Khāi: 44 (103E, 18N)
 Non Phet: 62 (103E, 15N)
 Pakse: 66 (106E, 15N)
 Pak Sébang Fai: 50 (105E, 17N)
 Pak Seng: 36 (103E, 20N)
 Pāsāng: 17 (99E, 19N)
 Phannanānikhom (Phannānikhom):
 47 (104E, 17N)
 Phanom Phrai: 57 (104E, 16N)
 Phayao: 13 (100E, 19N)
 Phrae: 15 (100E, 18N)
 Praṅchantakhām: 60 (102E, 14N)
 Repatriated Lao: some 80 km
 E of Vientiane (42)
 Rōi-et: 55 (104E, 16N)
 Rural Chiang Rāi province
 (dist. of the city of
 Chiang Rāi and Mae Chan
 dist.): 11 (100E, 20N)
 Sahatsakhan: 54 (104E, 17N)
 Sakon Nakhōn: 48 (104E, 17N)
 Saraburī province: 26
 (101E, 15N)
 Savannakhet: 50 (105E, 15N)
 Šin Fong Yiw: probably near 74
 Sī Sakēt: 64 (104E, 15N)
 Sithandone province: 67
 (betw. 105 & 106E, 14N)
 Songkhla: 31 (101E, 7N)
 Sop Cop: 79 (104E, 21N)
 Tāk: 21 (99E, 17N)
 Tāk Bai: 33 (102E, 6N)
 Tāk Dialect: 21 (99E, 17N)
 Tāk District: 21 (99E, 17N)
 tambon Na Luang: 14 (101E, 19N)
 Taphān Hin: 24 (100E, 16N)
 That-Khe: 75 (107E, 22N)
 Thā Tūm: 63 (104E, 15N)
 Thā Uthēn: 49 (105E, 18N)
 Thawatburī: 55 (104E, 16N)
 Thuan Chau (Muong Muoi): 72
 (104E, 21N)
 Tran Ninh: 40 (103E, between 19
 & 20N)
 Trāt: 29 (103E, 12N)
 Ubon (Ubon Rāṭchathānī): 65
 (105E, 15N)
 Udōn (Udōn Thānī): 45 (103E, 17N)
 Ū Thōng: 27 (100E, 14N)
 Uttaradit: 22 (100E, 18N)
 Van Poong Tong: in Sip Song Pan
 Na (Sip Song Pan Na lies between
 100 and 102E and between 21
 and 23N)
 Vientiane: 42 (103E, 18N)
 Wang Thōng: 23 (100E, 17N)
 Wānōn Niwāt: 46 (104E, 18N)
 Wāpīpathum: 56 (103E, 16N)
 Wāritchaphūm: 47 (104E, 17N)
 Wat Phrāo: 21 (99E, 17N)
 Xiang Khouang: 41 (103E, 19N)
 Yasōthōn: 58 (104E, 16N)

Language name not stated: Muong Sen

WESTERN NUNG: Ban Lao, Muong Khuong, Šin Fong Yiw
and probably also

LAO NGAE0: Lopburī and Saraburī provinces

Language name not stated: Tāk Bai

Language name not stated: Nam Bac

The last three dialects listed--Lao Ngaeo (Khanittanan 1973), Tāk Bai (Brown 1962, 1965, dialect #79) and Nam Bac (Dejvongsā, Soulisak, Koxayo and Chamberlain 1972, p. 9, dialect #2)--will not be further discussed here.⁹

Figure 4 shows representative tone systems of the Lān Nā type. There is not space here to present my complete body of Lān Nā group data.¹⁰

All these Lān Nā type tone systems (other than Lao Ngaeo, Tāk Bai, and Nam Bac) share the following characteristics:

1. A-*ph is rising and starts lower than A-*b. (Except for the Western Nung dialects spoken in Ban Lao and Muong Khuong.¹¹)
2. A-*b varies in contour but always starts higher than A-*ph (with the possible exceptions of Ban Lao and Muong Khuong: see footnote 11).
3. B-*ph is level or falling. In many cases it starts lower than B-*b.¹²
4. B-*b is falling. In many cases it starts higher than B-*ph (see footnote 12).
5. At least one of the two C-tones is usually falling.
6. Usually, but not always, the C-tones are glottalized.

The B and C tones in these dialects exhibit somewhat complex relationships to one another. These are as follows:

(a) The two *ph*p*?b tones (i.e. B-*ph*p*?b and C-*ph*p*?b) are level or only slightly falling.¹³

(b) The two *b-tones are sharply falling. This is true in Chiang Rāi and in other Kam Muang tone systems which are similar to that of Chiang Rāi, viz. rural Chiang Rāi province (Mae Chan district and

Chiang Rāi (KAM MUANG) (Brown)
A B C

*ph			
*p			
*ʔb			
*b			

Chiang Mai (KAM MUANG) (Brown)
A B C

*ph			
*p			
*ʔb			
*b			

Thā Uthēn (NYŌ) (Gedney)
A B C

*ph			
*p			
*ʔb			
*b			

Xieng Khouang (PHUAN) (Dejvongsa et al.)
A B C

*ph			
*p			
*ʔb			
*b			

Muong Sen (Dejvongsa et al.)
A B C

*ph			
*p			
*ʔb			
*b			

Ṣin Fong Yiw (W. NUNG) (Gedney)
A B C

*ph			
*p			
*ʔb			
*b			

Figure 4: Representative Lān Nā

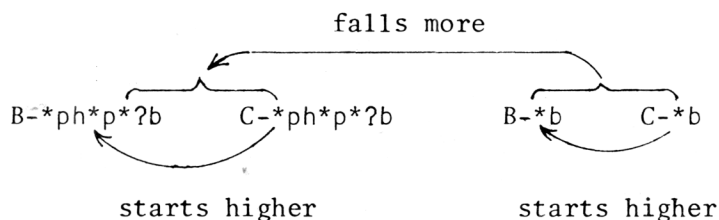
district of the city of Chiang Rāi), Chiang Saen, Bān Dū, Chiang Kham, Phrae,¹⁴ Nān, tambon Na Luang (Sā district), Lampāng, and Lamphūn. Elsewhere it is only partially true.

First, in Muong Sen the *b-tones are only slightly falling; nonetheless they do agree with Chiang Rāi, etc., in that they do fall more than the *ph*p*?b tones do, since the latter are level.

Second, in certain dialects, although B-*b is high falling the way it is "supposed" to be, C-*b is rising-falling (e.g. most descriptions of Chiang Mai, Phuan Xieng Khouang), rising (e.g., Thā Uthēn), or level (e.g. Šin Fong Yiw). I shall argue that in these dialects C-*b was originally high falling.

(c) Each C-tone starts higher than the corresponding B-tone, i.e. C-*ph*p*?b starts higher than B-*ph*p*?b and C-*b starts higher than B-*b. This is completely true in Chiang Rāi and in the other Kam Muang dialects which are like Chiang Rāi (Chiang Saen, etc.), as well as in Muong Sen. In the dialects where C-*b has become rising-falling, rising or level, we find that the generalization still holds for C-*ph*p*?b and B-*ph*p*?b, but it no longer holds for C-*b and B-*b, because C-*b and B-*b start at roughly the same level. I shall argue that in these dialects C-*b originally started higher than B-*b, and that it is precisely because it started higher that it has become rising-falling, rising, or level.

These hypothesized relationships can be diagrammed thus:



As we have seen, this diagram is true for many Kam Muang dialects and for Muong Sen. For the other dialects I think it used to be true. The detailed evidence for this statement will unfortunately have to wait till a later paper devoted to B and C tones, as there is not space for it here.

These particular relationships among the B and C tones distinguish the Lān Nā group from other groups which are otherwise similar to the Lān Nā group. Examples from some of these other groups will also be treated here.

In order to account for the similarities among the tone shapes in the dialects of the Lān Nā type, I hypothesize that these dialects started out with identical tone shapes, and arrived at their present conditions via various sound changes.

I would like to make a number of initial hypotheses about the reconstructed common ancestor of all these tone systems. These hypotheses are in accord with the two general hypotheses proposed in section two. First, since we always find that at least one of the A-tones is rising, and since frequently both of them are rising, I will hypothesize that in the proto system both A-tones were rising.¹⁵ Since one or both B-tones is always falling I hypothesize that in the proto-system both B-tones were falling. Since one or both C-tones is usually falling, I hypothesize that both C-tones were also falling. Perhaps also the C-tones were glottalized since they usually are in the modern dialects.

Since A-*b always starts higher than A-*ph (with the possible exception of certain Western Nung dialects) and since B-*b often starts higher than B-*ph, I would like to suggest that *b-class initials conditioned higher starting points. We set aside for the time being the difficult question of the tones of the *p and *ʔb-classes, which we see sometimes merge with those of the *ph-class and sometimes with those of the *b-class according to the particular Proto-Tai tone involved and according to the dialect.

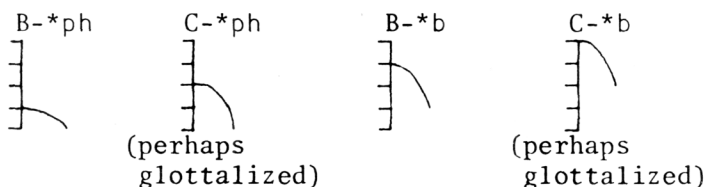
We have observed a tendency for C-tones to start higher than the corresponding B-tones and I reconstruct this for the proto-system as well. We have also observed a tendency for G-*ph and B-*ph to fall only slightly (if at all) whereas C-*b and B-*b fall sharply. But we have already posited that *ph-tones started lower than *b-tones, and therefore that C-*ph and B-*ph started lower than C-*b and B-*b. In accordance with the hypothesis that falling less is a consequence of starting lower, we can make the following hypothesis about the relative starting points of the four C and B tones:

(1) B-*ph started lower than C-*ph because it still does start lower in all the attested dialects.







(2) C-*ph started lower than B-*b because it falls less than B-*b.

(3) B-*b started lower than C-*b because it still starts lower than C-*b in many dialects.

So I reconstruct these four tones thus for "Proto Lān Nā":



For the whole system I reconstruct this:

	A	B	C
*ph			
*b			

The dialect of Kam Muang spoken in Chiang Rāi is still fairly close to this reconstructed system.

Notice that my reconstruction omits the *p and *ʔb classes. As I mentioned earlier, the tones that developed after *p-consonants and after *ʔb-consonants are sometimes like those that developed after *ph-class consonants, sometimes like those that developed after *b-class consonants, and sometimes like neither, depending on the particular Proto-Tai tone involved and depending on the dialect. This problem has been discussed by various authors, for example, Hartmann (1977), Haudricourt (1972), Gedney (1970b), Li (1977, pp. 43-53).

My reconstruction rests on a number of unsubstantiated hypotheses. In this and future papers I will substantiate them. Let us first review briefly what these hypotheses are and what must be done to substantiate each one:

1. I hypothesized that both A-tones were originally rising. I must show why in some dialects one of the A-tones is not rising.

2. I hypothesized that both B-tones were originally falling. I must show why in some dialects one of the B-tones is not falling.

3. I hypothesized that both C-tones were originally falling. I must show why in some dialects one of the C-tones is not falling.

4. I hypothesized that the tones which developed after *b-class initials were in every case higher than their counterparts after *ph-class initials. If so, (1) why are there cases in the modern dialects in which a *b-class tone is not higher than its *ph-class counterpart, and (2) why should *b-class initial consonants condition higher allotones of tones in the first place? To a very large extent, these two questions have already been answered by Brown (1975).

5. The reconstruction of the relationship between the B and C tones rests on two hypotheses: (1) that in dialects like Chiang Mai, Thā Uthēn, and Šin Fong Yiw--in which C-*b is now rising-falling, rising, or level--C*b was originally falling: I must show why C-*b changed in these dialects; (2) that lower tones tend to fall less: I must give evidence for this.

This paper will substantiate hypothesis #1, that both A-tones were originally rising in the Lān Nā dialects. (Some of the evidence used to substantiate hypothesis #1 also bears on hypotheses 2, 3 and 5.)

5. If both A-tones were originally rising, why are there many dialects in which A-*b is level or falling?: The Lān Nā A-tones.

I will now proceed to substantiate hypothesis #1. First it should be pointed out that there are many dialects in which both A-tones are still rising. This is true in all the Kam Muang dialects on which I have data except for those in the southwest corner of the Kam Muang-speaking area (Chiang Mai, Hōt, Tāk Dialect, and probably Tāk)¹⁶, those in the northeast corner (Chiang Saen, Bān Dū), and possibly Phayao (see footnote 15). Thus both A-tones are rising in Chiang Rāi, rural Chiang Rāi province (district of the city of Chiang Rāi and Mae Chan district), Phrae, Nān, tambon Na Luang (Sā district), Lampāng, and Lamphūn.¹⁷

Both A-tones are also rising in the Tai dialect spoken in Muong Sen, in central Vietnam, near the Lao border.

Second, it should be pointed out that in the dialects presently under discussion, the A-*ph tone, which is the lower of the two A-tones, is always rising. If one of the A-tones is non-rising, it is always A-*b, the higher of the two, which is non-rising. This leads us to the following hypothesis:

Higher tones tend to be non-rising.

There is abundant evidence for this. First of all, within the Lān Nā group we have the following dialects in which A-*ph (lower) is rising and A-*b (higher) is level (le) or has a slight fall (fa):

KAM MUANG: Chiang Mai (fa, le)¹⁸, Hōt (le)

Language name not stated: perhaps Phayao (fa?), perhaps Tāk (fa?)
[see footnote 16]

TĀK DIALECT (le)

LAO YUAN (le)

PHUAN: Xieng Khouang (le), Bān Khō (le), Bān Mī (le), Lopburī and Saraburī provinces (le)

Language name not stated: Xieng Khouang (le)

LAO: perhaps Xieng Khouang (fa?)¹⁹

WESTERN NUNG: Ǟ̃ Sin Fong Yiw (1e), and perhaps Ban Lao (1e) and Muong Khuong (1e).²⁰

In a variety of Ny̯ spoken in Thā Uthēn (William Gedney, field-notes; different from the Thā Uthēn Ny̯ described by Simmonds [1965] which belongs to my Mau-Kengtung group) the change appears to be in progress, since Gedney recorded both mid rising and mid level as pronunciations of the A-*b tone in this dialect (see figure 4).²¹

6. The Shan A-tones

Outside of the Lān Nā group we also find many cases where the lower of the two A-tones is rising, and the higher of the two A-tones is level or falling. First I will describe three cases where there are several closely similar tone systems in one of which both A-tones are rising and in the others the higher of the two A-tones has become level or falling. These are Shan, Yo-Kaleung, and Lao.

In a Shan dialect spoken in Chiang Rāi by immigrants from Kengtung (Brown 1962, 1965 dialect #4, and see Brown 1962, p. 13; Brown 1965, p. 13) both A-tones are rising. In other Shan dialects (Hsen Wi, Hsi Paw) the lower of the two A-tones (A-*ph*p*?b) is rising, and the higher (A-*b) is level.²²

Figure 5 shows that these dialects are similar in other respects. Observe that they have the following features in common: 1) all three Proto-Tai tones undergo the split *ph-*p-*?b vs *b; 2) A-*ph*p*?b starts low and rises; 3) A-*b starts higher than A-*ph*p*?b; 4) B-*ph*p*?b, B-*b, and C-*ph*p*?b are level or fall a relatively short distance, whereas C-*b falls a long distance; 5) if you look at the starting points of the B and C tones, you will see that in Hsen Wi, the order from lowest to highest is:²³

B-*ph*p*?b B-*b C-*ph*p*?b C-*b

In the other dialects, the order is the same except that the two middle categories--B-*b and C-*ph*p*?b--have merged. This merger is not surprising: first, note that Hsen Wi has three tones--B-*ph*p*?b, B-*b, and C-*ph*p*?b--which are similar in contour (level or slightly falling) and differ mainly in height. Now, outside of Southern Thai, only a couple or so of the Southwestern and Central Tai dialects have three tonemes distinguished mainly or entirely by pitch height: this seems to be a state of affairs which Tai speakers find difficult to maintain. The solution is either to change one or more of the tones to a different contour, or--as in Hsi Paw and Chiang Rāi Shan--to allow two of the tones to merge. Note that in Hsi Paw, at least, the outcome of this merger is defined simply as falling a relatively short distance and as non-low: the starting point of B-*b/C-*ph*p*?b in Hsi Paw seems to vary freely from mid to high.²⁴

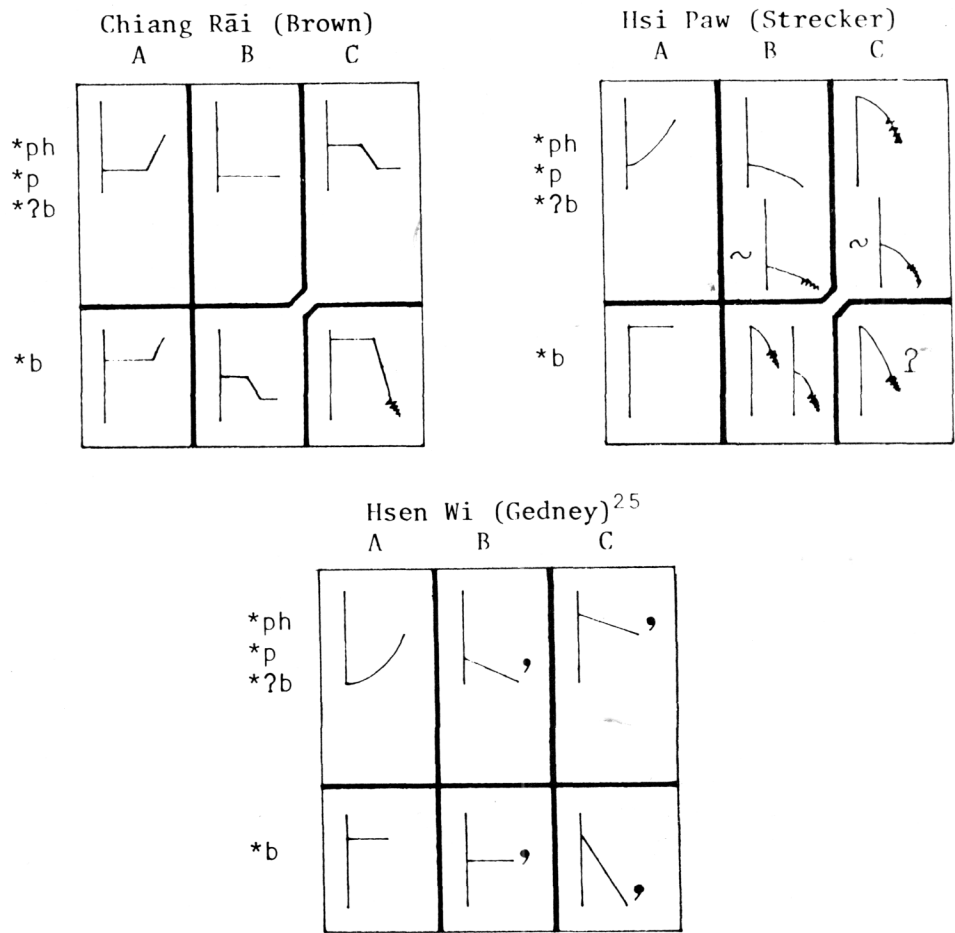


Figure 5
SHAN

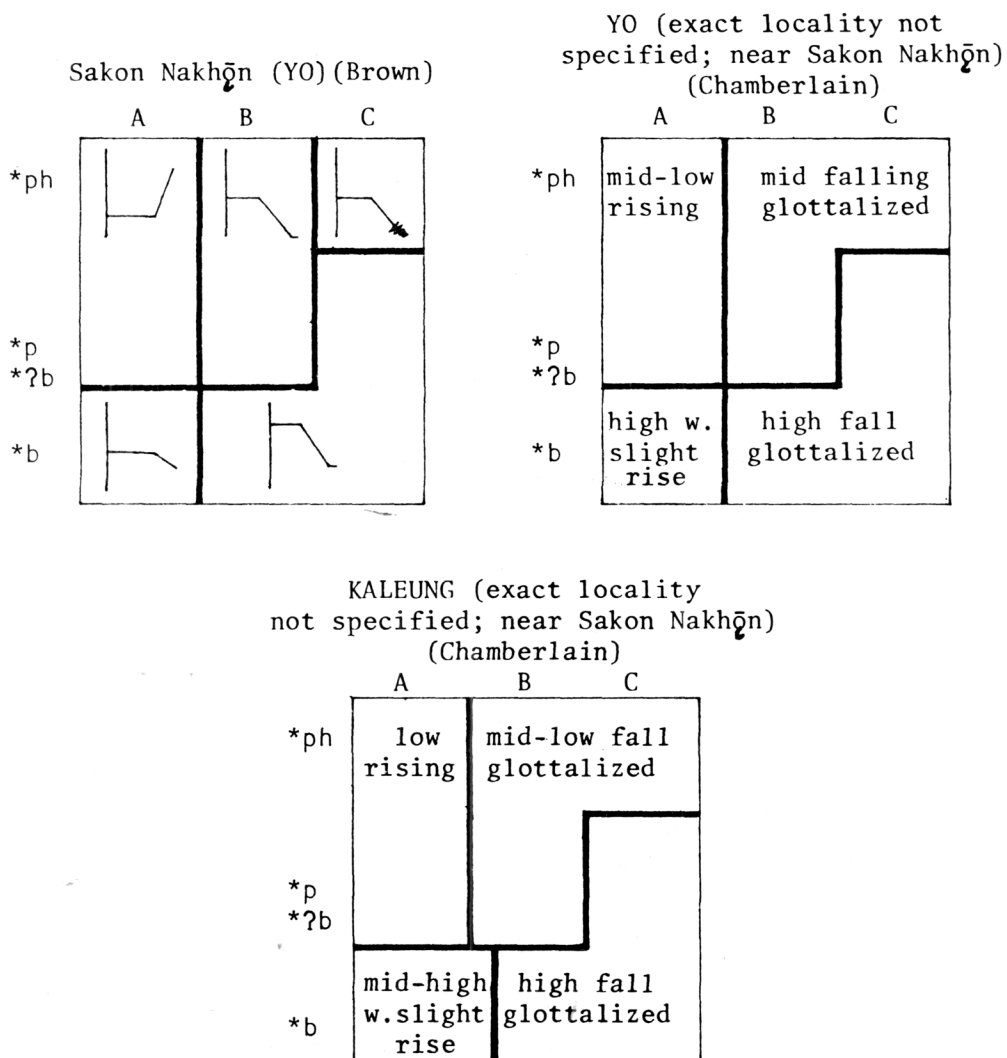


Figure 6
YO and KALEUNG

Thus, it is reasonable to suppose that the Hsen Wi B and C tones are close to an earlier stage from which Hsi Paw and Chiang Rai developed by means of a merger.

These similarities suggest that these Shan tone systems may have developed, perhaps in fairly recent times, from a common ancestor with the A-tones something like Chiang Rāi and the B and C tones something like Hsen Wi. If this is so, then the development of the A-*b tone in Hsen Wi and Hsi Paw is another example of the tonal change I have posited for the Lān Nā group.

7. The A-tones of Yo and Kaleung

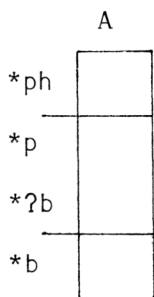
Yo and Kaleung are minority languages spoken in northeastern Thailand. The dialects on which information is available are shown in figure 6. It will be seen that these three tone systems are nearly identical. In the dialect described by Brown, B-*ph*p*?b and C-*ph differ only in that the latter is glottalized, whereas in the other two dialects even this difference has disappeared and the two tones have merged. Also, in the two dialects described by Chamberlain, B-*b/C-*p*?b *b is glottalized, whereas in Brown's dialect it is not.

Finally, there seem to be some slight differences among the three dialects in the exact height of the B and C tones (Chamberlain seems to have perceived slightly lower pitches in Kaleung than in Yo), but the relative pitch heights are the same in all three dialects. Aside from this, the three dialects differ only in the A-column: in Chamberlain's dialects both A-tones are rising, whereas in Brown's dialect the higher of the two A-tones has become non-rising (in this case slightly falling) just as we found in the Lān Nā dialects (figure 4) and in Shan (figure 5).

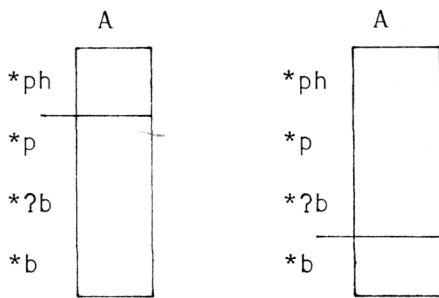
8. The A-tones of Central and Southern Lao

We now turn to Lao. The name Lao refers to a rather large and diverse group of dialects. I will be referring here to the dialects of central and southern Laos and northeastern Thailand, making up what Brown (1962, 1965, 1975) calls the Vientiane subgroup of Lao, and what Hartmann (1976a, p. 48; 1977) calls Central Lao and Southern Lao.

In most central and southern Lao dialects there are three A-tones, following the pattern:



Some central and southern Lao dialects have only two A-tones, but in otherwise very similar dialects the split may be either between *ph and *p or between *ʔb and *b:



Sĩ Sakēt, Thā Tūm Khōn Sawan, Ban Nong Na Kham

This suggests that these dialects as well may originally have had a three-way split in the A-column, and that some of them merged the top two boxes, while others merged the bottom two boxes.

We will look first at the Lao dialects with two-tone A-columns (figure 7). In Khōn Sawan, both A-tones are rising. In Sĩ Sakēt, Thā Tūm, and Ban Nong Na Kham the higher of the two A-tones is falling. That this relationship is not fortuitous is suggested by figure 7 which shows that all these dialects share the following characteristics:

1) A-*ph is rising and starts lower than A-*b, 2) B is level, 3) the C-tones split C-*ph vs C-*p*ʔb*b, 4) both C-tones are glottalized, 5) C-*ph is level and is lower than both C-*p*ʔb*b and B, 6) C-*p*ʔb*b is falling and starts higher than C-*ph.

Characteristics 1, 3, 4, and 6 are shared also by Vientiane (as described by Brown, etc.), Attoupeu, and the variety of Nakhōn Phanom recorded by William Gedney:²⁶ see figure 8: If these three dialects are included in our discussion and if we ignore the difference in the placement of the split in the A-column, then it is possible to set up a very neat phonetic progression of A-tones which might very well correspond to

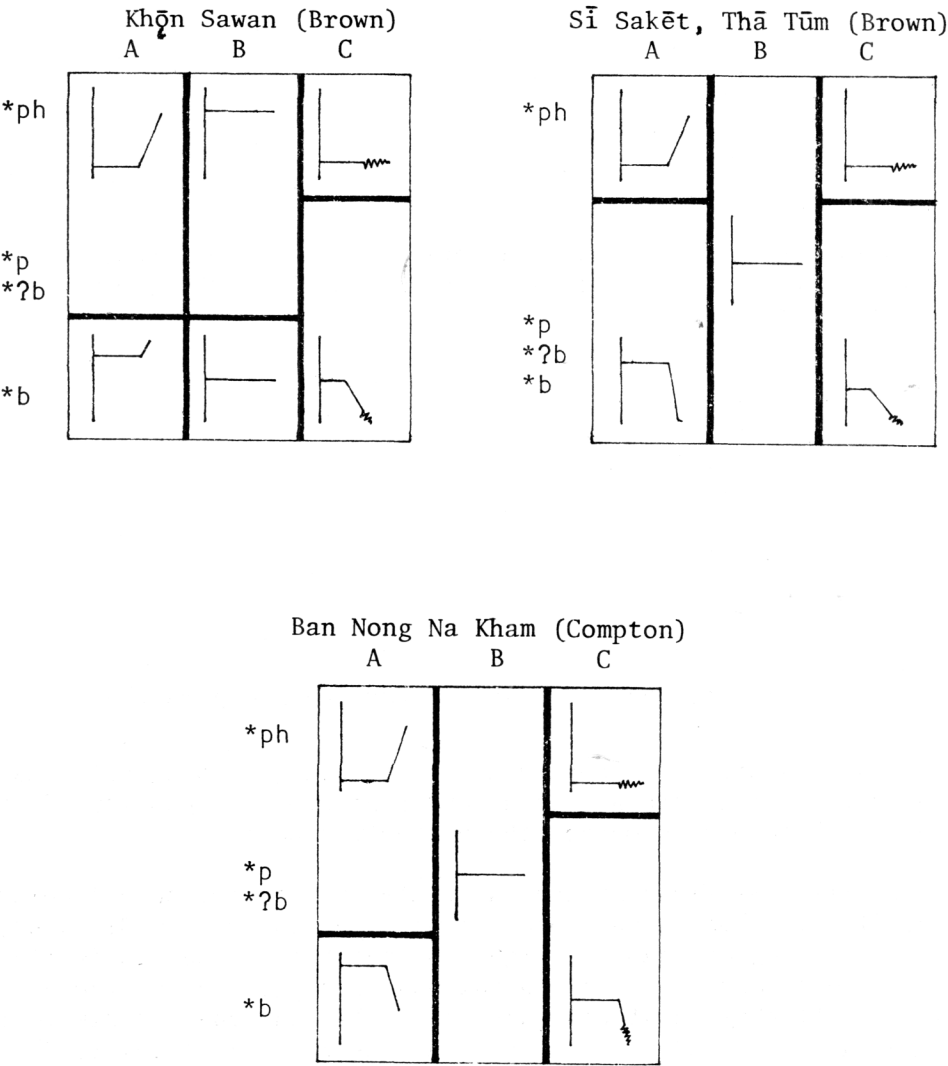
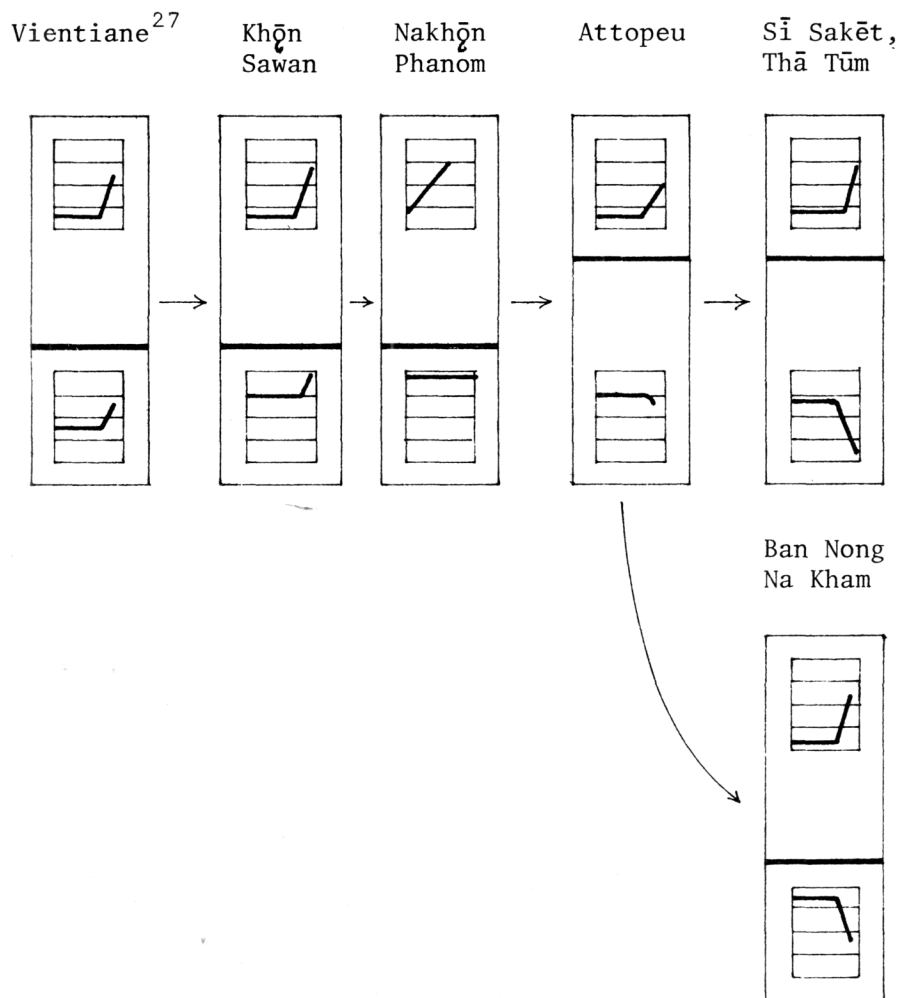


Figure 7
Lao Dialects with Two-Tone A-columns

the actual diachronic changes leading up to the final members of the progression (Sĩ Sakēt, Thā Tūm, and Ban Nong Na Kham):



VIENTIANE: A-column splits *ph*p*?b vs. *b:

	A-*ph*p*?b	A-*b	B	C-*ph	C-*p*?b*b
Brown	$\bar{1}\bar{1}\bar{3}$	$\bar{3}\bar{3}\bar{3}$	$\bar{2}\bar{2}$	$2\bar{1}$ ~	$4\bar{1}$ ~
Chamberlain	low rising	mid with slight rise	mid level	mid falling glottalized	high falling glottalized
Compton	$\bar{1}\bar{4}$	$\bar{3}\bar{4}$	$\bar{3}\bar{3}$	$3\bar{1}$ ~	$\bar{4}\bar{1}$ ~
Dejvongsa, et al.	223	$\bar{4}\bar{4}\bar{4}$	$\bar{3}\bar{3}$	$\bar{3}\bar{3}\bar{2}$	$\bar{4}\bar{2}$
Peyasanti- wong	112	334	33	$3\bar{1}$ ~	$4\bar{1}$ ~
Strecker	224	45	22	$3\bar{1}$ ~	$5\bar{4}$ ~

VIENTIANE: A-column splits *ph vs. *p*?b*b:

	A-*ph	A-*p*?b*b	B	C-*ph	C-*p*?b*B
Gedney	13	33	44	31' or 21'	53'

ATTOPEU (Dejvongsa, Soulisak, Koxayo, and Chamberlain):

A-*ph	A-*p*?b*b	B	C-*ph	C-*p*?b*b
$\bar{2}\bar{2}\bar{3}$	$44'$	$\bar{3}\bar{3}'$	$\bar{3}\bar{3}\bar{2}^{28}$ ~	$\bar{4}\bar{4}\bar{2}$ ~

NAKHON PHANOM (gedney):

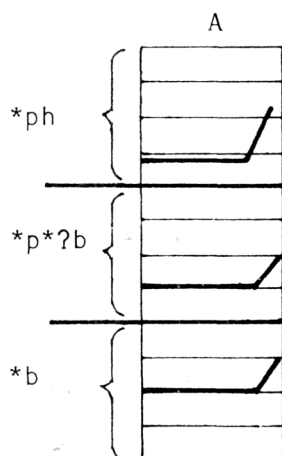
A-*ph*p*?b	A-*b	B	C-*ph	C-*p*?b*b
24	$\bar{5}\bar{5}$	221 (or 332?)	21' low falling glottalized	4454' ~ 54'

Figure 8

Vientiane, Attopeu, and Nakhon Phanom

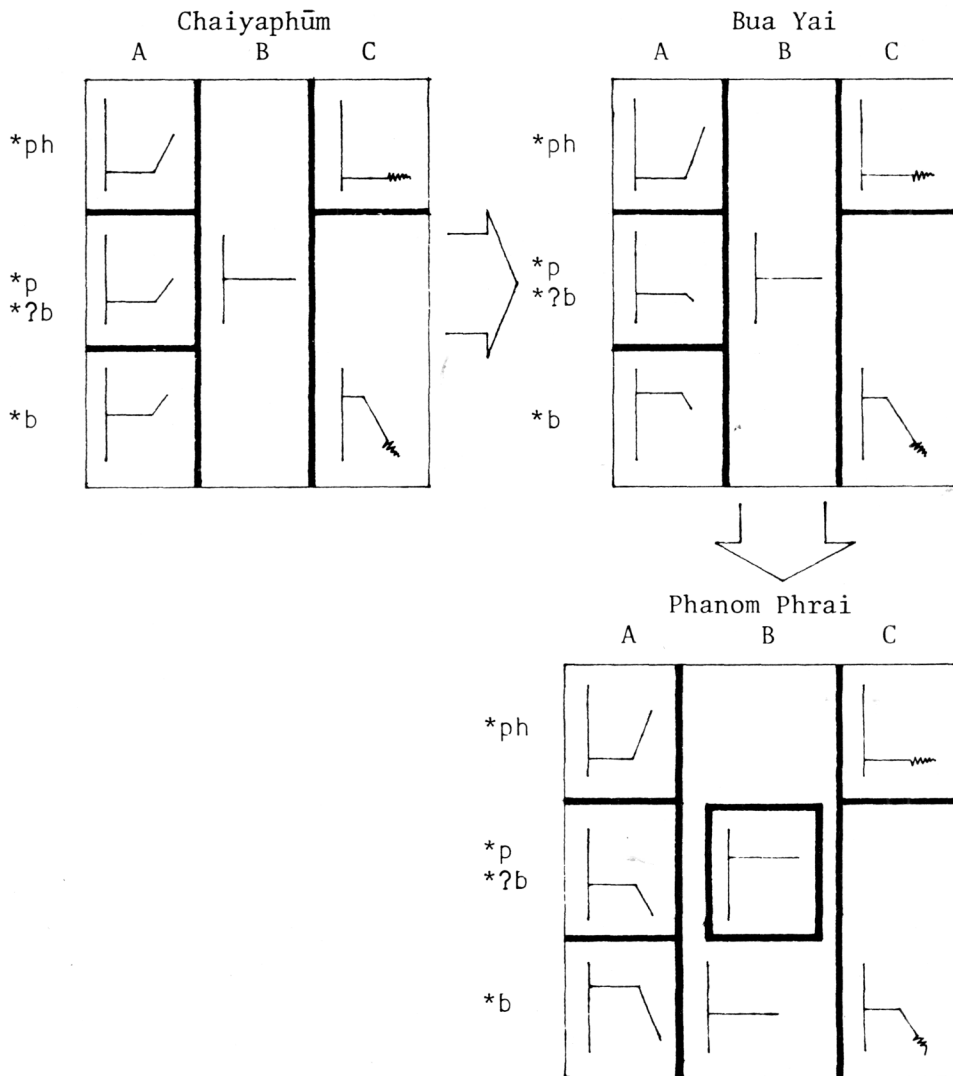
The problem with including Vientiane, Attopeu, and Nakhōn Phanom is in the height relationship among the B and C-tones (characteristic 5 in the list above). In Vientiane, Attopeu and Nakhōn Phanom, C-*ph and B start at about the same level but C-*ph falls more. In accordance with the hypothesis that falling more is a consequence of starting higher, the fact that C-*ph falls more than B in Vientiane, Attopeu, and Nakhōn Phanom suggests that in those dialects C-*ph was originally higher than B.²⁹ In Khōn Sawan, Sī Sakēt, Thā Tūm, and Ban Nong Na Kham, on the other hand, both B and C-*ph are level (not falling) and C-*ph is lower than B. On the basis of this difference I assign the two sets of dialects to different tone shape groups: Vientiane, etc., to the Mau-Kengtung group, and Khōn Sawan, etc., to the Southern Lao group.

In most Lao dialects of southern Laos and northeastern Thailand, there are three A-tones. In Chaiyaphūm³⁰ in northeastern Thailand there are three rising A-tones as shown here:



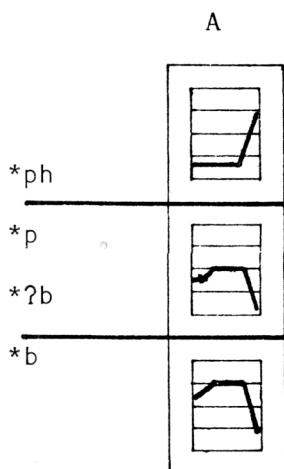
A-*ph starts the lowest, A-*p*?b starts higher, and A-*b starts the highest.

In many other Lao dialects of northeastern Thailand and southern Laos, the two higher of the A-tones are level or falling. In Bua Yai the fall is slight whereas in Phanom Phrai the fall is quite marked, so that it is possible to set up a phonetic progression, just as we did with Vientiane, etc., above:³¹



This progression is probably not fortuitous, for the three systems are like each other and like the Lao dialects previously mentioned: they have the six characteristics listed earlier in this section. They have identical C-tones (aside from slight differences in pitch height) and identical B-tones, except that in words beginning with /p t c k b d/ and probably /j/ and /ʔ/ (< *p *t *c *k *ʔb *ʔd *ʔj and *ʔ respectively), Phanom Phrai uses a slightly higher tone.³²

In most Lao dialects of northeastern Thailand and southern Laos, the two higher of the A-tones are falling but also have a slight initial rise, e.g. R̥i-et:



An initial rise seems to be the mirror image of a final fall: just as the final fall makes the central portion of the tone (from which it is falling) seem higher, an initial rise makes the central portion of the tone (to which it is rising seem higher.

The dialects which show this pattern are R^ōi-et, Thawatburī, Wāpīpathum, Non Phet, Ubon (Ubon Rāthathānī), Muang Sām-sip, Yaśōthōn, Kham Khuan Kaeo, Pak Sébang Fai, Sahatsakhan, and Pračhantakhām.³³

Figure 9³⁴ shows that all of these dialects are similar to each other and to the other Lao dialects mentioned previously: they have the six characteristics that were listed earlier in this section. Therefore it is plausible to suggest that these dialects too may have started out like Chaiyaphūm, with all three A-tones rising, and then the two higher of the A-tones became falling.

Khōn Kaen is also similar to R^ōi-et, except that A-*p*?b lacks the initial rise.

Finally, the variety of Udōn (Udōn Thānī) described by Brown (1962, 1965, dialect #46)³⁵ is of particular interest in that A-*p*?b and A-*b each have two allotones (apparently in free variation): 1) falling with slight initial rise (as in R^ōi-et); 2) level. We can thus set up a phonetic progression as follows:

R̥i-et, Thawatburī, Wāpīpathum,
Non Phet

	A	B	C
*ph			
*p *?b			
*b			

Ubon, Muang Sām-sip, Yasōthōn,
Kham Khyān Kaeo, Pak Sēbang Fai,
Sahatsakhan, Pračhantakhām

	A	B	C
*ph			
*p *?b			
*b			

Khōn Kaen

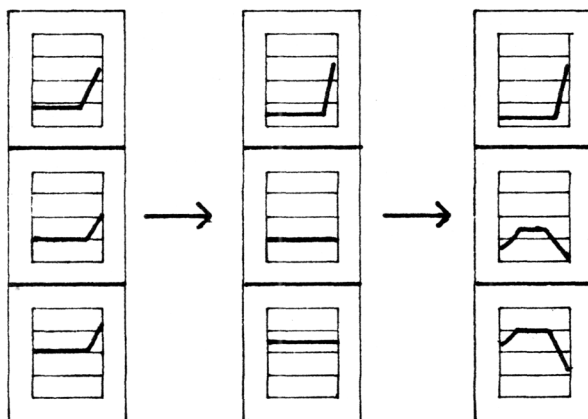
	A	B	C
*ph			
*p *?b			
*b			

Udōn

	A	B	C
*ph			
*p *?b			
*b			

Figure 9

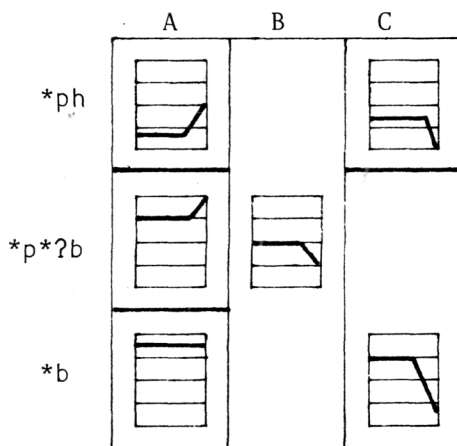
R̥i-et, etc. (all from Brown)



The first stage is attested in Chaiyaphūm, the last two stages are both attested in Udōn (except that, unfortunately, A-*p*?b is lower than it should be), where, apparently, the sound change is in progress.

Khōn Kaen and Udōn (also shown in figure 9)³⁶ also have the six characteristics listed earlier, so that it is plausible that they also started out like Chaiyaphūm and underwent a sound change whereby the two higher of the three rising tones became level or falling.

Finally we should mention the variety of Nakhōn Phanom described by Dejevongsa, Soulisak, Koxayo, and Chamberlain (1972, p. 12, dialect #7) and by Egerod (1961, p. 64), in which there are three A-tones of which the highest (A-*b) is level. The two lower A-tones are both rising:



Observe that the pattern of splits and mergers in this dialect is *identical to that of Chaipayūm, Ubon, Udōn, etc., etc.* This dialect also has the six characteristics listed earlier in this section except that C-*ph and B are falling instead of level.³⁷

To summarize what we have said about these Central and Southern Lao tone systems:

They are all on the whole very similar to one another. They all have the pattern

	A	B	C
*ph	1	2	3
*p	4	2	7
*?b	4	2	7
*b	5	6	7

where the dotted lines represent possible mergers. They all have the following characteristics: 1) A-*ph is rising and starts lower than A-*b. If A-*ph and A-*p*?b are separate tones, then A-*ph also starts lower than A-*p*?b;³⁸ 2) The B-tone(s) is (are) level, or only slightly falling; 3) Both C-tones are glottalized (except in Dejvongsa et al.'s Nakhōn Phanom); 4) C-*ph is level or only slightly falling and is lower than both C-*p*?b*b and B; 5) C-*p*?b*b is falling and starts higher than C-*ph.

They differ in the A-*p*?b and A-*b tones. The development of these two tones supports the hypothesis that higher tones tend not to rise: A-*b and A-*p*?b (if it is a separate tone from A-*ph) are higher than A-*ph and A-*b and A-*p*?b are rising in some dialects but level or falling in others.³⁹

9. The A-tones in other dialects

To recapitulate the thread of the argument so far: we found that in the systems of what I call the Lān Nā group, sometimes both A-tones are rising, and sometimes the higher A-tone is level or falling. We posited that there was a sound change whereby relatively high tones become non-rising. We then found three more examples of this change: in Shan, in Yo-Kaleung, and in Central and Southern Lao.⁴⁰ Now I would like to give still more evidence for this change by listing still other dialects in which A-*ph is lower and rising and A-*b is higher and either level (le), slightly falling (sf), or falling (fa):

KHŪN: Kengtung (1e), Bān Veng

SHAN: Kengtung (1e)⁴¹

LUE⁴²: Mōng Yawng (sf), Houei Lao (sf)

YŌNG: Bān Sī Bun Yŭn (1e), Pāsāng (1e)

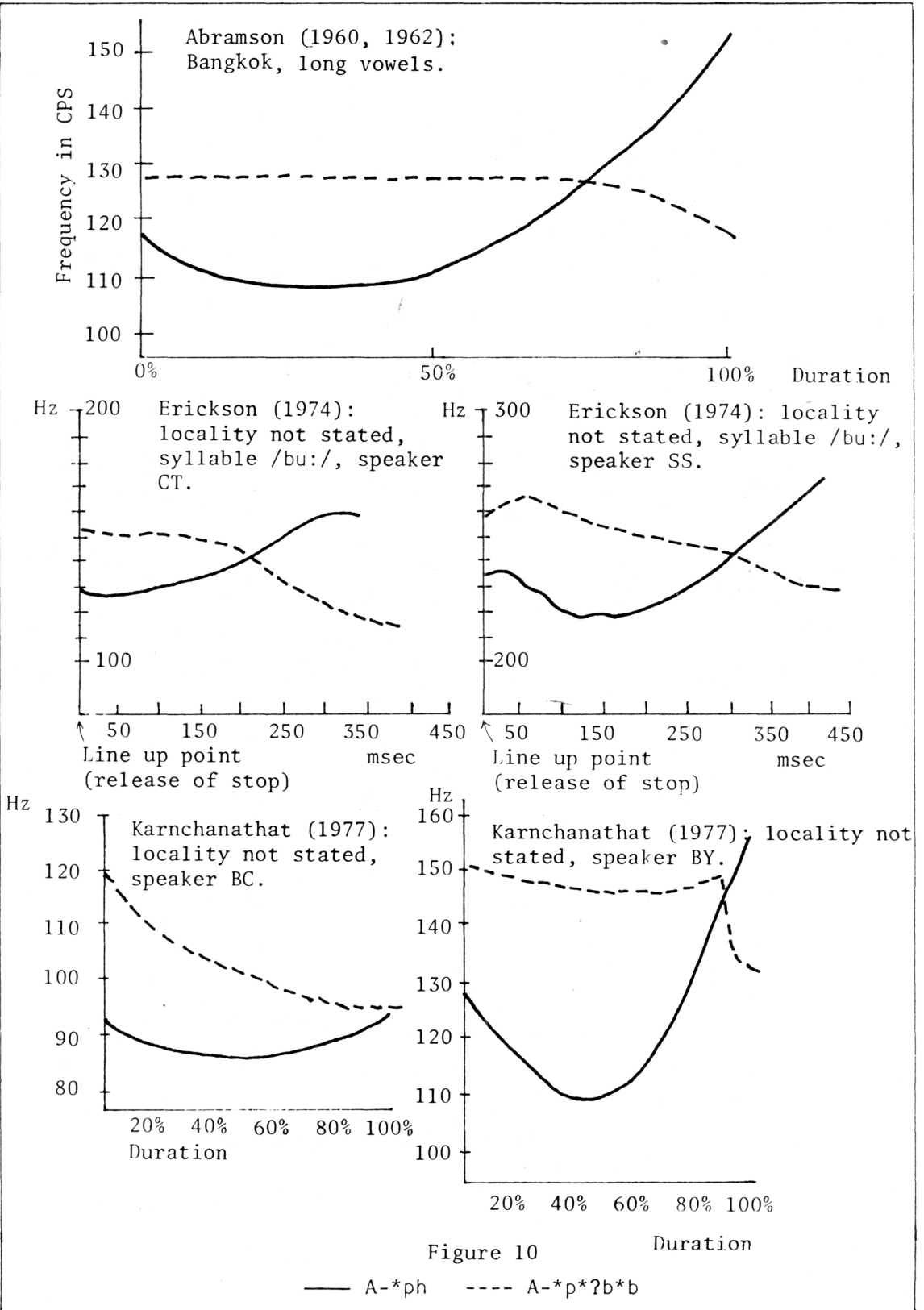
CENTRAL THAI (SIAMESE): Taphān Hin & Uttaradit (sf), Bangkok (sf),
Trāt (Ban Plai Klong and Koh Khwaang
village) (sf), Khōrāt (Nakhōn Rāṭchasīmā)⁴³
(fa)

PHŪTHAI: Dong Keun (fa), Nakhōn Phanom (fa), Wanōn Niwāt (fa),
Wāritchaphūm (sf), Phannanānikhom (sf), Sakon Nakhōn
(fa)

See also figure 10, which is a sample of curves based on spectrographic measurements of the two A-tones in Siamese. Some details of these spectrographically based curves will require further study, but it will be seen, once more, that the lower of the two A-tones, A-*ph ("rising tone": solid lines in figure 12), in each case ends in a rise, and the higher of the two A-tones, A-*p*?b*b ("mid tone": broken lines), in each case ends in a fall.

Finally, I would like to quote from Henderson (1964, page 416) on the pronunciation of A-*p*?b*b (the higher of the two A-tones) in Siamese:

When I first began to teach Siamese phonetics, 'mid level' was a satisfactory descriptive label for one of the Siamese tones [viz. A-*p*?b*b], provided students were warned that a slight fall in pitch might be expected before a pause. ... In the somewhat slow formal style of utterance used in teaching the elements of the language, this fall was not always present, even at the end of a sentence, and was never so marked as to cause confusion with the tone labelled 'falling'. Of recent years, however, as records by younger speakers have been added to the collection of teaching material, I have had to abandon the label 'mid level' in favour of the label 'mid', since there appears to be a tendency among younger speakers to pronounce this tone with such a marked fall in prepausal position, even in slow formal styles of utterance, that the earlier label is now misleading to students. Confusion between the falling and the mid tones is now common among beginners.



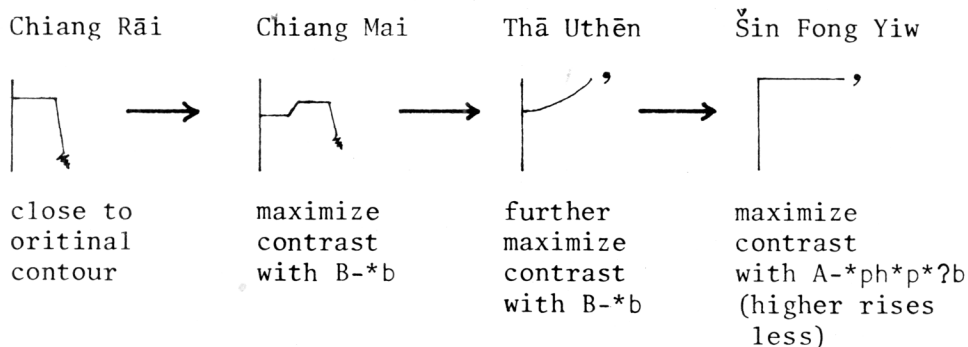
The direction of this change is exactly that predicted by the higher-falls-more hypothesis.⁴⁴

10. Apparent counterexamples





Before concluding, I must say something about apparent counterexamples to the higher-falls-more principle which the reader may have noticed. In section 3, I reconstructed proto-Lānnā C-*b as the highest (in starting point) of four falling tones. Assuming this to be the case, the higher-falls-more hypothesis predicts that C-*b will be a sharply falling tone in all modern dialects of the Lān Nā tone-type. Indeed, C-*b is pronounced this way in Chiang Rāi, for example. But in some dialects, C-*b is rising-falling (e.g. Chiang Mai), rising (e.g. Thā Uthēn) or level (e.g. Šin Fong Yiw) (see figure 4).

I believe we can explain these apparent counterexamples by hypothesizing that in these dialects, C-*b acquired an initial rise in order to further differentiate it from the other falling tones (B-*b, etc.). As we saw in section 7, an initial rise apparently makes the tone to which it is rising seem higher. Then the final fall may be shortened (e.g. Chiang Mai) or lost altogether (e.g. Thā Uthēn) in order to further maximize the difference between C-*b (rising-falling) and an abruptly falling tone like B-*b. The point is, that the difference between C-*b and B-*b is now perceived as one mainly of contour (rising-falling vs. falling) rather than of height. Pressure to maximize the contour difference (by minimizing the falling element of C-*b) overrides pressure to maximize the perceived height difference (higher-falls-more).

Finally, the rise may be lost in order to maximize the difference between C-*b and the rising tone(s) of the A-column (e.g. Šin Fong Yiw). The progression is thus something like:



Evidence for the plausibility of such a change is provided by Henderson (1964, p. 417) who shows that in Siamese (Central Thai) C-*b may be currently in the process of losing its final fall in order to maximize the contrast between C-*b and B-*b/C-*ph*p*?b ("falling tone":

or  41; early 1900's  ? 31? or  21):  51

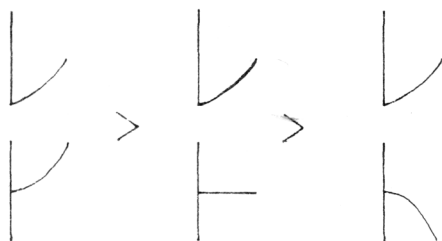
In his notes and in his account in the Linguistic Survey of India [George Abraham Grierson, ed., The Linguistic Survey of India, vol. I, part 2, Calcutta, 1928, p. 11], Professor [Daniel] Jones agrees with Bradley's analysis [C. Bradley 1911] of this tone [C-*b], in contexts other than short syllables closed by a stop, as beginning with a slight rise and ending with a strong fall. ... In both Bradley's graph and in Jones's diagram in his notes [D. Jones 1918], this fall is shown as reaching as low or almost as low a pitch as the falling tone. When I first attempted an analysis, the contour of the tone sounded to me like a short sharp rise in pitch, followed by a sustained high pitch, followed by a marked fall, but the fall was to a mid pitch, not to a pitch as low as that reached by the falling tone. Nevertheless, students in those days had difficulty in distinguishing the two in both pronunciation and recognition, especially as both are closed in pre-pausal position by glottal constriction or a weak glottal stop. Latterly I have become aware that there is an increasingly common variant of this tone in which there is an initial short rise, followed by a sustained high pitch, with no fall at the end. Final glottal constriction is still present. With some speakers this appears to be the only pronunciation that commonly occurs, [fn. 5: One such speaker is Terd Chuenkongchoo, who emphatically rejects the rise-fall analysis of this tone for his own pronunciation, which he describes as 'high level'. See his unpublished London M.A. thesis, The Prosodic Characteristics of Certain Particles in Spoken Thai, presented in 1956] and it is the form that I now recommend to learners, since it causes them far less difficulty than the rise-fall pronunciation. Where there is a final fall in the pronunciation of this tone nowadays it is usually so slight that confusion with the falling tone is no longer likely to arise. Observation from Bradley onwards suggests that there has been a tendency over the last sixty years to curtail, and perhaps ultimately to abandon altogether, the fall in pitch at the end of this tone, the modern high level variant of which now brings the pronunciation of syllables ending with a continuant closely into line with that long observed for stopped syllables. The change has been a very gradual one, however, and is not so clearly linked to age-groups as is the changing contour of the mid tone. There are a number of instances of a pronunciation without final fall among the older speakers in my earlier records, whilst some of the younger speakers recorded more recently show a preference for the rise-fall contour still.

Henderson (1977, p. 165) adds:

On a very recent visit to Thailand, however, I was interested to notice in listening to 'natural' unguarded conversation among Thais, young and old, that the "strong fall" at the end of this tone is by no means obsolete, and is still far commoner than I had expected might by now be the case.

11. Conclusion

I have presented evidence that tones in certain Tai dialects have been susceptible to a phonological process whereby lower tones tend to fall less and rise more while higher tones tend to rise less and fall more:



(Similar evidence exists for the analogous change affecting falling tones: this was omitted for lack of space.)

This process permits us to explain why in some dialects of my "Lān Nā group" both A-tones are rising, while in others the higher of the two A-tones has changed from *rising to level or falling. This in turn allows us to hypothesize that originally in all these dialects both A-tones were rising.

12. Wider implications

This paper makes two contributions to historical linguistics. First, I have added to the inventory of posited phonetic changes affecting tones. Historical linguists have at their disposal a large inventory of phonetic changes affecting vowels and consonants, but our tone change inventory is still comparatively meager, and I hope to have added a few items.

Second, I would like to suggest that areal convergence and independent parallel development as well as genetic inheritance have been of importance in the development of Tai tone shapes. The tone shape groupings posited here crosscut classifications proposed on the basis of lexical and phonological criteria by Li (1959, 1960, 1977), on the

basis of tonal splits by Brown (1965, p. 157), Chamberlain (1972a, p. 234; 1975, p. 50), Hartmann (1977) and others, and on the basis of development of initial consonants by Chamberlain (1972a, and see also 1975).

Such crosscutting classifications indicate that at least some of the criteria involved must be areal rather than genetic. On the other hand, Western Nung is remarkably like certain Lān Nā dialects, e.g., Chiang Mai or the various Phuan dialects, in its tone shapes, but is markedly different from them in other respects, and is far removed from them geographically. This may mean that Western Nung developed a system of the Lān Nā type by independent parallel evolution.

The tonal changes posited in this paper will be much more believable if the vast body of experimental phonetic literature on tone production and perception is brought to bear on the history of tones.⁴⁵ Such data will either support my hypothesis or lead to its revision. Marvin Brown has begun this task (see Brown 1962, pp. 52-53; 1965, pp. 53-54; 1975, pp. 43-45). But the ultimate basis on which the hypotheses proposed here must stand or fall is careful phonetic descriptions of the tones of Tai dialects such as those so ably provided by Eugénie Henderson.

APPENDIX: SOURCES OF INFORMATION

Abbreviations: single letters A through L: tone shape group, see figure 2; No = Northern Branch of the Tai family; Ct = Central Branch; SW = Southwestern Branch.

- Attopeu (A, SW): Dejevongsa, et al. (1972)
 Ban Chieng Di (I, SW): Gedney (1964)
 Bān Dū (C, SW): Jones (1965)
 Bangkok (B, SW): Abramson (1960, 1962), Brown (1962, 1965), Compton (1971). See also C. Thai, loc. not spec.
 Bān Khō (C, SW): Compton (1971: "Udorn Phuan": the consultant had learned the dial. as a 2nd lg.)
 Ban Lao (C, Ct): Wm Gedney (fieldnotes, 1964)
 Bān Mī (C, SW): Brown (1962, 1965)
 Ban Nong Na Kham (F, SW): Compton (1971: "Khon Kaen Lao")
 Ban Plai Klong: see Trāt
 Bān Sī Bun Yūn (A, SW): Wm Gedney (fieldnotes, 1964)
 Bān Veng (A, SW): Wm Gedney (fieldnotes)
 Black Tai: see Ban Chieng Di; Muong Muoi, etc.; Muong Pieng; Muong Theng
 Bua Yai (F, SW): Brown (1962, 1965)
 Central Thai (Siamese), locality not specified (B, SW): Abramson (1961, 1974, 1975, 1976), Abramson and Erickson (1977), Bradley (1916), Chamberlain (1971), Erickson (1974, 1976), Gedney (1947), Haas (1958,

- 1964), Henderson (1949, 1964, 1976), Jones (1918), Karnchanathat (1977), Khanittanan (1973), Li (1977), Noss (1964), and many others. See also Bangkok; Khōrāt; Taphān Hin & Uttaradit; Trāt; Ū Thōng.
- Chaiyaphūm (F, SW): Brown (1962, 1965)
- Cha Pa: see Muong Hum & Cha Pa
- Chefang (A, SW): Harris (1975)
- Chiang Kham (C, SW): Seree Weroha (psnl. comm.) & author's fieldnotes, 1976, consultant Sipa Weroha
- Chiang Mai (C, SW): Brown (1962, 1965), Egerod (1959), Egerod (1961: see fn 15), Wm Gedney (fieldnotes 1964), Haas (1958), Jones (1965), Pantupong (1976), Purnell (1963), Suntharagul (2505), & observ. made by Wm Gedney & his stud. on the sp. of Mr. Boonyong Keiwkarnka (1977)
- Chiang Rāi (Kam Muang) (C, SW): Brown (1962, 1965), Egerod (1961: see fn 15), Jones (1965)
- Chiang Rāi (Shan) (B, SW): Brown (1962, 1965)
- Chiang Rāi, dist. of the city of: see Chiang Rāi prov.
- Chiang Rāi prov. (C, SW): Purnell (1963)
- Chiang Saen (C, SW): Jones (1965)
- Chiang Thōng: see Tāk Dialect
- Chiang Pōc: see Muong Muoi, etc.
- Dien Bien Phu: see Muong Theng; see also Muong Muoi, etc.
- Dam (Tai Dam): see Ban Chiang Di; Muong Muoi, etc.; Muong Pieng; Muong Theng
- Don (Tai Don): see Lai Chau prov.; Mong Te & Mong Lai; Minot's Thay Blanc
- Donaldson's White Tai: see Lai Chau prov.
- Dong Keun (D, SW): Dejvongsa, et al. (1972)
- Eastern Thai (=Lao): see Nakhōn Phanom (Dejvongsa et al.; Egerod); Ubon (Egerod); Udōn (Egerod). See also Lao.
- Fippinger's Black Tai: see Muong Muoi, etc.
- Hēt (C, SW): authors tape (1976) of the sp. of Ms. Phongsri Yossuk. N.B.: Ms. Yossuk has lived in the city of Chiang Mai for sev. yrs., & this may have influenced her tones.
- Houei Lao (A, SW): Dejvongsa, et al. (1972)
- Hsen Wi (A, SW): Wm Gedney (fieldnotes)
- Hsi Paw (B, SW): Wm Gedney (fieldnotes & tape, 1964); author's fieldnotes & tape, 1976, consultant Vihtun Wonglu. [Henderson (1976) cites an early study of Hsi Paw Shan by Daniel Jones (Le Maître Phonétique, 77 [1942]) but I have not had time to look it up.]
- Hua Diat: see Tāk Dialect
- Kaleung (G, SW): Chamberlain (1971)
- Kam Muang: see Bān Dū; Chiang Kham; Chiang Mai; Chiang Rāi; Chiang Rāi prov.; Chiang Saen; Hēt; Lampāng; Lamphūn; Mae Hōng Sōn; Na Luang; Nān; Phrae; Wang Thōng. See also Lao Yuan; Phayao; Tāk; Tāk Dialect.
- Kene Thao (Brown) A, SW): Brown (1962; 1965)
- Kene Thao (Simmonds) (F, SW): Simmonds (1965)
- Kengtung (Khūn) (A, SW): Wm Gedney (fieldnotes, 1964), Egerod (1959, 1961), & observ. made by Wm Gedney & his stud. on the sp. of Sao Sai Mōng, November, 1975

- Kengtung (Shan) (B, SW): Wm Gedney (fieldnotes 1964)
 Kham Khuan Kaeo (F, SW): Brown (1962, 1965)
 Khamti: see Mān Chong Kham
 Khong (F, SW): Simmonds (1965)
 Khōn Kaen (see also Ban Nong Na Kham) (F, SW): Brown (1962, 1965)
 Khōn Sawan (F, SW): Brown (1962, 1965)
 Khōrāt (Nakhōn Rāṭchasīmā) (G, SW): Brown (1962, 1965)
 Khūn: see Bān Veng; Kengtung (Khūn)
 Koh Khwaang: see Trāt
 Lai Chau: see Mong Te & Mong Lai
 Lai Chau prov. (exact locality not specified) (I, SW): Donaldson (1963)
 Lāi Hkā (B?, SW): Cushing (1871, 1881) [See fn 20.]
 Lampāng (C, SW): Brown (1962, 1965)
 Lamphūn (C, SW): Egerod (1961: see fn 15), Jones (1965)
 Lao: see Ban Nong Na Kham; Bua Yai; Chaiyaphūm; Kham Khuan Kaeo; Khōn Kaen; Khōn Sawan; Luang Prabang; Muang Sām-sip; Nōng Khāi; Nōn Phet; Pak Sébang Fai; Phanom Phrai; Pračantakhām; Repatriated Lao; Rōi-et; Sa-hatsakhan; Sī Sakēt; Sithandone prov.; Thā Tūm; Thawatburī; Ubon (Brown); Udōn (Brown); Vientiane (Brown, etc.); Vientiane (Simmonds); Wāpīpathum; Xieng Khouang (Lao); Yasōthōn. See also Kene Thao; Khong; Nakhōn Phanom (Dejvongsa, et al.; Egerod); Nakhōn Phanom (Gedney); Pakse; Savannakhet; Ubon (Egerod); Udōn (Egerod); Attopeu
 Lao Ngao (C[tentative], SW): Khanittanan (1973)
 Lao Yuan (C, SW): Khanittanan (1973)
 Lopburī & Saraburī provs. (Phuan; see also Lao Ngao; Lao Yuan; see also Bān Mī) (C, SW): Khanittanan (1973)
 Luang Prabang (A, SW): Brown (1962, 1965), Chamberlain (1971), Dejvongsa, et al. (1972), Wm Gedney (fieldnotes, 1965), Roffe and Roffe (1956); Simmonds (1965)
 Lue: see Houei Lao; Mōng Yawng
 Lu-jung (tone shape type not yet determined; No): Chinese Academy of Sciences (1959), dial. pt. #5
 Lungchow (K, Ct): Li (1940, 1977)
 Mae Chan dist.: see Chiang Rāi prov.
 Mae Hōng Sōn (C?, SW): Egerod (1961): I am uncertain of the correctness of these data: cf fn 15
 Mān Chong Kham (K, SW): Harris (1976)
 Mau (Tai Mau or Tai Māu): see Hsen Wi; Nam Hkam
 Meng Vo (D, SW): Gedney (1976a)
 Minot's Thay Blanc (I, SW): minot (1949)
 Mong Lai: see Mong Te and Mong Lai
 Mōng Nāi (B?, SW): Bandhumedha (2507), Cushing (1871, 1881) [See fn 20.]
 Mong Te & Mong Lai (I, SW): Gedney (1964)
 Mōng Yawng (A, SW): Wm Gedney (fieldnotes, 1965)
 Muang Sām-sip (F, SW): Brown (1962, 1965)
 Muong Hum & Cha Pa (I, No): Gedney (1965, 1970b, 1976b)
 Muong Khuong (C, Ct): Wm Gedney (fieldnotes, 1964)
 Muong Muoi (Thuan Chau), Chieng Poc, Muong Theng (Dien Bien Phu), & Sop Cop (I, SW): Fippinger and Fippinger (1970). See also Muong Theng.

- Muong Pieng (I, SW): Gedney (1964)
 Muong Sen (C, SW): Dejevongsa et al. (1972)
 Muong Te: see Mong Te
 Muong Theng (Dien Bien Phu) (I, SW): Simmonds (1965). See also
 Muong Muoi, etc.
 Nakhon Phanom (Dejevongsa, et al.; Egerod) (F, SW): Dejevongsa, et al.
 (1972), Egerod (1961)
 Nakhon Phanom (Gedney) A??, SW): Wm Gedney (fieldnotes, 1965)
 Nakhon Phanom (Khanittanan) D, SW): Khanittanan (1975)
 Nakhon Ratchasima: see Khorāt
 Nakhon Si Thammarat (J, SW): Brown (1962, 1965); Haas (1958)
 Na Luang (tambon Na Luang, Sā dist.) (C, SW): Davis (n.d.)
 Nam Bac (C[tentative], SW): Dejevongsa, et al. (1972)
 Nam Hkam (A, SW): Harris (1975)
 Nan (C, SW): Brown (1962, 1965), Jones (1965)
 Nong Khai (F, SW): Brown (1962, 1965) [Wm Gedney (fieldnotes) recorded
 a set of tone shapes somewhat different from Brown's (but also of
 the S. Lao tone shape type) from a person who was born in Nong Khai,
 but who moved to a place called Nong Song Hong when small. This
 material is the Lao used by Sarawit (1973).]
 Non Phet (F, SW): Brown (1962, 1965)
 Northern Thai: see Ban Dū; Chiang Kham; Chiang Mai; Chiang Rāi; Chiang
 Rāi prov.; Chiang Saen; Hōt; Lampāng; Lamphūn; Mae Hōng Sōn;
 Na Luang; Nan; Phrae; Wang Thōng. See also Lao Yuan; Phayao; Tāk;
 Tāk Dialect.
 NW Vietnam or adjacent areas of Yunnan, exact locality not specified:
 see Minot's Thay Blanc
 Nua (Tai Nua): see Chefang; Nam Hkam; Van Poong Tong; Meng Vo
 Nung, Western: see Ban Lao; Muong Khuong; Sin Fong Yiw
 Nyō: see Thā Uthēn (Gedney); Thā Uthēn (Simmonds)
 Pakse (F, SW): simmonds (1965)
 Pak Sébang Fai (F, SW): Brown (1962, 1965)
 Pak Seng (K, SW): Dejevongsa, et al. (1972)
 Pāsāng (A, SW): author's fieldnotes (1976), consultant Narong Langkāphin
 Phannanānikhom (Phannānikhom) (D, SW): Wm Gedney (fieldnotes 1965)
 Phanom Phrai (F, SW): Brown (1962, 1965)
 Phayao (C, SW): Simmonds (1965)
 Phrae (C, SW): Brown (1962, 1965), Jones (1965), Simmonds (1965)
 Phuan: see Bān Khō; Bān Mī; Lopburī & Saraburī provs. (Phuan);
 Pak Seng; Tran Ninh; Xieng Khouang (Phuan). See also Xieng Khouang
 (lg. name not stated).
 Phūthai: see Dong Keun; Nakhon Phanom (Khanittanan); Phannannānikhom;
 Sakon Nakhon (Phūthai); Wannōn Niwāt; Waritchaphūm
 Prachantakhām (F, SW): Brown (1962, 1965)
 Pu-i: see Lu-jung
 Repatriated Lao (F, SW): Simmonds (1965)
 Rōi-et (F, SW): Brown (1962, 1965)
 Rural Chiang Rāi prov.: see Chiang Rāi prov.
 Sahatsakhan (F, SW): Brown (1962, 1965)

- Sakon Nakhōn (Phūthai; see also Yo; Kaleung) (D, SW): Brown (1962, 1965)
 Saraburī prov.: see Lao Ngao; Lao Yuan; Lopburī & Saraburī provs.
 Satūn (J, SW): Brown (1962, 1965), Court (1974, 1975)
 Savannakhet (F, SW): Simmonds (1965)
 Shan: see Hsen Wi; Hsi Paw; Kengtung; Lāi Hkā; Mǒng Nāi; Chiang Rāi (Shan). See also Tai Nūa.
 Siamese: see Bangkok; Khōrāt; Taphān Hin & Uttaradit; Trāt; Ū Thōng; C. Thai, loc. not spec.
 Šin Fong Yiw (C, Ct): Wm Gedney (fieldnotes, 1968)
 Sī Sakēt (F, SW): Brown (1962, 1965)
 Sithandone prov. (F, SW): Compton (1977, pp. 358-359)
 Songkhla (J, SW): Brown (1962, 1965), Chantavibulya (1959a, 1959b), Chittatham (1977), Egerod (1961), Henderson (1959)
 Sop Cop: see Muong Muoi, etc.
 Southern Thai: see Nakhōn Sī Thammarāt; Satūn; Songkhla
 Tai, Black: see Ban Chiang Di; Muong Muoi, etc.; Muong Pieng; Muong Theng
 Tai Dam: see Ban Chiang Di; Muong Muoi, etc.; Muong Pieng; Muong Theng
 Tai Don: see Lai Chau prov.; Mong Te & Mong Lai; Minot's Thay Blanc
 Tai Mau: see Nam Hkam
 Tai Māu: see Hsen Wi
 Tai Nūa: see Chefang; Nam Hkam; Van Poong Tong; Meng Vo
 Tai, White: see Lai Chau prov.; Mong Te & Mong Lai; Minot's Thay Blanc
 Tai Yuan: see Bān Dū; Chiang Kham; Chiang Mai; Chiang Rāi; Chiang Rāi prov.; Chiang Saen; Hōt; Lampāng; Lamphūn; Mae Hōng Sōn; Na Luang; Nān; Phrae; Wang Thōng. See also Lao Yuan; Phayao; Tāk; Tāk Dialect.
 Tāk (C, SW): Simmonds (1965)
 Tāk Bai (C[tentative], SW): Brown (1962, 1965)
 Tāk Dialect (C, SW): Sautter (1970) & accompanying tape
 Tāk dist., Villages in: see Tāk Dialect tambon Na Luang: see Na Luang
 Taphān Hin & Uttaradit (B, SW): observations made by the author on the speech of Ms. Patcharin Peyasantiwong, 1978. Ms. Peyasantiwong was born in town of Taphān Hin (Phičit prov.), where lived until age of 12 or 13 yrs., then moved to town of Uttaradit (Uttaradit prov.), where lived until age of 18 or 19 yrs. Ms. Peyasantiwong says that there are some lexical diffs. betw. Phičit prov. and Uttaradit prov.--e.g. Phičit /kapǎŋ/, Uttaradit (& Std. Thai) /thǎŋ/ 'bucket'--but that she did not notice any phonetic diffs. betw. the 2 places, & that when she arrived in Uttaradit from Taphān Hin no one commented that her pronun. sounded in any way strange or different.
 Thai, Central: see Bangkok; Khōrāt; Taphān Hin & Uttaradit; Trāt; Ū Thōng; C. Thai, loc. not spec.
 Thai, Eastern (=Lao): see Nakhōn Phanom (Dejvongsa, et al.; Egerod); Ubon (Egerod); Udōn (Egerod). See also Lao.
 Thai, Northern: see Bān Dū; Chiang Kham; Chiang Mai; Chiang Rāi; Chiang Rāi prov.; Chiang Saen; Hōt; Lampāng; Lamphūn; Mae Hōng Sōn; Na Luang; Nān; Phrae; Wang Thōng. See also Lao Yuan; Phayao; Tāk; Tāk Dialect.

- Thai Nyō: see Thā Uthēn (Simmonds). See also Thā Uthēn (Gedney).
 Thai, Southern: see Nakhōn Sī Thammarāt; Satūn; Songkhla
 That-Khe (L, Ct): Gedney (fieldnotes, 1964)
 Thā Tūm (F, SW): Brown (1962, 1965)
 Thā Uthēn (Gedney) (C, SW): Gedney (fieldnotes, 1965)
 Thā Uthēn (Simmonds) (A, SW): Simmonds (1965)
 Thawatburī (F, SW): Brown (1962, 1965)
 Thay Blanc: see Minot's Thay Blanc
 Tho: see Lungchow; That-Khe
 Thuan Chau: see Muong Muoi, etc.
 Tran Ninh (C?, SW): Guignard (1912) [Tran Ninh is a region in N Laos, NW of Xieng Khouang.]
 Trāt (B, SW): Court (1971, 1972)
 Ubon (Brown, Compton) (F, SW): Brown (1962, 1965), Compton (1971)
 Ubon (Egerod) (E??, SW): Egerod (1961)
 Udōn (Brown) (F, SW): Brown (1962, 1965)
 Udōn (Egerod) (F, SW): Egerod (1961)
 Udōn Phuan: see Ban Kho
 Ū Thōng (B, SW): Brown (1962, 1965)
 Uttaradit: see Taphān Hin & Uttaradit
 Van Poong Tong (A, SW): Harris (1975)
 Vientiane (Brown, etc.) (A, SW): Brown (1962, 1965), Chamberlain (1971), Compton (1971), Dejvongsa et al. (1972), Wm Gedney (fieldnotes), Patcharin Peyasantiwong, class presentation with tape (1977), Simmonds (1965), authors fieldnotes, 1977, consultant Marikeo
 Vientiane (Simmonds) (F, SW): Simmonds (1965)
 Wang Thōng (G, SW): Brown (1975, p. 40)
 Wānōn Niwāt (D, SW): Brown (1962, 1965)
 Wāpīpathūm (F, SW): Brown (1962, 1965)
 Waritchaphūm (D, SW): Wm Gedney (fieldnotes)
 Wat Phrāo: see Tāk Dialect
 Western Nung: see Ban Lao; Muong Khuong; Šin Fong Yiw
 White Tai: see Lai Chau prov.; Mong Te & Mong Lai; Minot's Thay Blanc
 Xieng Khouang (Lao) (C, SW): Simmonds (1965)
 Xieng Khouang (Phuan) (C, SW): Dejvongsa, et al. (1972)
 Xieng Khouang (lg. name not spec.) (C, SW); Wm Gedney (fieldnotes, 1965)
 Yasōthōn (F, SW): Brown (1962, 1965)
 Yay: see Muong Hum & Cha Pa
 Yo (Brown) (G, SW): Brown (1962, 1965)
 Yo (Chamberlain) (G, SW): Chamberlain (1971)
 Yōng: see Bān Sī Bun Yūn; Pāsāng
 Yuan: see Bān Dū; Chiang Kham; Chiang Mai; Chiang Rāi; Chiang Rāi prov.; Chiang Saen; Hōt; Lampāng; Lamphūn; Mae Hōng Sōn; Na Luang; Nān; Phrae; Wang Thōng. See also Lao Yuan; Phayao; Tāk; Tāk Dialect.

See also the Bibliography for sources of information on additional dialects, some of which were used in the preparation of figure 2, but which are not otherwise explicitly cited in this paper.

ADDENDUM

While this paper was being typed, Brenda Johns directed my attention to a description of the tones in the Tai Nong (= Western Nung) dialect spoken in Ban Pa Kha (Tingsabadh 1976; Ban Pa Kha is in the same area as the other Western Nung dialects, viz. the area labelled 74 in figure 3). The Ban Pa Kha tones are similar to those of the Western Nung dialects recorded by William Gedney (Ban Lao, Muong Khuong, and Sin Fong Yiw), except for C-*ph*p*?b which is described by Tingsabadh as low level (as low as or lower than B-*ph*p*?b) as in the Southern Lao dialects and not as mid or high level (or slightly falling) (higher than B-*ph*p*?b) as in the Lān Nā type dialects (including Gedney's Western Nung). Hence Ban Pa Kha (unlike Gedney's Western Nung) can be said to be of the Southern Lao tone type.

However, Tingsabadh (1976), like many of the articles in the otherwise extremely valuable Noss Festschrift, has numerous misprints. I think it is conceivable that Tingsabadh's descriptions of B-*ph*p*?b (tone 2) and C-*ph*p*?b (tone 3) might have gotten reversed. If this were the case, then B-*ph*p*?b would be low level, and C-*ph*p*?b would be low falling, and in that case I could use the principles proposed in section 3 to show that Ban Pa Kha is a dialect of the Lān Nā type, and one which is closer to my reconstructed Proto-Lānnā than Gedney's Western Nung.

NOTES

¹ I would like to thank the following people who assisted in one way or another in the preparation of this paper: Robert Bickner, Marvin Brown, Sandra C. Browne, Ian Catford, James R. Chamberlain, Scott Delancey, William Gedney, Kathleen Goudie, John Grima, Sunee Grima, John Hartmann, Kenneth Hill, Brenda Johns, Laurence Krieg, Boonyong Keiwkarnka, Peter Ladefoged, Narong Langkāphin, Marikeo, Patcharin Peyasantiwong, Salee Sriphen, Seree Weroha, Sipā Weroha, Vihtun Wonglu, and Phongsri Yossuk. I am responsible for errors and shortcomings.

This paper is an excerpt from a very long study which I am preparing for eventual publication either as a series of papers similar to this one or as a monograph. I regret that neither space nor time permit the inclusion of the entire study in this Festschrift but I hope that even the small amount of material presented here will be of interest to Professor Henderson and her students.

² In this paper segmentals are written according to the conventions of the International Phonetic Association. Tones are represented sometimes by tone letters consisting of a vertical reference line to which is attached a line suggesting the height and shape of the pitch

contour and sometimes by sequences of numbers, with 1 representing the lowest pitch and 5 the highest:

5 high
4 mid-high
3 mid
2 mid-low
1 low

For example:

┌ or 55 = high level;

↗ or 13 = rising from low to mid;

┐ or 4552 = rise from mid-high to high followed by more or less level middle portion, and final fall from high to mid-low.

The following additional conventions are employed as necessary:

? syllable final glottal stop analyzed as part of the tone, e.g.

┌? or 44? = mid-high level tone followed by a glottal stop

glottalized voice quality (i.e. anything from tense glottis to creak) simultaneous with part of the pitch contour, e.g.

↘ or 4₁ = tone falling from mid-high to low, the final portion of which has glottalized voice quality

· tone described simply as "glottalized" without specifying whether it has glottalized voice quality of only a final glottal stop, e.g.

┌' or 33' = mid level tone, glottalized

- tone slightly lower than written, e.g. $\bar{3}\bar{3}$ = level tone, slightly lower than mid

+ tone slightly higher than written, e.g. $\overset{++}{3}\overset{++}{3}$ = level tone, slightly higher than mid

' slight rise, e.g. '442 = slight rise to mid-high, followed by more or less level portion, followed by a fall to mid-low; 44' = mid-high level with a slight rise toward the end

slight fall, e.g. 33` = mid level tone with slight fall at end

Note: 222⁺ is meant to suggest a slightly greater final rise than 22'; and so forth. I doubt that such small differences are significant (see Wang's apt caveat on the interpretation of tonetic descriptions [Wang 1967]), but I have tried to reproduce my sources as accurately as possible without taking up an undue amount of space. Readers particularly concerned about microtonetic detail should consult the primary sources.

Standard Thai (Siamese) words used without particular reference to their tones (for example in citing Thai authors) have their tones written with the Mary Haas system of diacritics; viz.:

symbol	name	example
(no mark)	mid	คา kha: 'thatch grass'
`	low	ชา khà: 'galangal', a kind of root used as a spice
^	falling	ค่า khâ: 'price, value'
'	high	ค้า khá: 'to do business'
ˇ	rising	ชา khǎ 'leg'

See figure 3 for locations of dialects cited, and see Appendix for sources of information.

- ³ See Gedney (1964) for a detailed demonstration of how one discovers which combinations of proto-tones and proto-initials result in which attested tones, and for a demonstration of the basis on which the Proto-Tai tones can be posited in the first place.
- ⁴ The earliest attempt to reconstruct tone shapes for earlier stages of Tai which I have found is not by Brown but by Nishida (1954: in Japanese, with English summary), who reconstructs Proto-Tai tone A as mid level (33), Proto-Tai tone B as high rising (35) and Proto-Tai tone C as low falling (31). As far as I can tell his reconstruction is based on ten (or eleven?) dialects: five in the Southwestern Branch, three in the Central Branch, and two (or three?) in the Northern Branch. I greatly regret that I do not read Japanese, so that I am not able to discuss Nishida's work in this paper, although I hope to do so in the future.

Brown was also preceded by Haas (1958, p. 821) who noted the similarity between the tone shapes of Bangkok and Chiang Mai and suggested that Bangkok might have developed from an earlier system more like that of Chiang Mai by means of a tone change. But as far as I know, she never followed this suggestion up.

In addition to myself, other authors who have expanded upon Brown's work on the historical development of Tai tone shapes include Fippinger (n.d.) and Chamberlain (1972b). Fippinger provides an alternative hypothesis for why in some Tai languages at the time of the Great Tone Split voiced consonants seem to have conditioned lower allotones, and in others they seem to have conditioned higher allotones (cf. Brown 1962, pp. 52 - 54; 1965, pp. 53 - 54; and 1975). Chamberlain presents evidence that tone shapes can be borrowed (cf. Brown 1965, p. 157). Also Gedney (1978), in a discussion of traditional Siamese verse forms, speculates briefly on the earlier pronunciation of Siamese tones, and shows, among other things, that rhymes can provide important evidence about the earlier pronunciation of tones.

Many authors have written on tone changes in language groups other than Tai, such as David Bradley (n.d.), Dwyer (1973; n.d., a; n.d., b), and Pulleyblank (1977), to name just a few examples.

After I had completed this paper, there was brought to my attention a dissertation prospectus by John R. Peterson, proposing a comparative investigation of the phonetics of Tai tones along lines very similar to those followed in this paper (Peterson, n.d.). I do not know, however, whether Peterson would agree or disagree with the specific tone changes proposed here.

5 This hypothesis makes four claims:

1. Lower tones are more likely to be rising
(lower-rises-more)
2. Higher tones are less likely to be rising
(higher-rises-less)
3. Higher tones are more likely to be falling
(higher-falls-more)
4. Lower tones are less likely to be falling
(lower-falls-less)

In different parts of this paper I will be referring to one or another of these claims.

- 6 "Tāk" is used to refer to a dialect described by Simmonds (1965): he says that on the basis of its linguistic characteristics it should be grouped together with the dialects that Egerod (1961) refers to as Yuan (i.e. Kam Muang) but he does not say by what name his Tāk consultant actually referred to his or her own language. I use the term "Tāk Dialect" --a translation of the name used by the language consultant--to refer to a dialect described by Sautter (1970, with accompanying tape) said to be spoken in the villages of Hua Diat, Wat Phrāo, Chiang Thōng, and Tāk district. (This dialect seems to be similar or identical to the one described by Simmonds.) Sautter refers to the dialect simply as "Tak", and does not say that it is a Kam Muang dialect, although she notes that it is mutually intelligible with the dialect of Chiang Mai "although the tonal system is different." (Sautter 1970, page 1) In fact, both "Tāk" and "Tāk

Dialect" seem to be identical in most respects to dialects referred to as Kam Muang or Northern Thai, and it probably would not be wrong to list both among the Kam Muang dialects.

- 7 The exact pronunciation of the Tran Ninh tones is not altogether clear from Guignard's description (Guignard 1912, page XX), but based upon what I think is the most likely interpretation I would tentatively assign it to the Lān Nā tone type. See also Brown (1962, 165, footnote 5).
- 8 I.e. the variety of Thā Uthēn Nyō recorded by William Gedney (unpublished fieldnotes, 1965). The variety of Thā Uthēn Nyō described by Simmonds (1965) is quite different and is not of the Lān Nā type.
- 9 The case for including these dialects in the Lān Nā group is based on a number of different hypotheses and involves positing a number of hypothetical intermediate stages. Against the whole background of the theory of tonal change discussed here, the inclusion of Lao Ngao, Tāk Bai, and Nam Bac in the Lān Nā tone type is plausible, in my opinion. But given only the small portion of the evidence which there is space for in this paper, it is difficult to see what is Lān-Nā-like about these three dialects, so that the whole issue is best set aside for a later, fuller, discussion.
- 10 Readers wishing a copy of this material are invited to write to the author, c/o Brenda Johns, Black Studies Department, University of Nebraska at Omaha, Omaha, Nebraska, 68182, U.S.A.
- 11 In Ban Lao and Muong Khuong it is not clear what the starting point of A-*ph is.
- 12 For an explanation of the exceptions see Brown (1975, page 41).
- 13 There is one exception to this statement--Jones's description of Chiang Mai (Jones 1965)--and one possible exception--Egerod's description of Chiang Mai (Egerod 1959, page 127: a brief summary of Chiang Mai tones in an article mainly devoted to a different dialect; cf. also Egerod 1961)--but a discussion of these exceptions is beyond the scope of this paper.
- 14 As described by Brown (1962, 1965) and by Jones (1965) and as I heard it in some very brief work with a student of mine from Phrae whose name I unfortunately failed to record. Simmonds (1965), on the other hand, says that in Phrae, C-*b is high rising-falling, just like in Chiang Mai. This may be a different subdialect from the one observed by Brown, Jones, and myself. On the other hand it is conceivable that Simmonds's language consultant might have been giving him the Chiang Mai pronunciation rather than the true Phrae pronunciation of this tone, since--as I was told by several Kam Muang speakers from various localities--the Chiang Mai pronunciation is considered more aesthetically pleasing.

- 15 What I am here calling the "Lān Nā group" is essentially a somewhat modified version of what Brown (1962, 1965) calls the "Chiang Saen group". My reconstruction for Proto-Lānnā differs, however, from Brown's reconstruction for Proto-Chiang-Saen (Brown 1962, 1965, dialect #3, page 76). I hope to devote a later paper to these differences. For the present, suffice it to say that Brown reconstructs the Proto-Chiang-Saen A-tones as falling (or falling-rising) in free alternation with rising. Brown's reconstruction can be shown to account for the facts at least as well as the one presented in this paper does. My reconstruction--which I regard as a first approximation, not as a definitive hypothesis--is simpler and I will adopt it here for that reason.
- 16 Most descriptions of the Chiang Mai dialect describe A-*ph as low rising and A-*b either as mid level (William Gedney, fieldnotes; Purnell 1963; Suntharagul 2505; Jones 1965; Haas 1958; and observations made by William Gedney and his students on the speech of Mr. Boonyong Keiwkarnka, March, 1977) or as mid with a slight fall at the end (Brown 1962, 1965, dialect #10). However, Pantupong (1976) depicts curves based on spectrographic measurements of a variety of Chiang Mai speech in which both A-tones are rising. Such variation is not surprising since Chiang Mai is a regional center which attracts people from many parts of Northern Thailand. Simonds (1965, page 145) says that the A-*b tone in Phayao and in Tāk is a "mid glide", but does not explain what he means by the term "glide".
- 17 Egerod's assertion that the tones of Chiang Rāi and Lamphūn are phonetically similar or identical to those of Chiang Mai (Egerod 1961, pp. 49, 61) is puzzling because it contradicts both the observations of other linguists and also the intuitions of several Kam Muang speakers who told me (spontaneously, without having been asked anything about tones) that the tones of Chiang Mai sound different from those of dialects farther east.
- 18 But see footnote 16.
- 19 Simmonds (1965, p. 136) describes the A-tones of this dialect as follows:

A-*ph "Rising"
 A-*p*?b "high mid"
 A-*b "H[igh] M[id] glide"

There are two problems here: (1) it is not clear from Simmonds' "Rising" where the starting point of A-*ph is, so we cannot say with certainty that A-*ph starts lower than A-*p*?b or A-*b in this dialect; (2) Simmonds does not explain what he means by the term "glide", so we do not know whether or not A-*b in this dialect conforms to the higher-rises-less hypothesis.

- 20 The A-tones of Ban Lao and of Muong Khuong (William Gedney, unpublished fieldnotes) are probably similar or identical to those of Šin Fong Yiw (see figure 4). However the height of the starting point of A-*ph*p*?b is not clear for Ban Lao and Muong Khuong so that we cannot say with certainty that A-*ph*p*?b starts lower than A-*b in these two dialects.
- 21 This statement should be regarded as tentative since Professor Gedney worked only briefly on this dialect. Nor have I checked his fieldnotes exhaustively.
- 22 The Shan dialects spoken in Lāi Hkā and Mǒng Nāi seem to be either like Chiang Rāi, or like Hsen Wi and Hsi Paw, in this regard, but the available descriptions (Cushing 1871, 1881; Bandhmedha 2507) though phonemically quite precise are phonetically imprecise and difficult to interpret with certainty. The material on Shan tones in Egerod (1957), although phonetically precise, has also not been used because it is not clear whether his description represents a single dialect or an amalgam of several dialects.
- 23 In modern Hsen Wi, C-*ph*p*?b and C-*b start at about the same height. I would like to reconstruct C-*b as higher: (1) because it falls more (higher-falls-more principle), (2) because it still does start higher in Chiang Rāi. It is admittedly circular to invoke the higher-falls-more, etc. principle in a chain of argument intended to demonstrate that very principle, but the aim here is to show that if the principle is accepted, much synchronic data can be neatly fit into a diachronic model. I am not attempting to prove that the higher-falls-more, etc. principle follows as a logically necessary result from the synchronic data.
- 24 This is my own observation, based on careful listening to a tape which I made of Mr. Vihtun Wonglu and to a tape which William Gedney made of Sai Min Awng.
- 25 This system is reproduced from William Gedney's unpublished fieldnotes. However, in personal communication, Professor Gedney has told me that it is possible that in Hsen Wi B-*b really has a slight fall.
- 26 William Gedney, unpublished fieldnotes. Note that this material represents Professor Gedney's tentative analysis of a dialect he worked with only briefly, and therefore should be used with caution. Dejevongsa, Soulisak, Koxayo, and Chamberlain (1972, page 12, dialect #7) and Egerod (1961, p. 64) describe a slightly different variety of Nakhōn Phanom speech.

- 27 These Vientiane tone shapes are taken from Brown (1962, 1965, dialect #27). Those given by Compton (1971), by Chamberlain (1972, page 27, dialect #7), and by Patcharin Peyasantiwong (class presentation with tape, 1977) are nearly identical. On the other hand, in the tone shapes given by Dejvongsa, Soulisak, Koxayo, and Chamberlain (1972, page 11, dialect #5) for Vientiane, and in those which I heard in some very brief work with a Vientiane speaker I interviewed in Honolulu, A-*b is a bit higher, just like Khōn Sawan. Finally, William Gedney (unpublished fieldnotes) recorded a Vientiane tone system with a different split in the A-column--viz. *ph vs *p*?b*b -- and in which A-*p*?b*b is recorded as mid level rather than rising. Thus several stages of the progression would all seem to be represented in Vientiane. In addition, Simmonds (1965, page 136) describes a rather different type of Vientiane speech which has three A-tones.
- 28 The chart in Dejvongsa, et al. is smudged at this point so that it is not clear whether or not there is a brief period of glottalization at the end of this tone.
- 29 For Vientiane and Attopen the descriptions are definite enough, but (as mentioned in footnote 26) Gedney's analysis of Nakhōn Phanom is tentative, and I do not feel very certain about the relationship between B and C-*ph in this dialect.
- 30 A-*p*?b is in complementary distribution with the other two A-tones since it occurs only after /p t c k b d j ?/ (these being the modern reflexes of the *p- and *?b- class consonants in this dialect) and the others occur only elsewhere. But it would be difficult to decide whether A-*p*?b should be assigned to the same phoneme as A-*ph or to the same phoneme as A-*b, since it is phonetically intermediate between the two.
- 31 In Bua Yai and in Phanom Phrai, A-*p*?b is in complementary distribution with A-*ph and A-*b, just as it is in Chaiphūm (see previous footnote), and, for that matter, in most or all of the three-A-tone Central and Southern Lao dialects. Since A-*p*?b and A-*b are phonetically similar (both falling, as opposed to the rising A-*ph), in a strict phonemic analysis one would treat them as allophones of a single phoneme.
- In connection with the Chaiphūm-Buayai-Phanomphrai progression we should mention also the variety of Kene Thao speech described by Simmonds (1965, page 146; different from the variety of Kene Thao [Kaen Thao] described by Brown 1962, 1965, dialect #21). Simmonds describes the tones as follows:

	A	B	C
*ph	rising	high-mid	low (c)
p?b	mid		high falling
*b	high		(c)

c = glottal constriction (see Simmonds 1965 page 135)

This description is not as phonetically precise as one might wish (for example I would like to know whether the starting point of A-*ph is lower than that of A-*p*?b), but it certainly looks a great deal like Bua Yai. If A-*p*?b and A-*b are indeed level in this dialect (as opposed to slightly falling in Bua Yai) then Kene Thao can perhaps be inserted into the Chaiyaphūm-to-Phanomphrai progression, between Chaiyaphūm and Bua Yai, making the progression look still more impressive.

- 32 Brown (1962, page 109; 1965, page 109) suggests the following explanation for this special development in the Phanom Phrai B-column (compare Phanom Phrai with figure 9):

This dialect is situated between the Ubon dialects and the Roi-et dialects. It seems to be a case of Ubon "correcting" itself to Roi-et. In so doing, it gets back the extra tone only in those words with distinctive initials: voiced and glottalized stops [i.e. /p t c k b d/ < *p *t *c *k *?b *?d. /p t c k/ are accompanied by simultaneous glottal closure in most or all Tai dialects.] Thus the M1 [i.e. B-*p*?b] tone of Ubon raises in the environment of voiced and glottalized stops and remains unchanged in all other environments.

It is not quite clear in Brown what sort of B-tone Phanom Phrai has after /j/ (<*?j) and /?/ (<*?). These initials are also distinctive but they are not voiced or glottalized stops.

- 33 In Sithandone province, in southern Laos (exact locality not specified), A-*p*?b has a slight initial rise, but A-*b does not (Compton 1977, pages 358-359). This dialect, however, is not a good example of the phenomenon discussed here because the A-*ph tone, described by Compton as "a mid, rising tone", apparently starts higher than the A-*p*?b tone (described by Compton as "a low, mid tone with a slight initial rise and final fall"). See footnote 35.

In all of these dialects, A-*p*?b occurs only after /p t c k b d j/ and /?/ (< *p *t *c *k *?b *?d *?j and *? respectively), and the other two A-tones occur only elsewhere, so that in a strict phonemic analysis, A-*p*?b and A-*b, which are phonetically similar, would be called allophones of a single phoneme. See also footnotes 29 and 30.

- 34 Figure 9 is based entirely on Brown (1962, 1965 dialects 33-43, 45, 46). Compton's tone curves for Ubon (Compton 1971) are exactly like Brown's (dialect #37) except that Compton's A-*b perhaps does not fall quite as low as Brown's. On the other hand, Egerod (1961, page 63) describes a variety of Ubon speech which is rather different from that described by Brown and Compton and which does not have the six characteristics listed in section 7.
- 35 As in other Southern Lao dialects with three-tone A-columns, A-*p*?b and A-*b are in complementary distribution in Khōn Kaen and Udōn and could be analysed as allophones of a single phoneme.
- 36 It is disturbing that Dejavongsa, Soulisak, Koxayo, and Chamberlain show the lower of these two tones (C-*ph) as having a more abrupt fall than the higher one (B) contrary to the hypothesis that a lower tone will fall less. I am not certain what this means. There is a good deal of evidence in favor of the lower-falls-less hypothesis and I am reluctant to abandon it solely on the basis of a very minute phonetic difference recorded by a single group of authors for a single dialect.
- 37 Except in Compton's Sithandone: see footnote 32.
- 38 The dialects of Savannakhet, Pakse, Khong, Kene Thao, and "Repatriated Lao" described by Simmonds (1965, pp. 145-146) and the dialect of Udōn described by Egerod (1961, p. 63) seem to belong here as well (see table below). I have not included them in this discussion: (1) because I do not know from Simmonds's and Egerod's term "rising" whether the tone in question (A-*ph) starts lower than the other A-tones or not. (2) I do not know what Simmonds means by the term "glide" used to describe the A-*b tone in Savannakhet and Repatriated Lao.
- abbrevs: r(ising), h(igh), m(id), g(lide), l(ow), f(alling),
c: glottal constriction.

	S'khet	Pakse	Khong	K.Thao	R.Lao	Udōn
A-*ph	r	r	r	r	r	r
A-*p*?b	hm	hm	hm	m	m	m
A-*b	hmg	hf	hf	h	hg	hf
B	m	m	m	hm	hm	h
C-*ph	l	l(c)	l(c)	l(c)	l	l
C-*p*?b*b	mf(c)	mf(c)	mf(c)	hf(c)	mf*	mf
					mf(c)**	
*C-*p*?b	**C-*b					

- 39 There are some puzzling exceptions, namely dialects in which there are three A-tones, just like Southern Lao, and in which A-*ph is rising and the other two A-tones are falling, just like Southern Lao, but in which --unlike the Southern Lao dialects discussed in section 7 and contrary to the higher-rises-less hypothesis--A-*ph starts higher than A-*ph*?b. These exceptions are: the Southern Lao dialect spoken in Sithandone province (Compton 1971); the variety of Ubon described by Egerod (1961, p. 63); and the three Tai Nua dialects (Chefang, Nam Hkam, and Van Poong Tong) described by Harris (1975). It may be that in all these dialects A-*ph was originally lower and has moved up, but at present I am at a loss to explain why it should have done so.
- 40 The starting point of A-*ph*p relative to that of A-*p*?b in Kengtung Khün is not clear either in Gedney's fieldnotes (1964) or in Egerod's descriptions (Egerod 1959, pp. 124, 127; 1961, p. 61) so that we cannot be certain that A-*?b*b actually starts higher than A-*ph*p. However on the basis of comparison with very similar looking tone systems such as Khün Bān Veng, Lue Möng Yawng, or the type of Khün Kengtung recorded by William Gedney and his students from Sao Sai Möng (1975), it seems reasonable to suppose that in Khün Kengtung A-*?b*b either presently starts higher than A-*ph*p, or else did so at one time.
- 41 This Shan dialect was not included in the discussion in section 5 because its tone system is somewhat different from those of the Shan dialects treated there: in certain respects its tones are more like those of Khün.
- 42 The tones of the two Lue dialects mentioned here are quite different from those of the Lue dialects of Sip Song Pan Na and adjacent parts of Laos. Möng Yawng is in Burma, near Kengtung. Houei Lao is in northern Laos, west of Luang Prabang, near the Thai border.
- 43 Brown (1962, 1965) refers to the dialect of the town of Nakhōn Rāthasīmā--or Khōrāt, as it is usually called--as a dialect of Central Thai. Sanguan Chantalay, a student of mine from Khōrāt, referred to Khōrāt and (Central) Thai as separate languages, although he said that they were very similar. The tones of Khōrāt are very similar to those of Yo and Kaleung (section 6) (except that in Khōrāt the A-tone splits *ph vs *p*?b*b whereas in Yo and Kaleung it splits *ph*?b*b vs *b) and Brown believes that Khōrāt is "the result of a Yo system recoding to Bangkok." (1962, 1965, p. 113.)
- 44 In Standard Siamese there are two tones which start lower than A-*p*?b*b: rising tone (A-*ph), which starts fairly low and rises, and low tone (B-*ph*p*?b), which is low level or slightly falling. In accordance with the higher-falls-more principle these both exerted pressure on A-*p*?b*b to become more falling., as Henderson describes.

As A-*p*?b*b became more falling, it must have started to sound similar to falling tone (B-*b/C-*ph*p*?b), which in the Siamese of the early 1900 's seems to have been falling from mid to low (cf. C. Bradley 1911, 1916; Henderson 1976; William Gedney, personal communication). Falling tone responded by moving up (see also Brown 1975, p. 41): in modern Standard Siamese falling tone starts rather high and falls abruptly to rather low, so that falling tone (higher) falls a longer distance than mid tone (lower), upholding the higher-falls-more principle.

- ⁴⁵ For example Abramson (1961, 1974, 1975, n.d.), Abramson and Erickson (1977), Erickson (1975, 1976). See Chan (1977) for an excellent synthesis of the literature.

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