

A Comparative Study of Tones in the Kammuang of Lampang and Chiang Rai

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Abstract

A. Scope of the study

This paper

B. Research methodology

Wordlists were obtained from speakers of Lampang, Chiang Rai, and Chiang Mai dialects of Khammuang, as well as a speaker of Bangkok Central Thai. The words were recorded and analyzed instrumentally in an effort to graphically represent the tonal variation of the Khammuang dialects involved, as well as the overall contrasts between Khammuang and Central Thai.

C. Research results

The tonal systems of Chiang Rai and Lampang were found to be virtually identical to one another. Chiang Mai tends, on the whole, to more closely resemble Bangkok Thai, except that Chiang Mai's Gedney A2 category matches her Northern siblings. In fact, it may be argued that, to native Northern Thai speakers, A2 as a rising tone is the most pivotal tone in clearly distinguishing Khammuang from Central Thai, which has a mid pitch in A2.

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บทคัดย่อ

ก. ขอบเขตของการวิจัย

การวิจัยครั้งนี้เป็นการศึกษาเบื้องต้นเกี่ยวกับการวิเคราะห์เสียงวรรณยุกต์ที่อาศัยหลักการฟังเสียงพูดจากภาษาคำเมืองจังหวัดลำปาง และจังหวัดเชียงราย ในภาคเหนือของประเทศไทย ซึ่งใช้การบันทึกเสียงด้วยคอมพิวเตอร์จากคำต่าง ๆ ในรายการคำ (wordlist) ของวิลเลียมเกดเนียที่ใช้วิเคราะห์ระบบเสียงวรรณยุกต์ของภาษาในตระกูลไต (เกดเนีย : 2515)

ข. ระเบียบวิธีการวิจัย

รายการคำ (wordlist) ได้มาจากผู้ที่พูดภาษาคำเมืองของจังหวัดลำปาง จังหวัดเชียงราย และจังหวัดเชียงใหม่ รวมทั้งผู้พูดภาษาไทยภาคกลางจากกรุงเทพ คำต่าง ๆ ในรายการคำนี้ได้บันทึกและวิเคราะห์ด้วยการใช้โปรแกรมคอมพิวเตอร์ในการแสดงแผนภาพคงรวมแตกต่างของเสียงวรรณยุกต์ของภาษาคำเมืองที่ทำการทดสอบ รวมทั้งข้อแตกต่างภาษาทั้งหมดระหว่างคำเมืองและภาษาไทยกลาง

ค. ผลการวิจัย

ระบบเสียงวรรณยุกต์ของจังหวัดเชียงราย และจังหวัดลำปางได้ผลออกมา คล้ายคลึงกันมาก ส่วนคำเมืองของจังหวัดเชียงใหม่โดยรวมจะใกล้เคียงกับภาษาไทยภาคกลาง จากกรุงเทพ ยกเว้นในหมวดเกดนิย A2 จะเหมือนกับภาษาในตระกูลเดียวกับทางภาคเหนือ ซึ่งมีข้อแย้งได้ว่า สำหรับผู้พูดที่เป็นชาวไทยเหนือ A2 ซึ่งเป็นวรรณยุกต์จัดว่าเป็นเสียงสำคัญที่แยก คำเมืองจากภาษาไทยกลาง ซึ่งเสียงนี้มีระดับเสียง (pitch) กลางใน A2

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1.0 Introduction¹

In the world of Tai² linguistics issues of tone are of considerable importance. While the seventy or so languages in the family share a surprising amount of phonological and lexical features, considerable variation can be found in the tones of each individual language and dialect. Gedney (1972: 191) asserts that the single most useful indicator of dialect boundaries in Tai areas is some sort of tonal change, i.e. an increase or decrease in the total number of tones, a shift in the distribution of tones, or the merging of tones which are distinct in neighboring dialects.

The uniqueness of Tai tonal systems across each dialect is reflected in the historical comparative work of J. Marvin Brown (1964). The basis for Brown's reconstructive work is tonal data drawn from most of the provinces within Thailand. Gedney's criteria can be applied to dialect-level variation, as well as boundaries between the major Tai languages of Thailand: Kammuang, Issarn, Klan (Central Thai), and Tay.

While Gedney and Brown based their findings on their highly-trained ears, other linguists have applied instrumental analysis to the question of Tai tone. Arthur Abramson, for example, led the field with his analysis of Bangkok Thai vowels and tones (1962). In the 1980s, Chulalongkorn University linguist M.R. Kalaya Tingsabadh went a step further by collecting data from various dialects of Central Thai, inspiring her to propose the creation of a "tonal map" for the entire country. Such a map, based on actual acoustical measurements which could be compared with one another at the stroke of a

¹ I am indebted to Dr. Ken Gregerson for reading and commenting on drafts of this paper. Any remaining errors are mine alone.

² As used in this paper, "Tai" refers to the Tai family of languages, whereas "Thai" refers to the national language of Thailand.

computer key, would be a tremendous asset for understanding both where and how dialect boundaries have come into being.

The genesis of this present work on Kammuang (Northern Thai) tone lies in a research trip taken in 1996 by Michael Cooper, Jonathan Gardner, and myself. We were trying to "get our feet wet" in the Kammuang language by comparing the tones of the various provinces. Located in Lampang, the geographical center of the North, Yonok College³ proved an excellent location to interview speakers of the several dialects. Two students from each Northern province were asked to fill out a sociolinguistic questionnaire and to tell a short story in their home dialect of Kammuang before viewing pictures designed to elicit all the words from Gedney's 1972 diagnostic "Checklist for Determining Tones in Tai Dialects."

Although our methods of data collection differed somewhat from the techniques employed by Dr. Kalaya (of whose work we were then unaware), the output in terms of computer-generated tone shapes based on instrumental data is similar. We thus hope that the findings of our papers will be of use to Dr. Kalaya and other interested individuals.⁴

³ We are grateful to Dr. Nirund Jivasantikarn, president of Yonok College, and Yonok faculty members Bhubate Samutachak and Tityaporn Moonsawat for their assistance in procuring speakers and providing recording facilities.

⁴Necessity has dictated that our collective work be published separately, Jonathan Gardner examining the Nan and Prae dialects, Michael Cooper the Phayao dialect, and myself reporting on the Lampang and Chiang Rai dialects. We hope to consolidate all our information in the future, at least in terms of having all the data together on electronic media, thus making it possible for other scholars to do more intensive comparative work across the language.

2.0 Gedney and his boxes

Beginning students of Thai are inevitably confused by the abundance of seemingly redundant letters: why, for example, do we need three symbols for /kh/? The answers lie with centuries of tonal changes whose lineage can be traced through contemporary written and oral Tai systems across the breadth of the Tai linguistic area.

Gedney's account of this evolution begins with Proto-Tai, which was thought to consist of three classes of open syllables--A, B, and C--and two classes of closed ("dead") syllables--D-S (closed syllables with short vowels) and D-L (closed syllables with long vowels)--as shown in Figure 1.

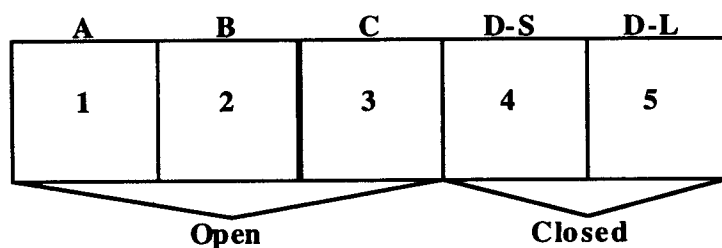


Figure 1. Proto-Tai tones (adapted from Gedney, 1973)

Implicit in the schema of Figure 1 is a distinction between tones and certain types of syllable finals. Thus, D tones all have stop final coda, while A, B, C have continuant/vocalic finals. Originally, the A, B, C tones may themselves have also differed from one another by virtue of some kinds of final distinctions (e.g. glottalization, spirancy, etc.). In this regard, it is possible that Tai languages may have followed a similar route of word final consonant influence on tonal development as that proposed by Haudricourt for Vietnamese. In Haudricourt's reconstruction, Vietic languages did not originally have the full-blown tone systems they have today, but did have word final consonants which would later affect tone formation as the finals disappeared or were

absorbed into the syllable peak. For example, glottal constrictions which may be remnants of such word final consonants have been found in the C tones of some Central and Southwestern Tai languages (including Chiang Mai Kammuang).

As time passed, a far reaching historical change began when the original proto-tones further divided on the basis of word initial consonants. The basis of this split seems to have been word initial voicing. That is, voiced initials are thought to have depressed the pitch of words in which they occurred, while voiceless initials did not (Li Fang Kuei, 1977:26). These conditioned pitch allophones, however, later took on true contrastive phonological status when the original voiced versus voiceless initial consonants fell together, both being voiceless. The result is as diagrammed in Figure 2.

| | A | B | C | D-S | D-L |
|-----------------------|---|---|---|-----|-----|
| Voiceless Initials | 1 | 3 | 5 | 7 | 9 |
| Voiced Initials | 2 | 4 | 6 | 8 | 10 |

Figure 2: Initials at time of first Tai tone split (adapted from
Gedney, 1973)

Further elaboration has been conventionalized by Gedney in distinguishing four categories of initials, namely voiceless fricatives, voiceless unaspirated stops, glottals, and the remaining voiced initial consonants. Each associates with a subcategory of tone, resulting in twenty potential 'tone boxes' as in Figure 3.⁵

⁵ By convention, each individual tone box is identified by its column (A, B, C, D-S, D-L) and row (1, 2, 3, 4). Voiceless fricatives correspond to row 1, voiceless unaspirated stops to row 2, etc.

| | A | B | C | D-S | D-L |
|------------------------------------|---|---|----|-----|-----|
| Voiceless friction sounds | 1 | 5 | 9 | 13 | 17 |
| Voiceless unaspirated stops | 2 | 6 | 10 | 14 | 18 |
| Glottals | 3 | 7 | 11 | 15 | 19 |
| Voiced | 4 | 8 | 12 | 16 | 20 |

Figure 3: Maximal tonal categories for Tai (adapted from Gedney, 1973)

This is not to say that any given Tai language had or has all 20 contrastive tones. Rather, each language “clumped” certain tone domains together in its own unique way. Thus, tonal contours can be quite different from one Tai language to another. Siamese Thai, for example, “clumped” these potential tone subcategories as shown in figure 4.

| | A | B | C | D-S | D-L |
|--|---------------|----------------|----------------|-------------|----------------|
| Voiceless initials at time of split | 5th rising | | | | |
| | 1st mid | 2nd low | 3rd falling | 2nd low | 2nd low |
| Voiced initials at time of split | | 3rd falling | 4th high | 4th high | 3rd falling |

Figure 4: Historical Sources of the Tones of Siamese (adapted from Gedney, 1973)

The actual phonetic tone contours observable today can be found in different proto-tone categories, as shown in Figure 4. For example, in Siamese, B1-3, D-S1-3, and D-L1-3 all are realized as low tones, B4 and D-L4 are both realized as falling tones, C4 and D-S4 as high tones, etc.

3.0 Lampang and Chiang Rai Tonal Configurations

The logical first step in seeking to understand the tones of Lampang and Chiang Rai is to determine which boxes “clump” together in the sense of Figure 4, above. This also highlights areas which merit in-depth comparison to Central Thai.

Data from the two Lampang speakers and the two Chiang Rai speakers were compared with the MacCECIL⁶ program, revealing that both dialects divide the Gedney chart (recall Figure 3) into ten sections, as shown in Figure 5, below:

| A | B | C | D-S | D-L |
|---|---|---|-----|-----|
| 1 | 3 | 5 | 7 | 9 |
| 2 | | | | |
| | 4 | 6 | 8 | 10 |

Figure 5: Preliminary division of tone boxes for Chiang Rai and Lampang dialects

Chiang Mai Kammuang divides up in the same configuration as Chiang Rai and Lampang, grouping A1 and A2, whereas Bangkok Thai (see Figure 4) “clumps” A2, A3 and A4 together--strong indication, by Gedney’s criteria, that a linguistic boundary has been crossed. In terms of Figure 3, Bangkok Thai thus associates only original voiceless

⁶ MacCECIL/PPC, version 0.8.2b2, © 1994-96, Summer Institute of Linguistics. CECIL stands for “Computerized Extraction of Components and Intonation in Language,” and has a number of applications for phonological analysis. Raw data from MacCECIL were exported to Microsoft Excel, as the graphing capabilities of the latter program help show the contrast. For purposes of clear comparison, only one speaker from each dialect (Chiang Rai, Lampang, Chiang Mai, Bangkok) is graphed here. The tones of the speakers not shown here almost invariably matched the graphed samples. The test subjects were part of a larger group of twelve Kammuang native speakers we asked to write out a number of sentences in Kammuang, utilizing the Central Thai script, in an effort to observe the phonemic reality of certain tones from native speakers’ point of view.

friction sounds (s-, th-, etc.) with one A tone and all other initial consonants with another A tone. The Northern Thai varieties, by contrast, group all voiceless initial sounds with one A tone and all voiced (including glottalized) initials with another A tone. Hence the contrasting tone chart patterns between Figures 4 and 5.

4.0 Tone shapes: Lampang, Chiang Rai, Chiang Mai, and Bangkok

In this section I present comparative toneplottings for sample words as pronounced by speakers from Lampang, Chiang Rai, Bangkok, and Chiang Mai. The Gedney-inspired tone categories indicated in the following plots specify A, B, C, D tone columns, plus 1, 2, 3, 4 rows in the Gedney pattern of Figure 3, thus A1,2,3,4, B1,2,3,4, etc., to designate the domains of tone “territories” being discussed.

4.1 A Tones

The A1 tone shapes of all four speakers are essentially the same: a basic rising tone, as shown in Figure 6:⁷

⁷ Speaker gender, is indicated in the chart as female voices are generally higher in frequency than male voices. This difference in frequencies does not significantly affect tone contours.

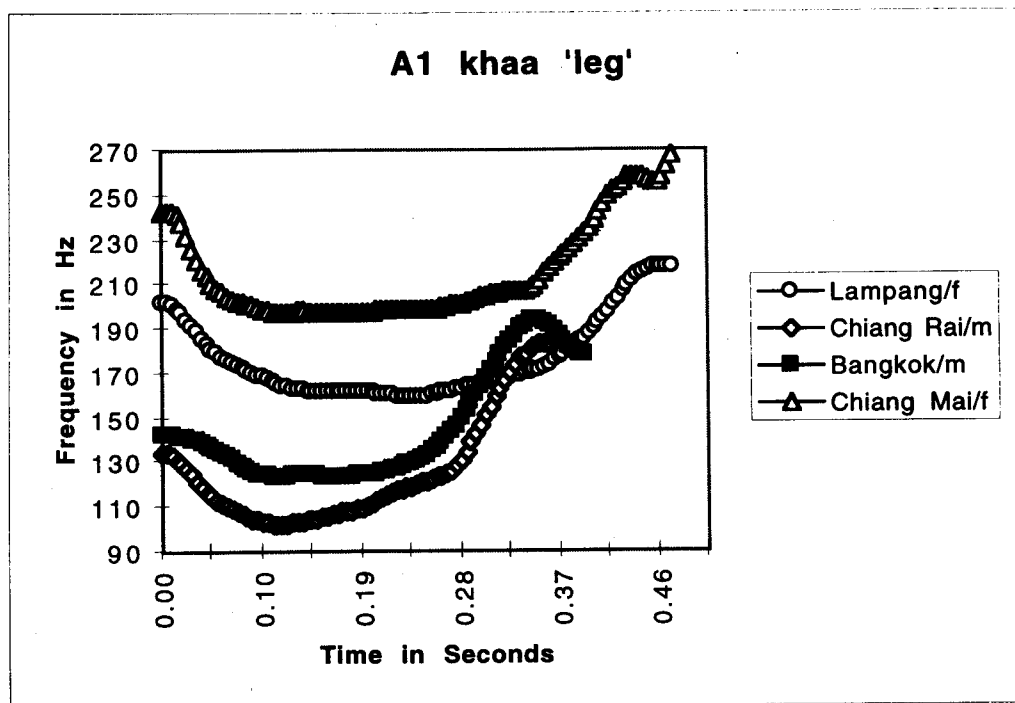


Figure 6. A1 Tone Comparison

The A2 tones of Chiang Rai, Lampang, and Chiang Mai plotted in Figure 7 are very similar to their A1 counterparts, whereas Bangkok Thai features a mid tone (virtually identical to Bangkok Thai's A3 and A4 tones) in A2, as shown in Figure 7.

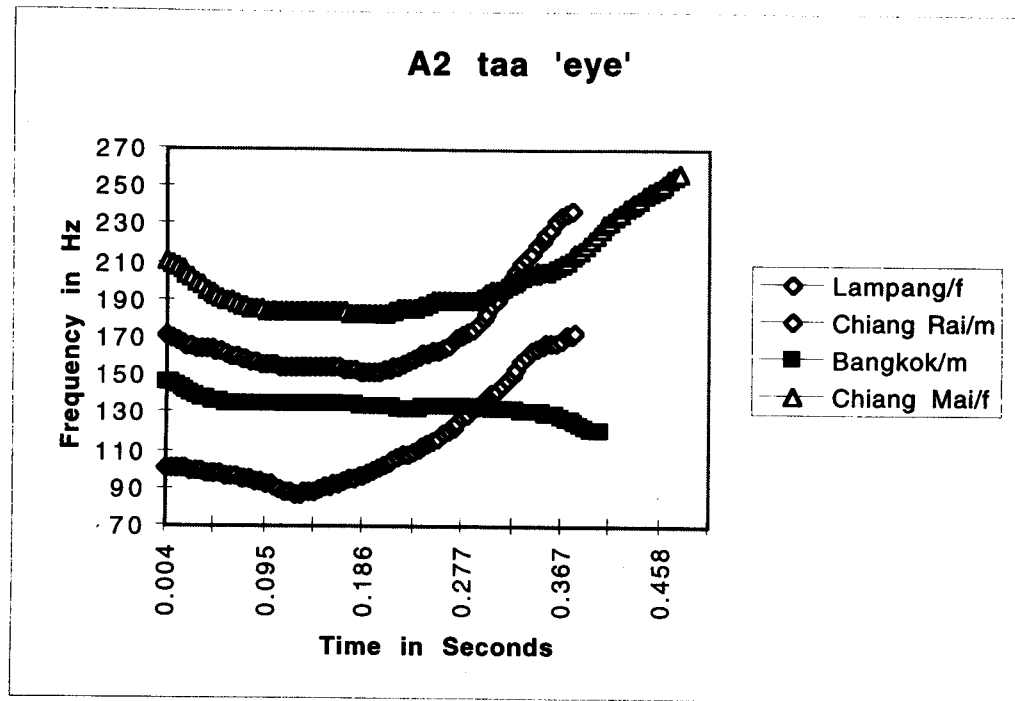


Figure 7. A2 Tones

The A2 tone thus marks a crucial, perhaps the most crucial, tonal difference between Central Thai and Kammuang.

When asked to write Kammuang A2 words using the Central Thai script, the Northern Thai test subjects invariably added the *may judthawaa* tone marker--the simplest way to make a mid tone into a rising tone. This indicates that the rising nature of A2 is something of which Kammuang speakers are quite conscious (Person 1996: 347).

The A3 and A4 tones of Chiang Mai Kammuang and Bangkok Thai as shown in Figure 8 are straightforward mid tones, as is Bangkok's A2-4. Lampang and Chiang Rai Kammuang, however, feature a slight rise syllable finally. When asked to spell A3 and A4 words using Central Thai script, however, virtually all the test subjects followed Standard Thai spellings, and maintained in interviews that A3-A4 are not at all like

Kammuang A2 words. Thus it would appear that the slight rise is heard only as phonetic detail and does not identify it with the rising features of Kammuang's A1-2 tones.

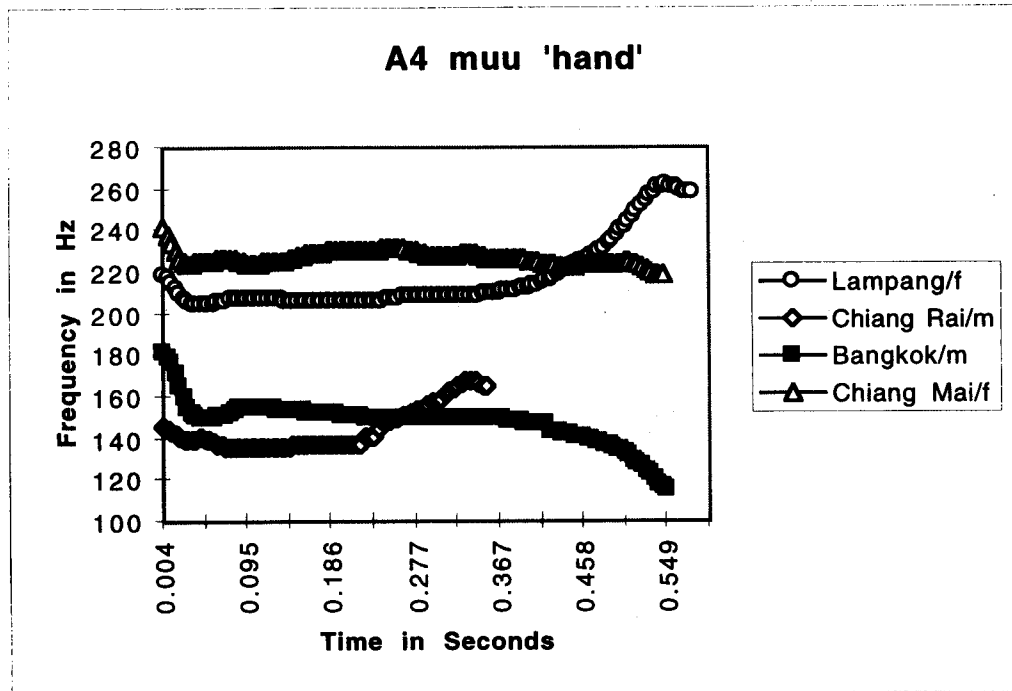


Figure 8. A3-4 Tone Comparisons

4.2 B Tones

Tones B1-B3 have the same basic shape in all dialects, representing a lowering level tone, as plotted in Figure 9:

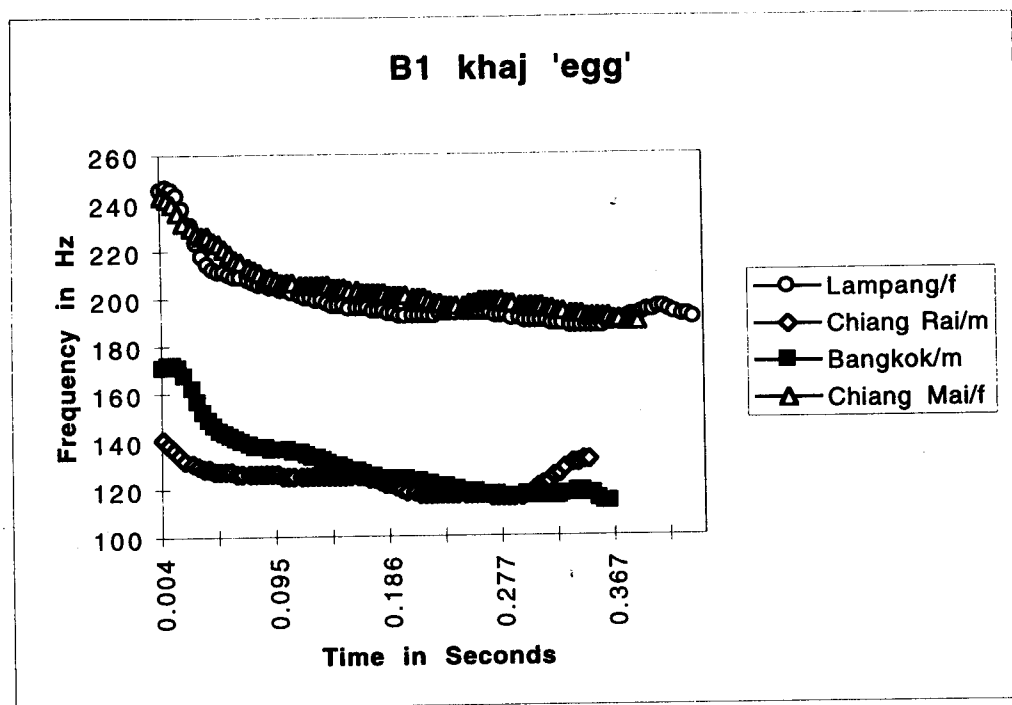


Figure 9. B1-3 Tone Comparisons

B4 is realized as a falling tone in all dialects, as shown in Figure 10:

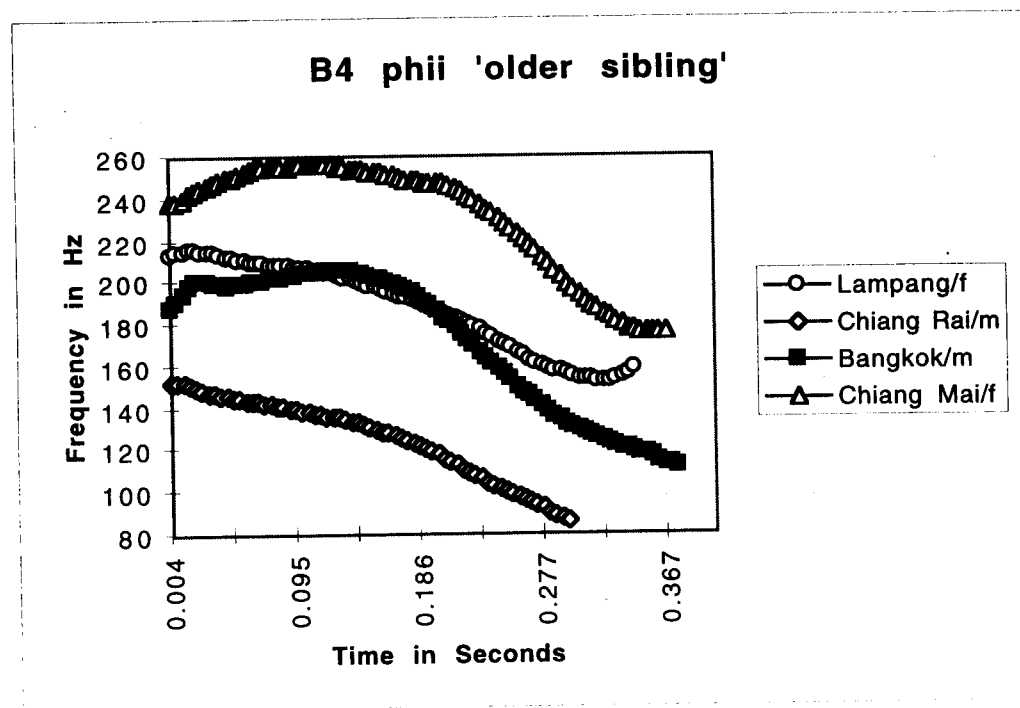


Figure 10. B4 Tone Comparisons

It should be noted that B4 words in Chiang Rai and Lampang tend to begin much lower (relative to the other falling tones in each dialect), and generally plummet downwards soon after the onset, while the other dialects feature a graceful rise prior to a tapered fall. Hence, following Purnell (1963:iii), I will consider the Chiang Rai and Lampang B4s mid-falling tones, while B4 in the other dialects is a plain falling tone, matching the falling tones from other boxes within each dialect.

4.3 C Tones

C1-C3 feature some interesting differences, as seen in Figure 11. Where Bangkok Thai and Chiang Mai⁸ Kammuang feature a fairly wide falling tone phonemically identical to B4, Lampang and Chiang Rai feature what might be called a narrow falling tone--involving a slight fall syllable initially, after which the contour becomes practically level:

⁸ Purnell's (1963:iii) assertion that Chiang Mai also has a narrow falling tone here is not supported by this data. It should nevertheless be noted that there can be significant tonal differences even in the areas immediately surrounding Chiang Mai city. The fact that the Chiang Mai tonal system on the whole is fairly similar to Bangkok Thai could have some sort of ongoing influence here--that there might be a tendency particularly among younger people to make some Chiang Mai tones conform more closely to their Bangkok Thai counterparts. Several graduate students in linguistics from the Chiang Mai area feel that the Chiang Mai C1-C3 tones are indeed identical to Bangkok Thai.

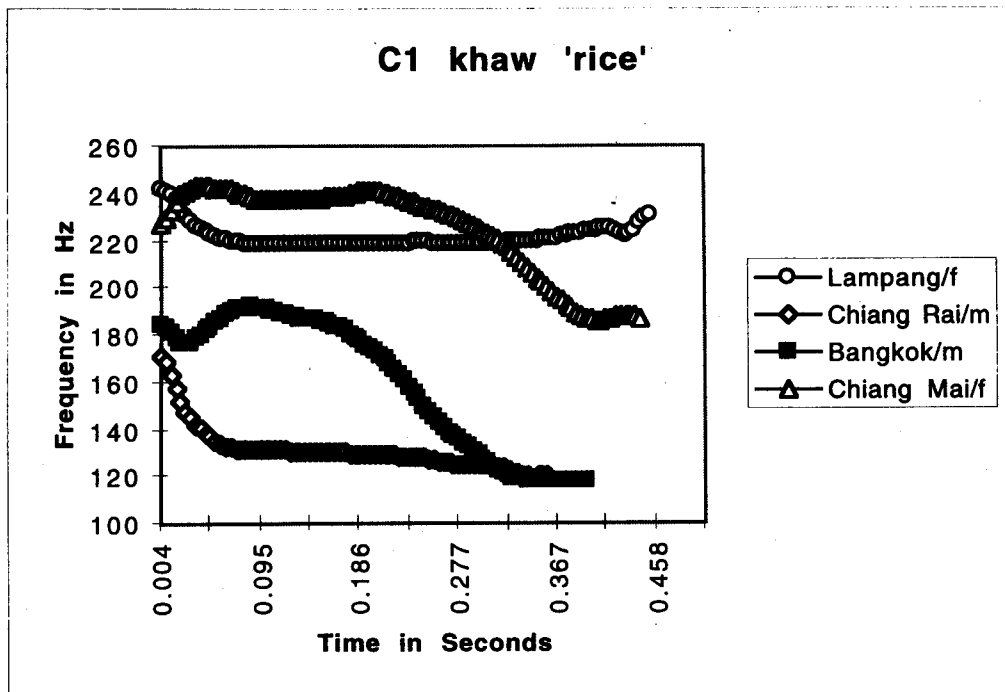


Figure 11. C1-3 Tone Comparisons

When asked to write C1-C3 words in the Central Thai script, the Lampang and Chiang Rai speakers were slightly confused. Many could be observed counting the five tones of Standard Thai on their fingers, then muttering "[Standard Thai] doesn't have that." They would then merely use the Standard Thai spellings. This indicates that this tone is phonemically distinct in the minds of native speakers.

C4 likewise reveals some rather dramatic differences, as plotted in Figure 12. As with C1-C3, Chiang Mai Kammuang is closer to Bangkok Thai's high, slightly rising tone than it is to its wide falling Kammuang counterparts: *

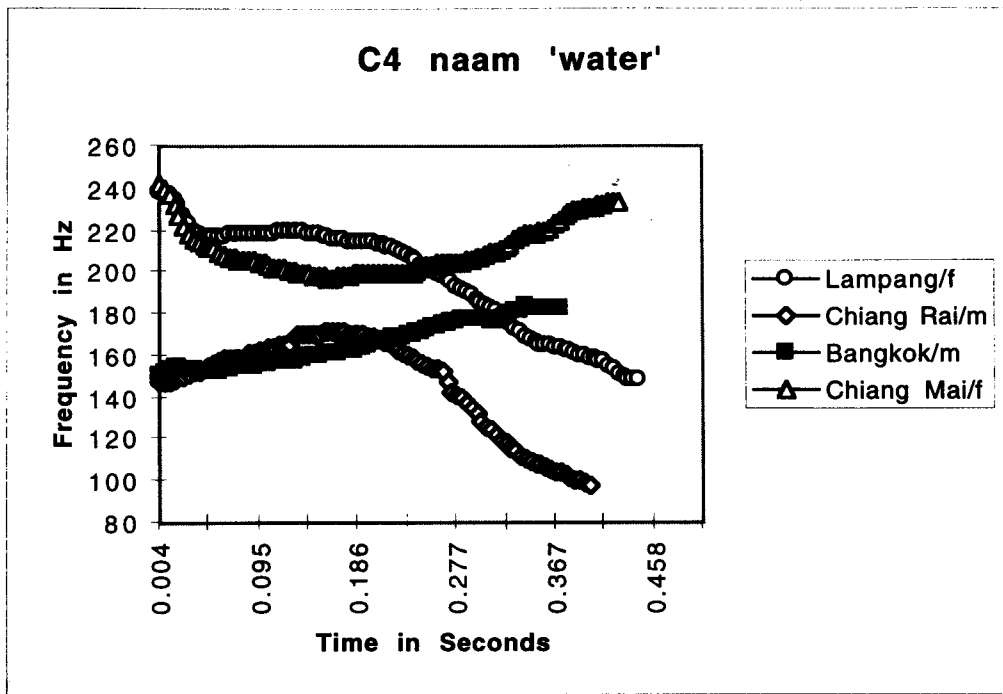


Figure 12. C4 Tone Comparisons

Here most subjects followed the Central Thai spelling. This accounts for the high nature of the tone, but not for its falling characteristic. A small number tried to portray a falling tone by adding *haw hiip*. This innovation seems to be the most logical way to portray the falling nature of the Kammuang tone; the fact that it was not used by the majority may indicate a lack of consciousness of the difference in tone or a reluctance to radically depart from familiar Central Thai spelling conventions. One or two subjects added *mai trii* to make what to them must seem to be a slightly different kind of high tone (since *mai trii* never occurs with these consonants in Central Thai).

4.4 D Tones

DS1-DS3 represent one of those points at which Central Thai and Kammuang display opposite tones: Bangkok speakers use a low tone here, while all three Kammuang dialects use a high tone as shown in Figure 13:⁹

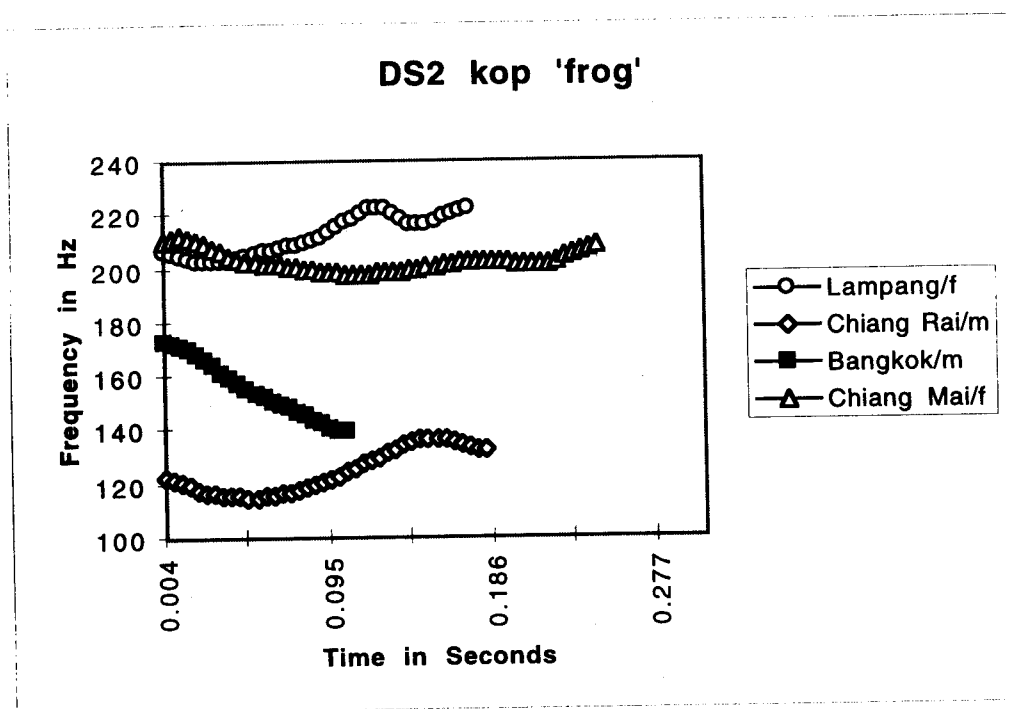


Figure 13. DS1-3 Tone Comparisons

Despite the opposite heights of these tones, most Kammuang speakers we observed retained Central Thai spellings for DS1-3. The addition of the *maj trii* tone mark would have resulted in a more phonetic spelling, clearly indicating a high tone.

⁹ The fact that the Chiang Rai speaker seems to have a lower tone than his Bangkok counterpart is due to the fact that the former's voice is significantly lower than the latter's, as can be observed on other charts. In addition, his velar stops seemed to be very glottal, with /k/ often tending towards [χ]—a phenomenon which seems to lower the onset of DS2.

DS4, as seen by comparing the Hz values of counterpart pitches between Figure 13 and Figure 14, features a relatively high tone in all four dialects.¹⁰

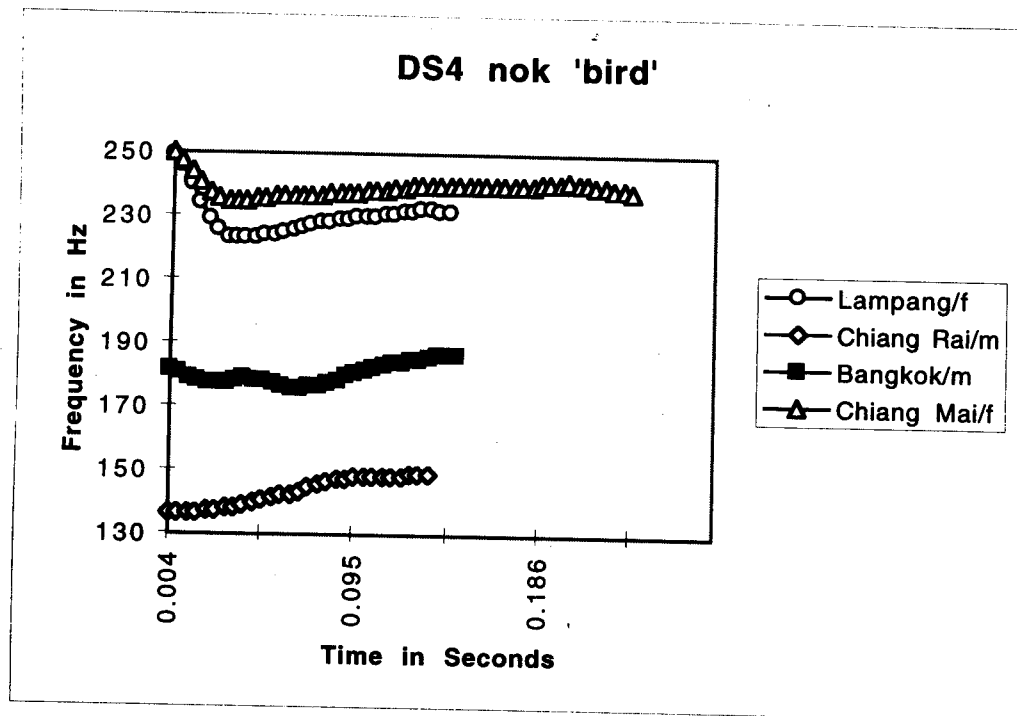


Figure 14. DS4 Tone Comparisons

Subjects did not try to indicate this rise in written form, preferring Standard Thai spellings.

All four dialects show basic lowering tones for DL1-3, as plotted in Figure 15:

¹⁰ Purnell (1963: iii) considers DS1-3 "high short rising" in Chiang Rai and "high level" in Chiang Mai, with DS-4 a "high short falling" in both dialects. While the data presented here does show a slight rise in DS1-3 for all the Northern dialects, and a slight rise can also sometimes be seen in DS4 for Lampang and Chiang Rai. A slight fall can be distinguished on some Kammuang DS4 words, but the available data does not conclusively show whether the DS1-3 and DS4 are phonemically distinct from one another.

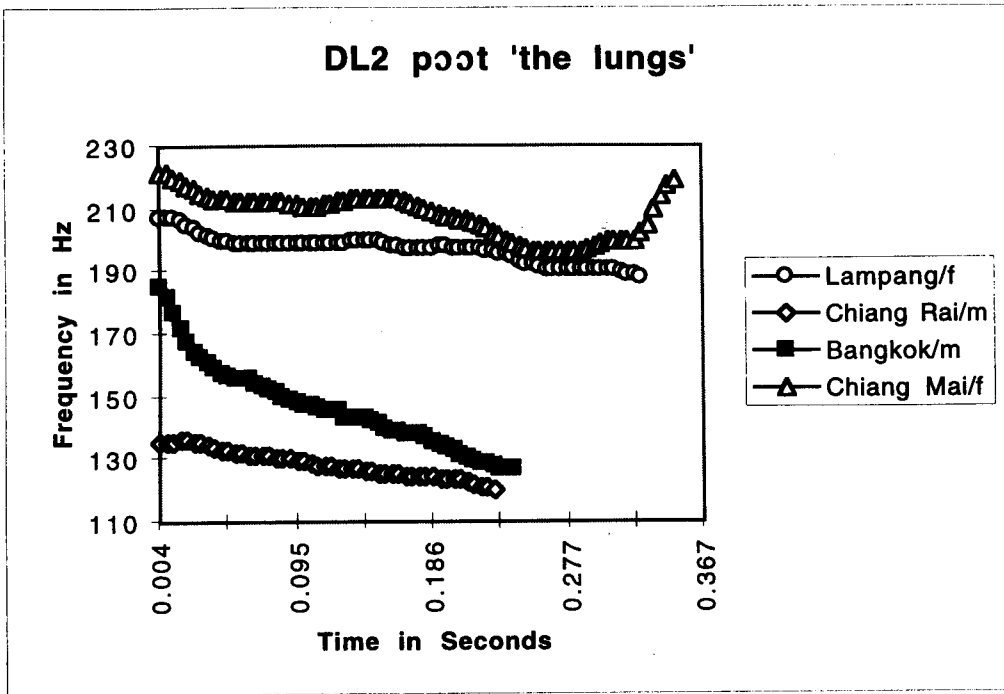


Figure 15. DL1-3 Tone Comparisons

Figure 16 graphically presents the uniform contrast of pitch profiles of DL4 tones compared to DL1-3 tones in Figure 15. DL4 tones are seen to begin with a higher Hz levels and then follow a rise-fall convex trajectory. DL4 also underlines the slight differences between the falling tones among the four dialects. Once again, Chiang Rai and Lampang feature mid-falling tones (as in B4 but unlike C1-3 and C4), while Bangkok and Chiang Mai start higher and drop further (as in B4 and C1-3):

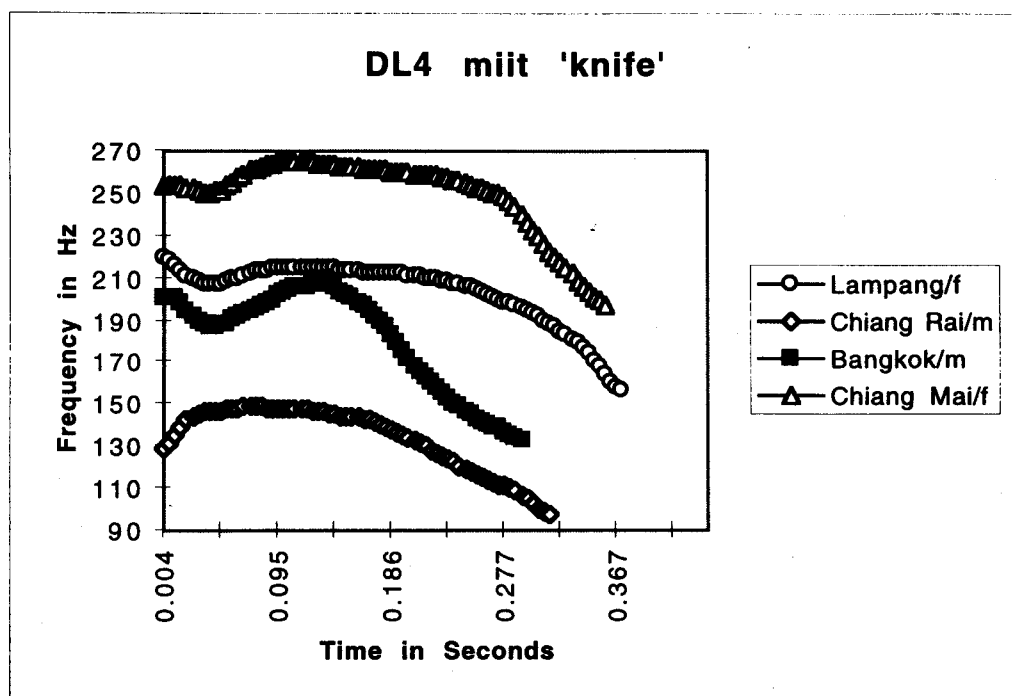


Figure 16. DL4 Tone Comparisons

5.0 Conclusion

In summary, then, the tonal systems of Chiang Rai and Lampang are virtually identical to one another (Figure 17). Chiang Mai tends, on the whole, to more closely resemble Bangkok Thai, except that Chiang Mai's A2 category matches her Northern siblings. In fact, it may be argued that, to native Northern Thai speakers, A2 as a rising tone is the most pivotal tone in clearly distinguishing Kammuung from Central Thai, with its mid pitch. This is reflected in the fact that A2 is the one tonal difference which is consistently marked as modified when native speakers write Northern Thai using Central Thai script.

**Figure 17. Comparative Summary of Tones in All Four
Dialects**

Appendix A: Gedney's Word List

From: Gedney, William. 1973. A checklist for determining tones in Tai dialects. Studies in linguistics in honor of George L. Trager. Ed. by Estellie Smith. 423-37. The Hague: Mouton.

Note: where more than three words are in Gedney's list, only the three used are appear here.

Column A:

- Box 1. *huu* 'eat'
khaa 'leg'
hua 'head'
- Box 2. *pīi* 'year'
taa 'eye'
kin 'to eat'
- Box 3. *bin* 'to fly'
dεεη 'red'
daaw 'star'
- Box 4. *mɿɿ* 'hand'
khwaay 'water buffalo'
naa 'ricefield'

Column B:

- Box 5. *khay* 'egg'
phaa 'to split'
khaw 'knee'
- Box 6. *paa* 'forest'
kay 'chicken'
kεε 'old'
- Box 7. *baa* 'shoulder'
baaw 'young man'
daa 'to scold'
- Box 8. *phīi* 'older sibling'
phoo 'father'
ray 'dry field'

Column C:

- Box 9. *khaw* 'rice'
sɿa 'shirt'
haa 'five'
- Box 10. *paa* 'aunt (older sister of either parent)'
klaa 'rice seedlings'
tom 'to boil'

Column C (cont.):

- Box 11. *baa* 'crazy'
baan 'village'
?aa 'to open (the mouth)'
- Box 12. *nam* 'water'
nooη 'younger sibling'
maa 'horse'

Column D-short:

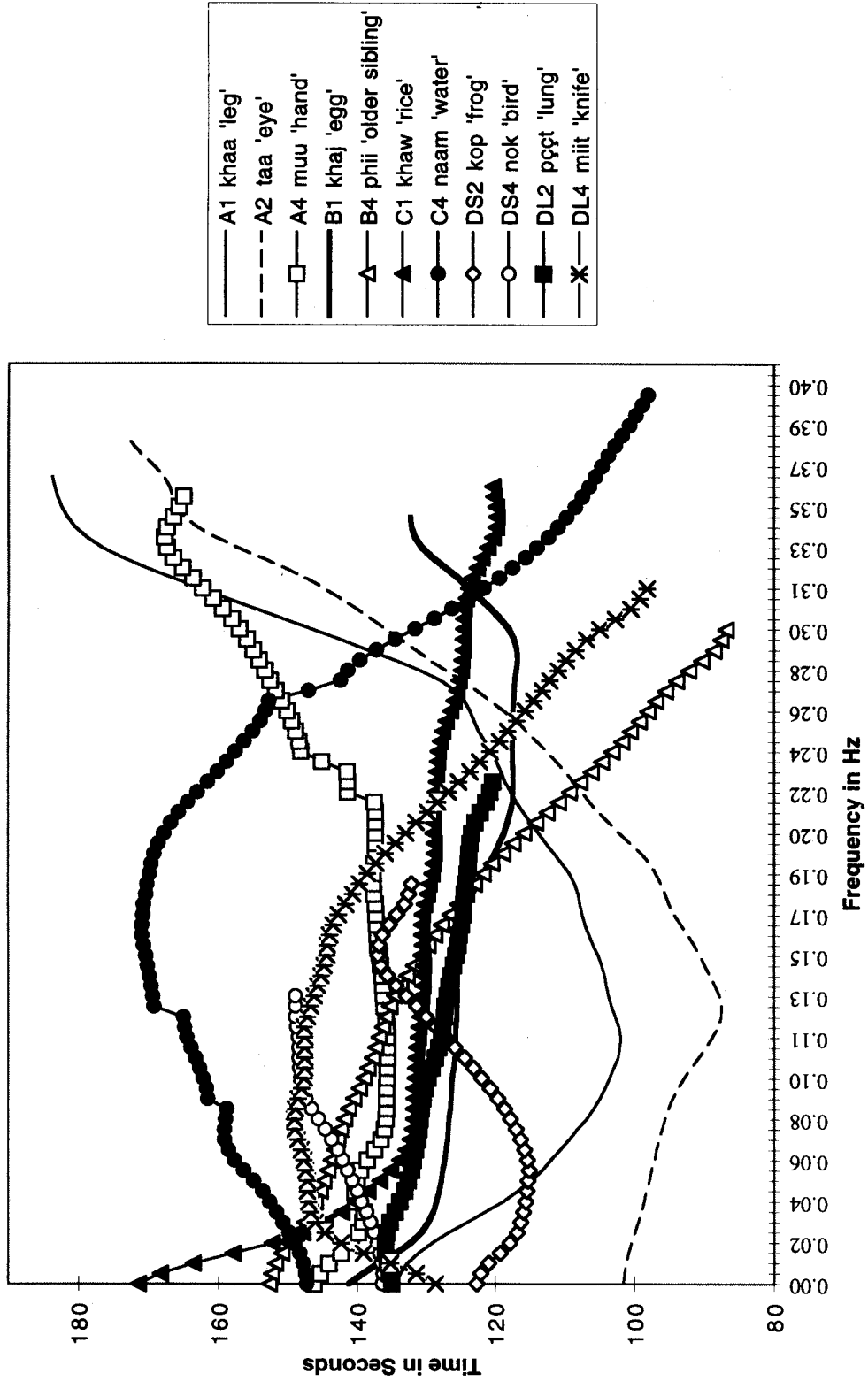
- Box 13. *mat* 'flea'
suk 'cooked, ripe'
phak 'vegetable'
- Box 14. *kop* 'frog'
tap 'liver'
cep 'to hurt'
- Box 15. *bet* 'fishhook'
dip 'raw, unripe'
?ok 'the chest'
- Box 16. *nok* 'bird'
mat 'to tie up'
lak 'to steal'

Column D-long:

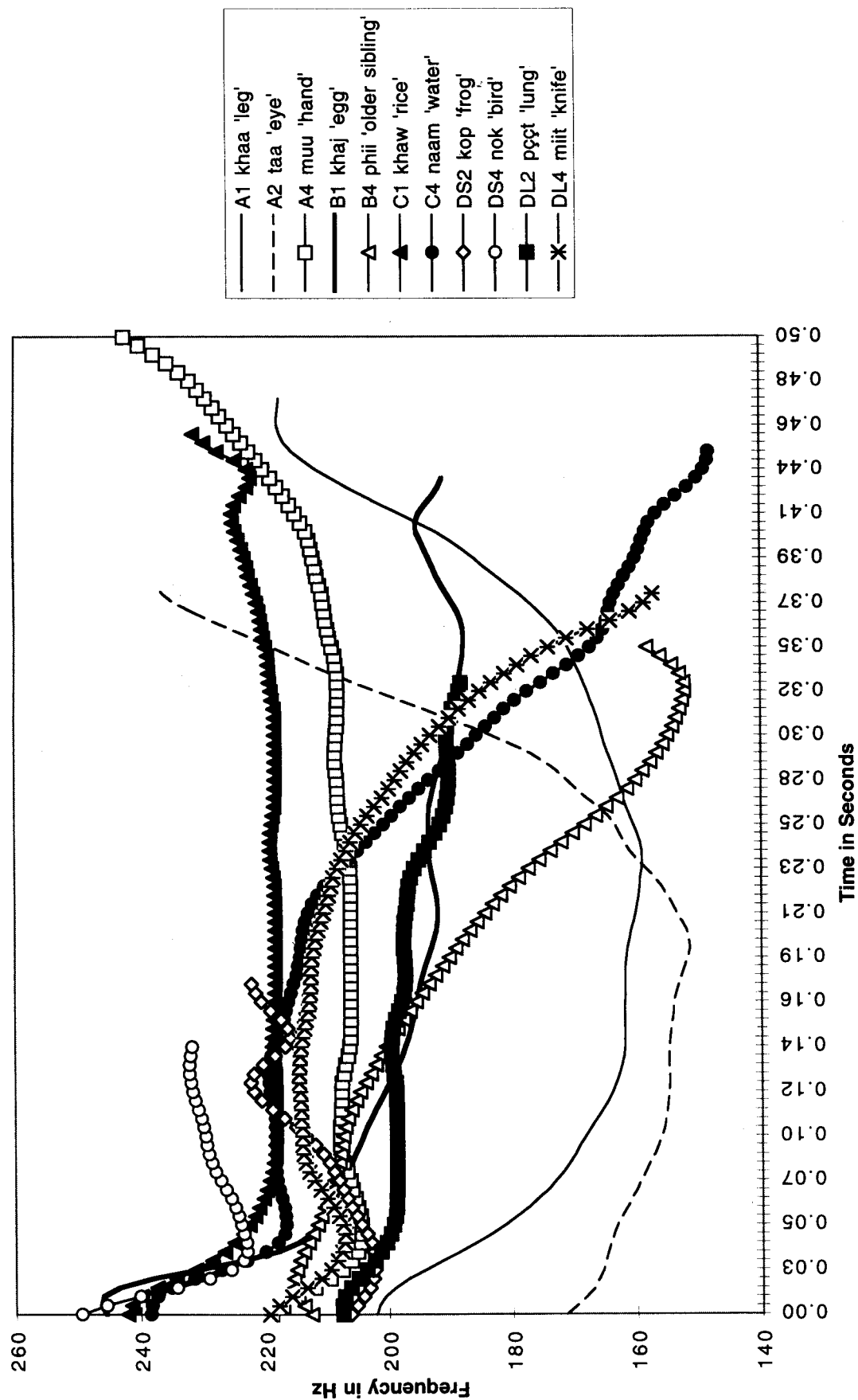
- Box 17. *khaat* 'broken, torn'
ηɿak 'the gums'
haap 'to carry on a shoulder pole'
- Box 18. *poot* 'the lungs'
piik 'wing'
took 'to pound'
- Box 19. *dεεt* 'to pound'
?aap 'to bathe'
dook 'flower'
- Box 20. *miit* 'knife'
luuk '(one's) child'
luat 'blood'

Appendix B: Tone Charts for Each Dialect

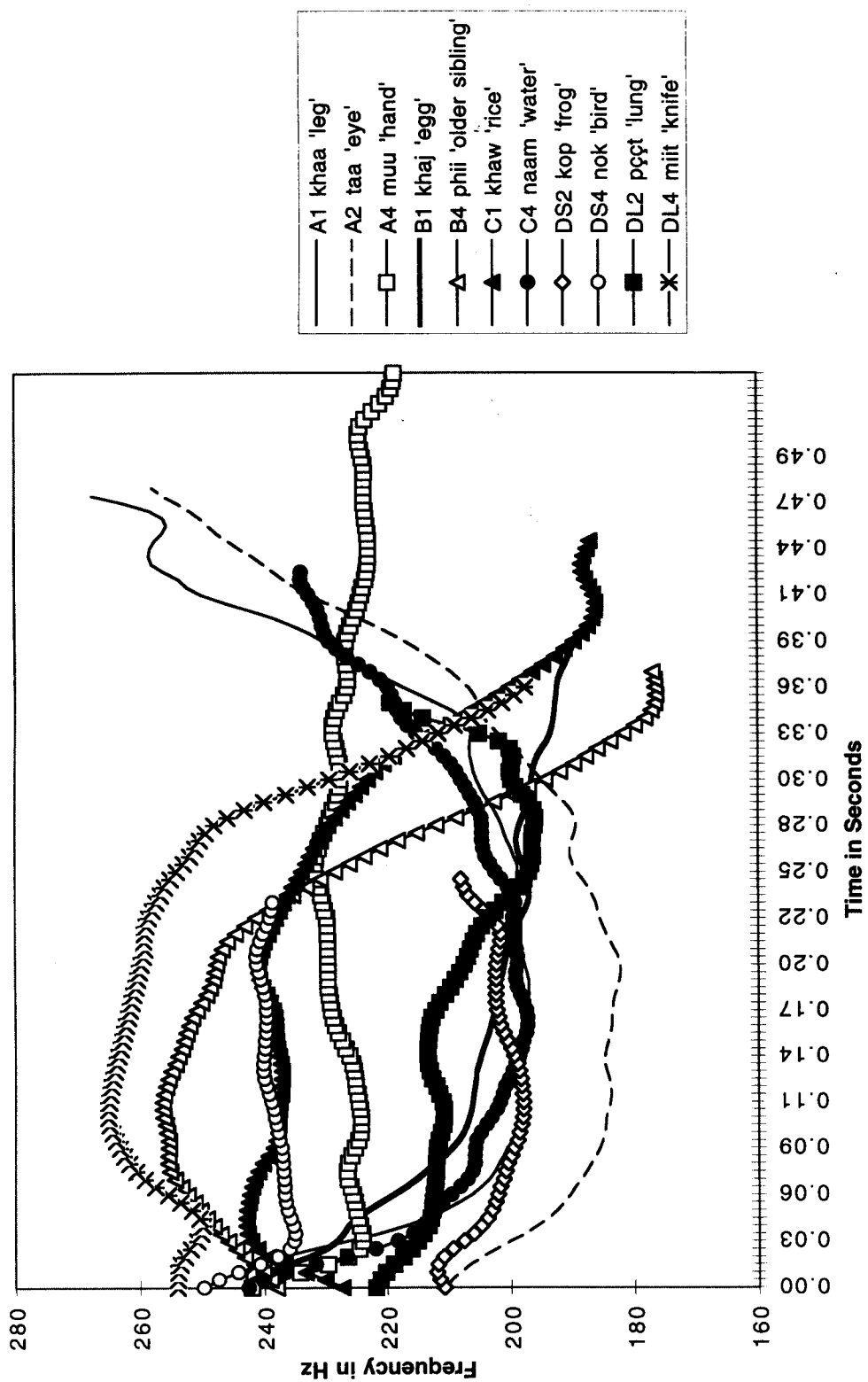
Chiang Rai Tones



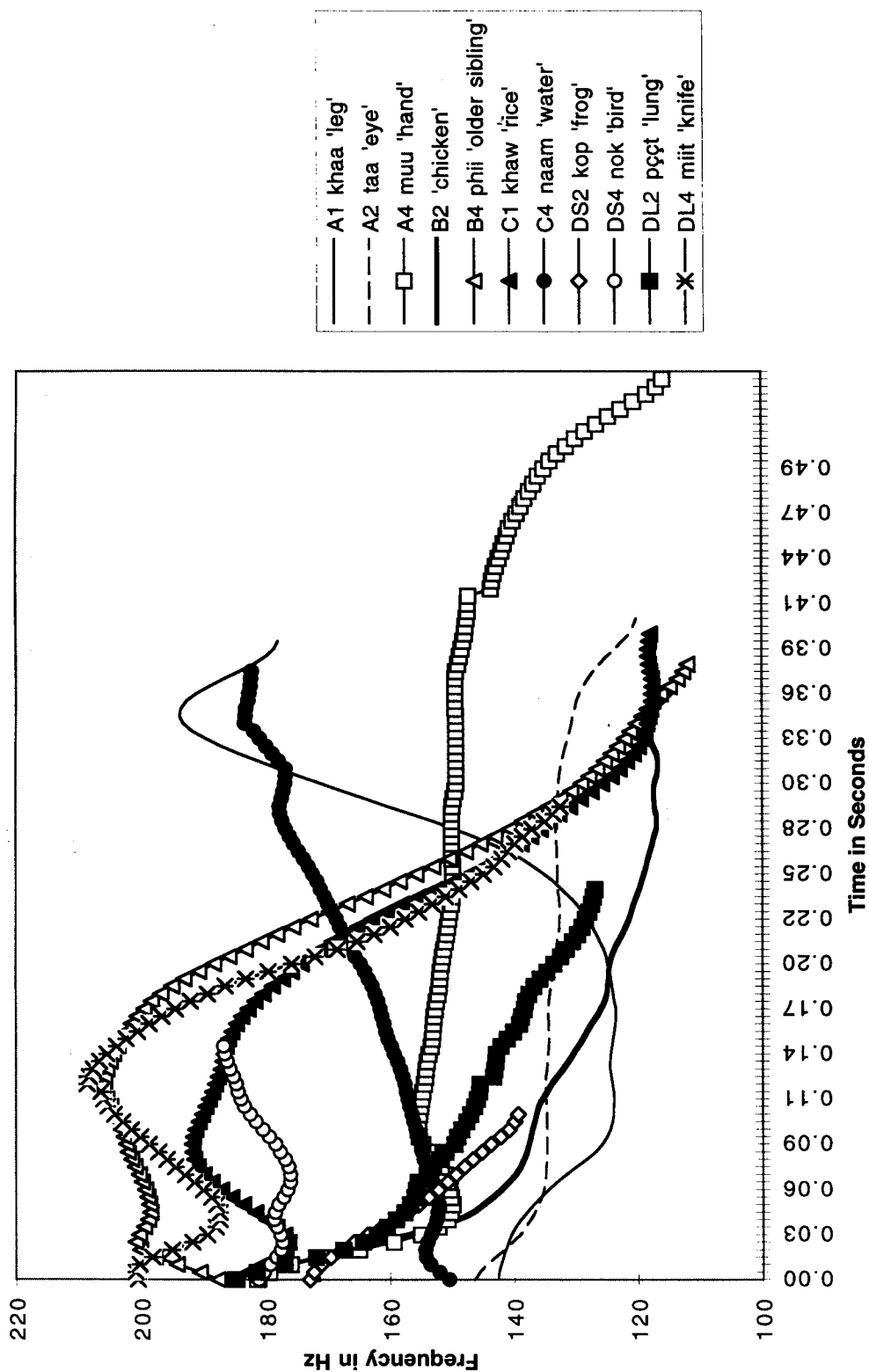
Lampang Tones



Chiang Mai Tones



Bangkok Thai



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