LANGUAGE IDENTIFICATION BY TONES : LAHU, AKHA, AND KAREN

ATTASITH BOONSAWASD

A THESIS SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS (LINGUISTICS)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2001

ISBN 974-04-0741-2

LANGUAGE IDENTIFICATION BY TONES : LAHU, AKHA, AND KAREN

ATTASITH BOONSAWASD

A THESIS SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS (LINGUISTICS)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2001

ISBN 974-04-0741-2

Thesis
entitled

LANGUAGE IDENTIFICATION BY TONES : LAHU, AKHA, AND KAREN

Mr.Attasith Boonsawasd
Candidate

Assoc.Prof.Somsonge Burusphat, Ph.D.
Major-Advisor

Assoc.Prof.Sujaritlak Deepadung, Ph.D.
Co-advisor

Assoc.Prof.Pitsamai Yupho, Ph.D.
Co-advisor

Assoc.Prof.Amon Thavisak, Ph.D.
Co-advisor

Asst.Prof. Anchalee Pongpun
M.A. (Applied Linguistics)
Acting Dean
Faculty of Graduate Studies

Assoc.Prof.Sujaritlak Deepadung, Ph.D.
Chairman
Master of Arts Programme in Linguistics
Institute of Language and Culture for
Rural Development

Thesis
entitled

LANGUAGE IDENTIFICATION BY TONES : LAHU, AKHA, AND KAREN

was submitted to the Faculty of Graduate Studies, Mahidol University
for the degree of Master of Arts (Linguistics)
on
September 28, 2001

Attasith Boonsawasd
.....
Mr.Attasith Boonsawasd
Candidate

Somsonge Burusphat
.....
Assoc.Prof.Somsonge Burusphat, Ph.D.
Chairman

Sujaritlak Deepadung
.....
Assoc.Prof.Sujaritlak Deepadung, Ph.D.
Member

Pitsamai Yupho
.....
Assoc.Prof.Pitsamai Yupho, Ph.D.
Member

Amon Thavisak
.....
Assoc.Prof.Amon Thavisak, Ph.D.
Member

Theraphan L. Thongkum
.....
Assoc.Prof.Theraphan Luangthongkum, Ph.D.
Member

Anchalee Pongpun
.....
Asst.Prof. Anchalee Pongpun
M.A. (Applied Linguistics)
Acting Dean
Faculty of Graduate Studies
Mahidol University

Suriya Ratanakul
.....
Prof.Khunying Suriya Ratanakul, Ph.D.
Director
Institute of Language and Culture for Rural Development
Mahidol University

ACKNOWLEDGEMENT

This thesis was completed with the kind support of many people and an organization to whom I would like to express my deep appreciation and great thanks. First and foremost, I would like to thank the Thailand Research Fund (TRF) for financial support during my research, which is part of the TRF M.A. Thesis Network Program.

Other people have provided a great deal of input. Associate Professor Dr. Theraphan Luangthongkum of Chulalongkorn University, the co-ordinator of the TRF M.A. Thesis Network Project on Tone, for her kind help and concern. Associate Professor Dr. Somsonge Burusphat, my supervisor, Associate Professor Dr. Sujaritlak Deepadung, Associate Professor Dr. Pitsamai Yupho, and Associate Professor Dr. Amon Thavisak, my committee members, of the Institute of language and culture for rural development, Mahidol University, have read and commented on various versions of this work and made specific comments to improve examples and explanations. I would like to thank Mrs.Yaowalak Mankong and Mr.Chokchai Saengsuk for providing me the accommodation during my field work. I would also like to thank my parents and my sister for their unfailing encouragement.

Finally, I must also express my acknowledgement to all of my informants for sparing me their time. Without their help, it would not have been possible for me to accomplish this work.

Attasith Boonsawasd

4136583 LCLG/M : MAJOR : LINGUISTICS ; M.A. (LINGUISTICS)
KEY WORD : IDENTIFICATION / TONE / LAHU / AKHA / KAREN
ATTASITH BOONSAWASD : LANGUAGE IDENTIFICATION BY TONES : LAHU, AKHA, AND KAREN. THESIS ADVISOR : SOMSONGE BURUSPHAT, Ph.D., SUJARITLAK DEEPADUNG, Ph.D., PITSAMAI YUPHO, Ph.D., AMON THAVISAK, Ph.D.169 P. ISBN 974-04-0741-2

This study is an attempt to identify the Lahu, Akha, and Karen languages by using the tonal systems and tone features of Chiangrai's Northern Thai (CNT) dialect pronounced by The Lahu, Akha, and Karen people living in Mueng district, Chiangrai province, Thailand, as criteria. A computer software program called "CECIL" was used to analyze the tone features by considering the fundamental frequency of each tone in both citation form and connected speech.

The analysis yielded interesting results in terms of a) citation form and b) connected speech.

a) In citation form, there are 4 tones in CNT dialect pronounced by the Lahu and Akha; 6 tones in CNT dialect pronounced by Karen; which was also similar to native CNT speakers. Even though the number of tones in CNT dialect pronounced by the Lahu and Akha are the same, there are differences in the pattern of tonal split and coalescence. The tone characteristics in CNT dialect pronounced by the Karen and native CNT speakers are different in the way that Karen tend to pronounce the tones on checked syllables with the glottalized tones, whereas native CNT speakers do not.

b) In connected speech, there are 5 tones in CNT dialect pronounced by the Lahu, 4 tones in CNT dialect pronounced by the Akha, and 6 tones in CNT dialect pronounced by the Karen and also native CNT speaker.

In conclusion, the research findings indicate overwhelmingly that it is possible to identify which speaker is the Lahu, Akha, or Karen in speech form, when these people speak CNT dialect by using tones as criteria.

4136583 LCLG/M : สาขาวิชา : ภาษาศาสตร์ ; ศศ.ม. (ภาษาศาสตร์)

อรรถสิทธิ์ บุญสวัสดิ์ : การกำหนดภาษาโดยใช้เกณฑ์วรรณยุกต์ : ลาฮู อาข่า กะเหรี่ยง (LANGUAGE IDENTIFICATION BY TONES : LAHU, AKHA, AND KAREN). คณะกรรมการควบคุมวิทยานิพนธ์ : สมทรง บุรุษพัฒน์, Ph.D., สุจริตลักษณ์ ดีผดุง, Ph.D., พิศมัย อยู่โพธิ์, Ph.D., อมร ทวีศักดิ์, Ph.D. 169 หน้า. ISBN 974-04-0741-2

งานวิจัยเรื่องนี้ต้องการกำหนดภาษาลาฮู อาข่า และกะเหรี่ยง โดยใช้ระบบเสียงวรรณยุกต์และสัทลักษณะของวรรณยุกต์ในภาษาไทยถิ่นเหนือ (เชียงราย) ที่ออกเสียงโดยคนลาฮู อาข่า และกะเหรี่ยง ซึ่งอาศัยอยู่ในอำเภอเมือง จังหวัดเชียงราย ประเทศไทย เป็นเกณฑ์ โปรแกรมCECILเป็นโปรแกรมที่ใช้ในการวิจัยครั้งนี้เพื่อวิเคราะห์สัทลักษณะของวรรณยุกต์ โดยพิจารณาที่ค่าความถี่มูลฐานของวรรณยุกต์ ทั้งในคำพูดเดี่ยวและคำพูดต่อเนื่อง

ผลการวิเคราะห์ข้อมูลแสดงให้เห็นว่าในคำพูดเดี่ยว ภาษาไทยถิ่นเหนือ(เชียงราย) ที่ออกเสียงโดยคนลาฮูและอาข่า มี 4 วรรณยุกต์ ในขณะที่ภาษาไทยถิ่นเหนือ (เชียงราย) ที่ออกเสียงโดยคนกะเหรี่ยงมี 6 วรรณยุกต์เหมือนกับคนเมืองเชียงราย แม้ว่าจำนวนวรรณยุกต์ภาษาไทยถิ่นเหนือ (เชียงราย) ที่ออกเสียงโดยคนลาฮูและอาข่าจะเท่ากัน แต่ก็มีความแตกต่างกันในเรื่องการแตกตัวและการรวมตัวของวรรณยุกต์ ขณะที่สัทลักษณะของวรรณยุกต์ภาษาไทยถิ่นเหนือ (เชียงราย) ที่ออกเสียงโดยคนกะเหรี่ยงและคนเมืองเชียงรายจะแตกต่างกันตรงที่คนกะเหรี่ยงมักจะออกเสียงวรรณยุกต์ในพยางค์ตายเป็นเสียงวรรณยุกต์ที่มีการปิดเส้นเสียงร่วมด้วย

ส่วนในคำพูดต่อเนื่อง ภาษาไทยถิ่นเหนือ (เชียงราย) ที่ออกเสียงโดยคนลาฮูมี 5 วรรณยุกต์ ที่ออกเสียงโดยคนอาข่ามี 4 วรรณยุกต์ และที่ออกเสียงโดยคนกะเหรี่ยงและคนเมืองเชียงรายมี 6 วรรณยุกต์

ดังนั้น วรรณยุกต์จึงเป็นสัทลักษณะอย่างหนึ่งที่สามารถใช้เป็นปัจจัยกำหนดได้ว่าใครเป็นคนลาฮู อาข่า หรือกะเหรี่ยง เมื่อคนเหล่านี้พูดภาษาไทยถิ่นเหนือ (เชียงราย)

CONTENTS

CONTENTS (CONT.)

LIST OF TABLES

LIST OF TABLES (CONT.)

LIST OF TABLES (CONT.)

LIST OF FIGURES

Page

LIST OF FIGURES (CONT.)

Page

LIST OF FIGURES (CONT.)

Page

LIST OF FIGURES (CONT.)

CHAPTER I

INTRODUCTION

1.1 Rationale

In Southeast Asia, Thailand is one of the countries where a number of minority groups possessing their own languages have been living. Considering the language family spoken in Thailand, the Sino-Tibeton language family is rare, because the minority groups that speak the languages of Sino-Tibeton family such as Karen, Lahu, Akha, and Lisu are all immigrants.

Karen, the largest and most populated minority group, has been living in Thailand for over 200 years. Most of Karen migrated from Burma because of political conflicts with the Burmese. Presently, Karen are settled in the western border of Thailand, which is adjacent to Burma from its northern part downwarding toward Prachuapkirikhan. Karen in Thailand are roughly divided into 4 sub-groups based on their languages' features as following: Sgaw, Pwo, Bwe, and Taungthu, among which Sgaw is the largest group, which consists of population of about 500,000.

Lahu, commonly known as Mussur, originating from China and Tibet, immigrated to Thailand over 150 years ago because of political and governing issues. Apart from this reason, some Lahu were also persuaded by western missionaries 50 years ago moving to Thailand through Burma path. Now Lahu, the first group immigrated to Thailand and speaking the middle Lolo branch of Tibeto-Burman language family, consists of about 82,000 people living on the high mountains of the northern part of Thailand.

Akha has a population of 30,000 people, which is fewer than those of Lahu. Akha immigrated from China and passed through Burma, Lao, and Thailand. But there is no evidence to indicate when they immigrated into Thailand. Most of Akha nowadays live north of the Mae-Kok river in Chiangrai province. According to Chiangrai map in detail, it apparently shows that the Akha people live near the Lahu village which provides a great opportunity for cultural blending and exchanging with each other. This, contributes to Chiangrai as an interesting place for the minority study in terms of both language and culture.

Mae-Yao, one of Chiangrai's sub-districts, is filled with minority immigrants. According to survey at the end of year 1998, there are 4 groups as follows: Lahu 3,769, Akha 3,738, Karen 1,704, and Yao 302, totaling 9,513 persons.

Figure 1 : *Map of Thailand*

Each minority group lives separately though they still contact and visit each other regularly due to their close villages' location, For instance, Chalae village, an Akha village, is situated next to a Lahu village. Another reason for those minority contact is that this sub-district has much beautifully attractive scenery-like mountains, waterfall and river attracting a wide rage of tourist attention. Thus, the minorities employ this sub-district as their daily market center that gives them a chance to stay in contact on a regular basis.

Since there are several minority languages spoken in this location, lingua franca used to communicate across their different groups is studied. It is evident that 90% of Lahu, Akha, and Karen groups are able to use Chiangrai's Northern Thai dialect as lingua franca. Meanwhile the rest, 10% out of 100%, are able to speak other minority languages. For example, some Akha are able to speak the Lahu language with the Lahu people. So, it is not necessary for some Lahu and Akha to use Chiangrai's Northern Thai dialect as lingua franca to communicate among the minorities.

However, though Lahu, Akha, and Karen can speak Chiangrai's Northern Thai dialect, they cannot speak as well as the native speakers. In other words, there is an interference of their native languages, such as an absence of final consonants.

Hence, to identify the native language of these minority groups with respect to Chiangrai's Northern Thai dialect spoken as lingua franca, it is practical to do so by considering linguistic features of these minority languages.

In this study, I consider only tones because each language has different tonal systems. Lahu has 7 tones (Solot 1986), Akha has 5 tones (Lewis 1968), and Karen has 6 tones (Puttachart 1983). Therefore, when these minority groups speak Chiangrai's Northern Thai dialect, their tonal systems and tone features should interfere with the tonal systems and tone features of Chiangrai's Northern Thai dialect in a different way.

1.2 Objective of the Study

1. To analyze the tonal systems and tone features of Chiangrai's Northern Thai dialect and the Lahu, Akha, and Karen languages pronounced by native speaker.
2. To analyze the tonal systems and tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, and Karen.
3. To compare the tonal systems and tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, and Karen with their native languages.
4. To compare the tonal systems and tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, and Karen with those by native Chiangrai's Northern Thai speakers.
5. To identify the Lahu, Akha, and Karen languages by using tones as criteria.

1.3 Benefits of the Study

1. To know the tonal systems and tone features of Chiangrai's Northern Thai dialect and the Lahu, Akha, and Karen languages pronounced by the native speaker.
2. To know the tonal systems and tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, and Karen people.
3. To know the similarities and dissimilarities of the tonal systems and tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, and Karen people and their native languages.
4. To know the similarities and dissimilarities of the tonal systems and tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, and Karen people and by the native Chiangrai's Northern Thai speakers.
5. To be able to identify the minority languages by using tones as criteria.
6. To know the problem of tonal pronunciation of Lahu, Akha, and Karen speakers which is useful for teaching Chiangrai's Northern Thai dialect to these people.
7. To use the results of the analysis as a guideline for identifying the other minority languages afterwards.

1.4 Scope of the Study

1. To analyze the tonal systems and tone features of the minority languages in only citation form.
2. To analyze the tonal systems and tone features of Chiangrai's Northern Thai dialect in both citation form and connected speech.
3. To analyze the tone features by using the CECIL program (Computerised Extraction of Components of Intonation in Languages).
4. To analyze the tone features by considering fundamental frequencies of each tone.
5. A checklist for determining tones in Chiangrai's Northern Thai dialect which is created by the author adapted from Gedney's checklist for determining tones.
6. Tonal systems and tone features of the minority languages and Chiangrai's Northern Thai dialect are obtained from the Lahu, Akha, Karen and Chiangrai's Northern Thai people living at Mae-Yao sub-district, Mueng district, Chiangrai province.

1.5 Research Hypothesis

Tonal systems and tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, and Karen would be different according to the tonal systems and tone features of each minority language due to the interference of their native languages. This enables us to identify which speaker is the Lahu, Akha, or Karen when these people speak Chiangrai's Northern Thai dialect.

1.6 Definition of Term

Allotone

Any of the different forms of a tone. For example, the tone /2/ in Chiangrai's Northern Thai dialect has two allotones which are in complementary distribution. There is a mid-rising tone occurring with smooth syllables and a high-rising tone occurring with checked syllables.

CECIL

CECIL (Computerised Extraction of Components of Intonation in Languages) is a speech analysis system produced by the Summer Institute of Linguistics (SIL). It provides facilities to record, analyze, save to disk, and replay short sections of speech. (Manual of CECIL program)

Checked

The term is also found as an alternative to closed, in the description of syllables.: a checked syllable is one ending in a consonant, and a checked vowel is a vowel occurring in such a syllable. (Crystal 1991 : 52)

Citation Form

The form of a linguistic unit when it is cited in isolation, for purposes of discussion. More specifically, the term refers to the pronunciation given to a word when it is produced in isolation, and not in connected speech. (Crystal 1991 : 54)

Connected Speech

A term used in linguistics to refer to spoken language when analysed as a continuous sequence, as in normal utterances and conversations. Its significance lies in the contrast implied with studies of linguistic units seen in isolation, such as an individual sound word or phrase, which were the subject-matter of much traditional linguistic enquiry. It is now realised that important changes happen to these units when they are used in connected speech, as demonstrated by such processes as assimilation and elision, e.g. *and* becoming */n/* in such phrases as *boys and girls.* (Crystal 1991 : 73)

Dialect

A regionally or socially distinctive variety of language, identified by a particular set of words and grammatical structures. Spoken dialects are usually also

associated with a distinctive pronunciation, or accent. Any language with a reasonably large number of speakers will develop dialects, especially if there are geographical barriers separating groups of people from each other, or if there are divisions of social class. One dialect may predominate as the official or standard form of the language, and this is the variety which may come to be written down. (Crystal 1991 : 102)

Duration

A term used in phonetics, to refer to the length of time involved in the articulation of a sound of syllable. Distinctions between relatively 'long' and relatively 'short' durations are measured in units of time, such as the millisecond (msec). In speech, the absolute duration of sound is dependent to a considerable extent on the overall tempo of speaking. Issues which need reference to duration include the study of rhythm, consonant articulation, and juncture. (Crystal 1991 : 115)

Fundamental Frequency

A term derived from the study of the physics of sound, and used in acoustic phonetics, referring to the lowest frequency component in a complex sound wave (other components being known as the 'harmonics'). Frequency refers to the number of complete cycles (opening and closing movements) of vocal cord vibration in a unit of time (per second). The 'fundamental', or Fo ('f nought'), is of particular importance in studies of intonation, where it displays a reasonably close correspondence with the pitch movements involved. It is measured in hertz (Hz), a term which has replaced the older 'cycles per second'. (Crystal 1991 : 147)

Glottalized Tone

The term is used to refer to what is heard as a glottal stop at the end of some tones.

Lingua Franca

A language that is used for communication between different groups of people, each speaking a different language. The lingua franca could be an internationally used language of communication (e.g. English), it could be the native language of one of the groups, or it could be a language which is not spoken natively by any of the groups but have a simplified sentence structure and vocabulary and is often a mixture of two or more languages. (Richards, Platt, and Weber 1987 : 166)

Native Speaker

A term used in linguistics to refer to someone for whom a particular language is a 'native language' (also called *'first language'*, or *'mother tongue'*). The

implication is that this language, having been acquired naturally during childhood, is the one about which a speaker will have the most reliable intuitions, and whose judgements about the way the language is used can therefore be trusted. (Crystal 1991 : 230)

Pitch

The auditory property of a sound that enables a listener to place it on a scale going from low to high, without considering the acoustic properties, such as the frequency of the sound. (Ladefoged, 1975: 280)

Stress

The use of extra respiratory energy during a syllable. (Ladefoged, 1975: 281)

Tone

Height of pitch and change of pitch which is associated with the pronunciation of syllables or words and which affects the meaning of the word. (Richards, Platt, and Weber 1987 : 294)

1.7 Background of Place of Gathering Data

1.7.1 Huaykhomnai Village

Located at Moo 1, it is of 20 Akha households grouping together around the plain and mountain slope areas. Most Akha men will gain employment in town during daytime and will be back to the village at night; meanwhile women will be at home with the elders. Staying home, women and elders are told not to contact or talk to any strangers, due to the drug news in the village made by a television station last year. This news was broadcasted on television demonstrating drug purchasing and the taking of a drug, which apparently very much defamed the village image. Thereafter, strangers have not been welcome to the village.

1.7.2 Ruammit Village

Many hilltribes, Lahu, Akha, Karen, and Yao live at Moo 2, among which Karen has the largest populace. This village, therefore, is called 'Baan Karen Ruammit'. Over the last ten years, this village only accounted for 4 households, which was surrounded by a wide range of forest which had many kinds of fierce animals. This made the villagers aware of wild creatures at all times when going out in the surrounding area. In the old days, the villagers earned their living by farming,

Figure 2 : ***Ruammit Village***

and doing orchard labor. Later, the number of the population increased. The forest condition has gradually changed and has been replaced by the village. Some have foreseen that the village location is apt as a tourist attraction site due to its location, which is near the Kok river, whereas the village backside remains a prosperous forest, and the waterfall as well. The villagers then got some elephants there for tourists which includes to the mountain and waterfall. Also, some retail shops have been established to sell souvenirs. During the same period, other hilltribes immigrated to the village and earn their major living by selling souvenirs which became a highly successful business because of the increasing tourist volume.

1.7.3 Huaysaikhaaw Village

Over 10 households of Akha are situated at Huaynamrin, Moo 3. The Akha here mostly are farmers, but some are silver ornament merchants. One of the Akha manufacturers told us that this silver site is the most beautiful genuine silver site and the silver is of the best quality in Thailand. Besides, some Akha living at Ruammit village originated from this village, so most of products sold at Ruammit village is derived from here.

1.7.4 Sanpaayaang Village

About 36 households of Akha at Moo 6 are at Baan Sancharern, which is about 10 kilometers away from the community. The Akha have just moved here recently and currently have poor living conditions. Most of them get hired in town earning about 80-100 baht a day. The Akha who are about 30-50 years old are rarely able to communicate with Nothern Thai dialect. So, it was too difficult to collect data here.

1.7.5 Klaangtung Village

Situated at Moo 7, Baan Sukjai is the place where the Ahka are living together near the town, which is the subsidiary of Klaangtung village. It consists of about 40 households. The general living standard is fairy healthy. It comprises of an underground water system and television sets the rely on battery usage because so far no electrical system has been installed. During day time, men get hired and work on farms, and then return home at night, whereas young girls and elders stay home all day. At nighttime everybody will often group, talk and have alcoholic beverages. Also, they often help each other. For example, when there is a new house building or old house fixing, all Akha will stop doing their regular work and come to help each other without any labor charge. This phenomenon maybe seen through all hilltribes.

1.7.6 Huaykhomnok Village

Despite staying at the same area, Moo 10, Akha, Lahu, and Karen will live separately. That is, the Lahu live in an uphill area, whereas Karen, the most

Figure 3 : ***Klaangtung Village***

populous group, live in plains area. Most of Karen are wealthy; almost all of them possess cars. Many roads have been constructed throughout the village. Too, there is electricity and hydrant water. This is due partly because the village leader is a developer and assists the village in becoming more prosperous than those of others in the same district. For instance, the textile industry becomes a household industry for creating jobs and earning money for all villagers. Drugs are strictly prohibited and the people are protected from drug dealers. Those breaking the drug taboo would be exiled from the village. Besides, every weekend, a meeting is held at the village leader's house in order to discuss possible solutions of problems or current issues. Attendees may suggest ideas and contribute freely through out the meetings.

1.7.7 Huaymaesai Village

More than 10 households of Lahu live at Baan Chafu, Moo 11, which is the subsidiary of Huaymaesai village. Lahu living at Baan chafu emigrated from Doi-Tung over 20 years; almost all of them are rather poor. They grow rice and raise pigs for consumption, whereas some get hired in town earning about 70-80 baht a day. Communications are not facilitated enough because some parts of the village have very bumpy rock roads, which are not good for travelling in the rainy season.

1.7.8 Patung Village

Patung village is located at Paa-O-Donchai sub-district, Mueng district, Chiangrai province. All people in this location are Northern Thai. Most of them have fair living conditions and earn their living by growing ginger crops, maintaining orchards, and ordinary farming, producing rice and other staples.

1.8 List of Informants

There are 40 informants divided into 4 ethnic groups as follows :

1.8.1 Lahu

1. Tobo Chasee, 48 years old, Huaymaesai village.
2. Laoja Chasue, 33 years old, Huaymaesai village.
3. Chakue Chasae, 32 years old, Huaymaesai village.
4. Chapae Losa, 40 years old, Huaymaesai village.
5. Chachor Lifu, 42 years old, Huaymaesai village.
6. Pa-ae Haeso, 32 years old, Ruammit village.
7. Chatee Saencawa, 33 years old, Ruammit village.
8. Chatae Saenmai, 48 years old, Ruammit village.
9. Pitak Pumer, 35 years old, Ruammit village.
10. Chanu Srisuwan, 35 years old, Ruammit village.

1.8.2 Akha

1. Akor Ube, 30 years old, Klaangtung village.
2. Loya Mayer, 39 years old, Klaangtung village.
3. Achong Chermue, 48 years old, Klaangtung village.
4. Apha Mayer, 36 years old, Huaysaikhaaw village.
5. Achong Mayer, 38 years old, Huaysaikhaaw village.
6. Apha Mayer, 39 years old, Sanpaayaang village.
7. Achee Mayer, 44 years old, Huaykhomnok village.
8. Acha Merlaeku, 39 years old, Ruammit village.
9. Lopha Merlaeku, 35 years old, Ruammit village.
10. Acho Amor, 32 years old, Huaykhomnai village.

1.8.3 Karen

1. Buje Baehae, 44 years old, Ruammit village.
2. Dikuhae Sapasiko, 49 years old, Ruammit village.
3. Boonchai Anusornkasem, 38 years old, Ruammit village.
4. Kampan Tataep, 49 years old, Ruammit village.
5. Songkraan Nasaw, 42 years old, Huaykhomnok village.
6. Somsak Wimu, 31 years old, Huaykhomnok village.
7. Sompong Katu, 41 years old, Huaykhomnok village.
8. Sombuun Turaworn, 38 years old, Huaykhomnok village.
9. Intong Turaworn, 34 years old, Huaykhomnok village.
10. Wichit Saenluang, 40 years old, Huaykhomnok village.

1.8.4 Chiangrai's Northern Thai

1. Wittaya Pannakit, 38 years old, Patung village.
2. Boontawee Chaikaew, 40 years old, Patung village.
3. Inpan Tippala, 47 years old, Patung village.
4. Songsak Kamkaew, 32 years old, Patung village.
5. Intip Chansom, 45 years old, Patung village.
6. Pikul Chailangka, 32 years old, Patung village.
7. Sutisak Donchai, 32 years old, Patung village.
8. Sanan Muengchai, 41 years old, Patung village.
9. Boontan Tepkamtai, 32 years old, Patung village.
10. Duangdee Tammawong, 47 years old, Huaysaikhaaw village.

CHAPTER II

LITERATURE REVIEW

Before collecting data on fieldwork, I have reviewed related literature in the following topics:

2.1 General information about the Lahu, Akha, Karen and Northern Thai people.

2.2 Tonal systems and tone features of the Lahu, Akha, Karen languages, and Northern Thai dialect.

2.3 Other related literature.

2.1 General Information about the Lahu, Akha, Karen and Northern Thai People

2.1.1 Lahu

Lahu is the hill dweller whose language is affiliated with Tibeto-Burman Linguistic family, Burmese Lolo-branch. Their origin was in the south western Yunnan, in the People's Republic of China. The people call themselves *Lahu.* Other people have different terms for them. The Chinese people in Yunnan call them *Lo-hei* and the Tai-people in the Shan State call them *Mussuh.* This name was later adopted by the Northern Thai. The Lahu people have the status of minority in whatever country they settle down. These people scattered themselves in the area of the northern part of Indo-Chinese peninsula: southwestern Yunnan, the People's Republic of China, eastern Burma, north western Laos and northern Thailand, with the total population of approximately 281,000.

In Thailand, the Lahu people is one of the hilltribe minority groups migrated from Yunnan, the People's Republic of China, into the northern part of Thailand about one hundred years ago. Their settlement is in the area of Chiangrai, Chiangmai, Lampang, Maehongson, and Tak with a population of 25,000. The Lahu, like other minority groups in Thailand, create many problems for the host country e.gs., growing opium and destroying the forest with their *slash and burn* farming technique. (Solot 1986 : 1)

2.1.2 Akha

The Akha, because they are widespread, are known by a variety of names in various locations. They call themselves *Akha*, *Akho*, or *Ako*. The Akha of Laos and the few in North Vietnam are known by only two names : *Kaw* and *Kha Ko*. The Akha of China are also known by a variety of names. The term most frequently used are *Aka*, *Akha-Jen*, *Akha*, *Akho*, and *Kaw Ko*. The term *Ako* is used by the Chinese to refer to those individuals of mixed Akha and Chinese ancestry. Another term, *Woni*, which is sometimes applied to the Akha in China, actually refers to the various Lolo (Tibeto-Burman) speaking groups of Southern Yunnan.

According to written sources, the first Akha village in Thailand was probably established in 1903 in the Phayaphai region of Hin-Taek, near the Myanmar border. Other villages followed, according to the source there were probably not more than 2,500 Akha living in Thailand by the end of World War II. In 1964 there were approximately 7,000 and by mid-1983 they numbered 24,000, which means their population has more than doubled three times in 38 years. Some population is from migration, but approximately 3% a year is from births in the Akha community. (Panadda 1993 : 6)

2.1.3 Karen

Karen, the largest hill tribal group in Thailand, are called by the Northern Thai *Yang*, and by the Thai in other parts of the country *Kariang*. The Karen people call themselves *Pakakayo*, which means "mankind".

Karen's origin was from Mongolia 2,000 years ago, who later escaped from war to live in Tibet. Afterward when attacked by Chinese army, they moved downwards to the South, beginning at the low flat plains of the Yaengsikiang river and afterward to Salween river in Burma.

Karen have been migrating into Thailand from Burma since the middle of the eighteenth century (some 200 years ago), because of political conflicts with the Burmese. Their settlements are found widely distributed along the eastern Burmese border and along the western border of Thailand, extending to the North and the East. That is, they settle in both the uplands and the low lands in the area of Maehongson, Tak, and Kanchanaburi province, where most of them live. Others are scattered in the areas of Chiangrai, Lampang, Lamphun, Prae, Chiangmai and downwards to the western frontier of the central part of Thailand. (Puttachart 1983 : 6)

2.1.4 Northern Thai

The Northern Thai people of the northern part of Thailand live in 8 provinces. They include Maehongson, Chiangmai, Lamphun, Chiangrai, Lampang, Phayaw, Phrae, and Nan. They call themselves *Khon-Mueng*, which means "town people" and call their language as *Kam-Mueng*, which means "town language" (*Kam* - language or word while *Mueng* - town or city), because they are settled in the plain areas where they are surrounded by mountainous areas inhabited by varieties of hilltribe people such as Miao, Yao, Karen, Akha, Lahu, and Lisu.

Lanna Thai, the name of their former kingdom, is well known to the Thai people as *Tin-Tai-Ngaam* or a land of beautiful Thai girls. The Northern Thai or Lanna people have their own script, literature, and culture. The Lanna script is very similar to the Shan script used by Shan people in Burma and in the religions texts of Laos. Some letters are also common to Mon and Burmese script. About 95 percent of the Lanna people are Buddhists with animistic beliefs. Most of them are peace lovers. (Ruengdet 1981 : 1-2)

2.2 Tonal Systems and Tone Features of the Lahu, Akha, Karen Languages, and Northern Thai Dialect

2.2.1 Tonal System and Tone Features of the Lahu Language

Matisoff (1973) states that there are 7 tones in Lahu. They are 5 open tones and 2 checked tones as follows:

Tone 1	33	mid
Tone 2	21	low - falling
Tone 3	54	high - falling
Tone 4	11	very low
Tone 5	45	high - rising
Tone 6	54ʔ	high - checked
Tone 7	21ʔ	low - checked

Bradley (1979) states that there are 7 tones in Red Lahu which are the same as Black Lahu as follows:

Tone 1	high - falling tone
Tone 2	half - low falling tone
Tone 3	half - high rising tone
Tone 4	low level tone
Tone 5	mid level tone
Tone 6	high - falling checked tone
Tone 7	half - low falling checked tone

The first five tones all occur in long vowel syllables which could be called "open". Tones 6 and 7 differ from tones 1 to 5. They are short vowel syllables with a final glottal stop which could be called "checked".

Solot Sirisai (1986) states that 7 tones in Lahu Nyi are divided into 3 glottalized tones and 4 non - glottalized tones as follows:

Tone 1	22	mid low level tone
Tone 2	22ʔ	mid low level glottalized tone
Tone 3	33	mid level tone
Tone 4	44	mid high level tone
Tone 5	45ʔ	high contour glottalized tone
Tone 6	44ʔ	mid high level glottalized tone
Tone 7	45	high contour tone

2.2.2 Tonal System and Tone Features of the Akha Language

Lewis (1968) states that there are 5 tones in Akha. They are 3 level tones occurring with oral vowels and 2 level tones occurring with laryngealized vowels.

Panadda (1993) states that there are 5 tones in Akha as follows:

/1/ - mid-level tone
/2/ - creaky-mid-level tone
/3/ - mid-low-falling tone
/4/ - glottalized-low-falling tone
/5/ - high-level tone

Goodman (1996) states that the Akha in Thailand can be divided into 3 groups : Ulo, Lomi, and Pamee. Though mostly their language features are the same, but they are somewhat different in some vocabulary and consonant pronunciations.

Goodman refers to Lewis that there are 5 tones in Akha, but in his book he focuses on high tone, low tone, and nasalization.

2.2.3 Tonal System and Tone Features of the Karen Language

Puttachart (1983) states that there are 6 tones in Karen. They are:

/1/ mid level tone
/2/ breathy high level tone
/3/ breathy low level tone
/4/ creaky low tone
/5/ glottalized high tone
/6/ glottalized low tone

2.2.4 Tonal System and Tone Features of Northern Thai Dialect

Brown (1965) states that there are the same number of tones in all Kham mueng with the same patterns of tonal split. However, Kham Mueng can be divided into 4 groups according to the tonal variations. They are:

1. Chiangrai dialect
2. Phrae - Nan dialect
3. Lampang dialect
4. Chiangmai dialect

The following chart is adapted from Brown (1965) to illustrate the tonal variation of 4 groups.

Table 1 : *Tonal variation of the 4 dialects of Kham Mueng*

Tones / Northern Thai Dialect	1	2	3	4	5	6
Chiangrai						
Phrae-Nan						
Lampang						
Chiangmai						

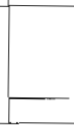
Mündhenk (1967) studies Kham Mueng spoken in 13 areas such as, Maehongson, Maesariang, Comthong, Chiangmai, Chiangrai, Nan, Lampang, Phrae, Lap-lae, Thoen, Tak, Sawhai and Khubua.

He states that Kham Mueng can be divided into 2 groups based on the tonal variation.

(i) Western Kham Mueng : This group comprises of Kham Mueng spoken in Maehongson, Masariang, Comthong, Chiangmai, Thoen, Tak, and Sawhai.

(ii) Eastern Kham Mueng : Kham Mueng spoken in Chiangrai, Lampang, Phrae, Nan, Lap-lae, and Khubua belong to this group.

Table 2 : *Tonal variation of the Western and Eastern Kham Mueng*

Tone	1	2	3	4	5
Western Kham Mueng					
Eastern Kham Mueng					

Katsura (1969) studies the phonological systems of Kham Mueng by collecting data from Chiangmai, Chiangrai, Maehongson, Lamphun, Lampang and Phrae. He finds that Kham Mueng can be classified into 2 groups according to the variation of tones in columns A3 and A4 of Gedney's tone test diagram.

(i) Chiangmai, Maehongson, and Lamphun have the mid level tone.
(ii) Chiangrai, Lampang, and Phrae have the mid level tone with a slightly rising at the end.

Ruengdet (1988) states that the Northern Thai dialect can be divided into 3 sub-dialects : Chiangmai, Chiangrai, and Phrae-Nan sub-dialect.

The Northern Thai dialect consists of 19-20 consonants, eighteen vowels, three diphthongs and six tones.

Tone 1 mid tone
Tone 2 low tone
Tone 3 falling tone
Tone 4 high tone
Tone 5 rising tone
Tone 6 high falling tone

Table 3 : *Tones of Northern Thai dialect*

	A	B	C	DL	DS
1	5	2	6	2	4/5
2	5	?	6	2	4/5
3	1	2	6	2	4/5
4	1	3	4	3	6

2.3 Other Related Literature

Gedney (1972) has presented a short-cut to discovering the structure of the tonal system of a Tai dialect by using a checklist for determining tones in Tai dialects which is obtained from the relation between initial consonants and tones as following :

	A	B	C	DL	DS
Voiceless friction sound, *s, hm, ph, etc.	1	5	9	13	17
Voiceless unaspirated, *p, t, k, etc.	2	6	10	14	18
Glottal, *ʔ, *ʔb, etc.	3	7	11	15	19
Voiced, *b, m, l, z, etc.	4	8	12	16	20
	Smooth Syllables			Checked Syllables	

This diagram displays a maximum of possible tonal distinctions resulting from the various types of tonal splits that have been described. In any given dialect there will be a division of each column of the chart into two or three tones, or in some cases no such division at all in one column or another. Most dialects will also show coalescence or syncretism between two or more belonging to different columns.

Suriya (1980) states that the problem of the Akha, Lahu, and Lisu children to learn the Thai language is the interference of their native languages in the secondary language.

She has compared the linguistic features of Thai with Akha, Lahu, and Lisu as follows:

Table 5 : ***Comparison of linguistic features between Thai and minority languages.***

Language / Linguistic features	Thai	Akha, Lahu, and Lisu
1. initial consonant	+ /r/ /s/ /n/	- /r/ /ts/ /ñ /
2. initial cluster consonant	/y/, /r/, /l/, /w/	/y/ (Akha), /w/ (Lahu and Lisu)
3. final consonant	+ final consonant	- final consonant
4. vowel	long and short vowel are significant	long and short vowel are not significant
5. sentence	Subject Verb Object	Subject Object Verb

CHAPTER III

MATERIALS AND METHODS

3.1 Place of Gathering Data

I selected the speech community of Mae-Yao sub-district, Mueng district, Chiangrai province, a highly cosmopolitan area composed of several ethnic groups, as the source for gathering data from Lahu, Akha, and Karen.

For Chiangrai's Northern Thai people, I selected Patung village, Paa-O-Donchai sub-district, Mueng district, Chiangrai province, because I have relatives living there.

3.2 Samples

A total of forty informants were chosen to be samples for this study and were divided into 4 groups:

(i) 10 Lahu
(ii) 10 Akha
(iii) 10 Karen
(iv) 10 Chiangrai's Northern Thai

The criteria for selecting the informants are:

3.2.1 Gender

All informants must be male, because in this study I have to consider the fundamental frequency. Male and female informants have different fundamental frequency range, that is, female informants have higher pitch than male; therefore, only one sex should be studied.

The reason for choosing men is male at Mae-Yao can speak Chiangrai's Northern Thai dialect fluently, whereas the female cannot because they rarely communicate with people outside their community.

3.2.2 Age

The informants have to be between 30-50 years old because the younger mostly have education in Thai school, they may have an interference from Standard Thai and the older probably have problems in speaking, such as the inefficiency of vocal cord or tooth loss, that can induce them produce unclear speech.

For my informants the youngest one is 31 years old and the oldest is 49.

3.2.3 Occupation

Most of my informants are farmers and laborers. Most laborers can speak Chiangrai's Northern Thai dialect fluently because they get employment with the Northern Thai people in town.

3.2.4 Education

All informants in each ethnic group, except Chiangrai's Northern Thai, must not have education in Thai school or ever, must not higher than primary education because Standard Thai may interfere when these people speak Chiangrai's Northern Thai dialect.

3.2.5 Settlement

Firstly, I stipulated the informants must be born in their village but I could not find one. All of them were immigrants. Then, I stipulated that the informants, Lahu, Akha, and Karen, must live in their village more than 30 years and the Northern Thai people must be born and live in their village.

3.2.6 Language Use

Chiangrai's Northern Thai : must speak Chiangrai's Northern Thai dialect as native language.

Lahu : must speak Lahu as native language and Chiangrai's Northern Thai dialect as lingua franca.

Akha : must speak Akha as native language and Chiangrai's Northern Thai dialect as lingua franca.

Karen : must speak Karen as native language and Chiangrai's Northern Thai dialect as lingua franca.

3.3 Materials Used in the Study

3.3.1 Word List for Determining Tones

There are two wordlists used in the research as follows:

1. Lahu, Akha, and Karen wordlist
2. Chiangrai's Northern Thai dialect wordlist

The first lists were obtained from the following theses : *The Phonological Description of Lahu Nyi Language Spoken in Chayi Village, Patung Sub-District, Mae Chan District, Chiangrai Province* (Solot 1986), *A Phonological study of Akha in Pa-Kha-Suk-jai Village, Tambol Mae-Sa-Long-Nok, King-Ampher Mae-Fa-Luang, Chiangrai Province* (Panadda 1993), and *The Phonology of Sgaw Karen, with Comparisons with Thai* (Puttachart 1983).

The second list was created by this author, adapted from Gedney's checklist for determining tones as follows:

1. There are total 20 words in the list, placed in the tone box which are A1, A2, A3, A4, B1, B2, B3, B4, C1, C2, C3, C4, DL1, DL2, DL3, DL4, DS1, DS2, DS3, and DS4.
2. Initial consonants in box A1, B1, C1, DL1, and DS1 are high consonant.
3. Initial consonants in box A2, A3, B2, B3, C2, C3, DL2, DL3, DS2, and DS3 are middle consonant.
4. Initial consonants in box A4, B4, C4, DL4, and DS4 are low consonant.
5. Words in box A1-4, B1-4, and C1-4 are smooth syllables.
6. Words in box DL1-4 are long-checked syllables.
7. Words in box DS1-4 are short-checked syllables.
8. Initial consonants in each box are voiceless sound except box A3, B3, C3, DL3, and DS3 are voiced.
9. Words in each box are monosyllabic words.
10. Vowels in each box are low central unrounded vowel : a.

Table 6 : *A checklist for determining tones in Northern Thai dialect*

khaa 'leg'	khaw 'knee'	khaaw 'rice'	khaat 'to be torn'	khat 'to scrub'
taa 'eye'	paa 'jungle'	paa 'aunt'	paat 'to sweep'	pat 'to wipe'
daaw 'star'	daang 'piebald'	daay 'cord'	daap 'sword'	dak 'to trap'
khaang 'chin'	kham 'dusk'	khaa 'to trade'	khaat 'to buckle'	khat 'to select'

After I had created this wordlist, I checked these 20 words with native Northern Thai who lived in Bangkok for correcting the list. Since there is a word that differs from Northern Thai dialect, for example "naan (a long time)" is pronounced as "[mɔɔn] (a long time)" in northern Thai dialect then I had to correct the list by using another word.

Thereafter, I brought these 20 words to sampling, 5 times each word, total 100 words divided into 60 smooth syllables and 40 checked syllables as the following table:

Table 7 : *Smooth syllables*

1. khaa1 'leg'	11. daaw1 'star'	21. daay2 'cord'	31. kham3 'dusk'	41. taa3 'eye'	51. khaaw5 'rice'
2. paa1 'jungle'	12. paa3 'jungle'	22. taa1 'eye'	32. daang3 'piebald'	42. daang4 'piebald'	52.khaang5 'chin'
3. khaa1 'to trade'	13. khaaw1 'rice'	23. khaw2 'knee'	33. paa5 'jungle'	43. khaa5 'leg'	53. taa4 'eye'
4. daang1 'piebald'	14. khaw1 'knee'	24. khaa3 'to trade'	34. daaw4 'star'	44.khaang4 'chin'	54. daay5 'cord'
5. khaang1 'chin'	15. paa2 'aunt'	25. khaaw3 'rice'	35. khaw3 'knee'	45. khaa4 'to trade'	55. kham4 'dusk'
6. paa2 'jungle'	16. kham2 'dusk'	26. paa4 'jungle'	36. daay3 'cord'	46. khaaw4 'rice'	56. khaa5 'to trade'
7. khaa2 'leg'	17. daay1 'cord'	27.khaang2 'chin'	37. taa2 'eye'	47. daay4 'cord'	57. paa5 'aunt'
8. daang2 'piebald'	18. daaw2 'star'	28. khaa3 'leg'	38.khaang3 'chin'	48. paa4 'aunt'	58. khaw5 'knee'
9. paa1 'aunt'	19. khaaw2 'rice'	29. daaw3 'star'	39. khaa4 'leg'	49. daang5 'piebald'	59. kham5 'dusk'
10. kham1 'dusk'	20. khaa2 'to trade'	30. paa3 'aunt'	40. daaw5 'star'	50. khaw4 'knee'	60. taa5 'eye'

Table 8 : *Checked syllables*

1. khaat1 'to be torn'	9. khat2 'to select'	17. dak2 'to trap'	25. khat3 'to scrub'	33. dak4 'to trap'
2. daap1 'sword'	10. khat1 'to scrub'	18. khaat3 'to buckle'	26. daap3 'sword'	34. pat5 'to wipe'
3. pat1 'to wipe'	11. paat2 'to sweep'	19. khaat3 'to be torn'	27. pat4 'to wipe'	35. khaat5 'to buckle'
4. dak1 'to trap'	12. khaat2 'to be torn'	20. khat2 'to scrub'	28. khaat5 'to be torn'	36. khat5 'to select'
5. paat1 'to sweep'	13. khaat2 'to buckle'	21. khat4 'to select'	29. paat4 'to sweep'	37. daap5 'sword'
6. khaat1 'to buckle'	14. pat3 'to wipe'	22. dak3 'to trap'	30. khat4 'to scrub'	38. paat5 'to sweep'
7. khat1 'to select'	15. khat3 'to select'	23. khaat4 'to be torn'	31. khaat4 'to buckle'	39. dak5 'to trap'
8. pat2 'to wipe'	16. daap2 'sword'	24. paat3 'to sweep'	32. daap4 'sword'	40. khat5 'to scrub'

3.3.2 Instruments

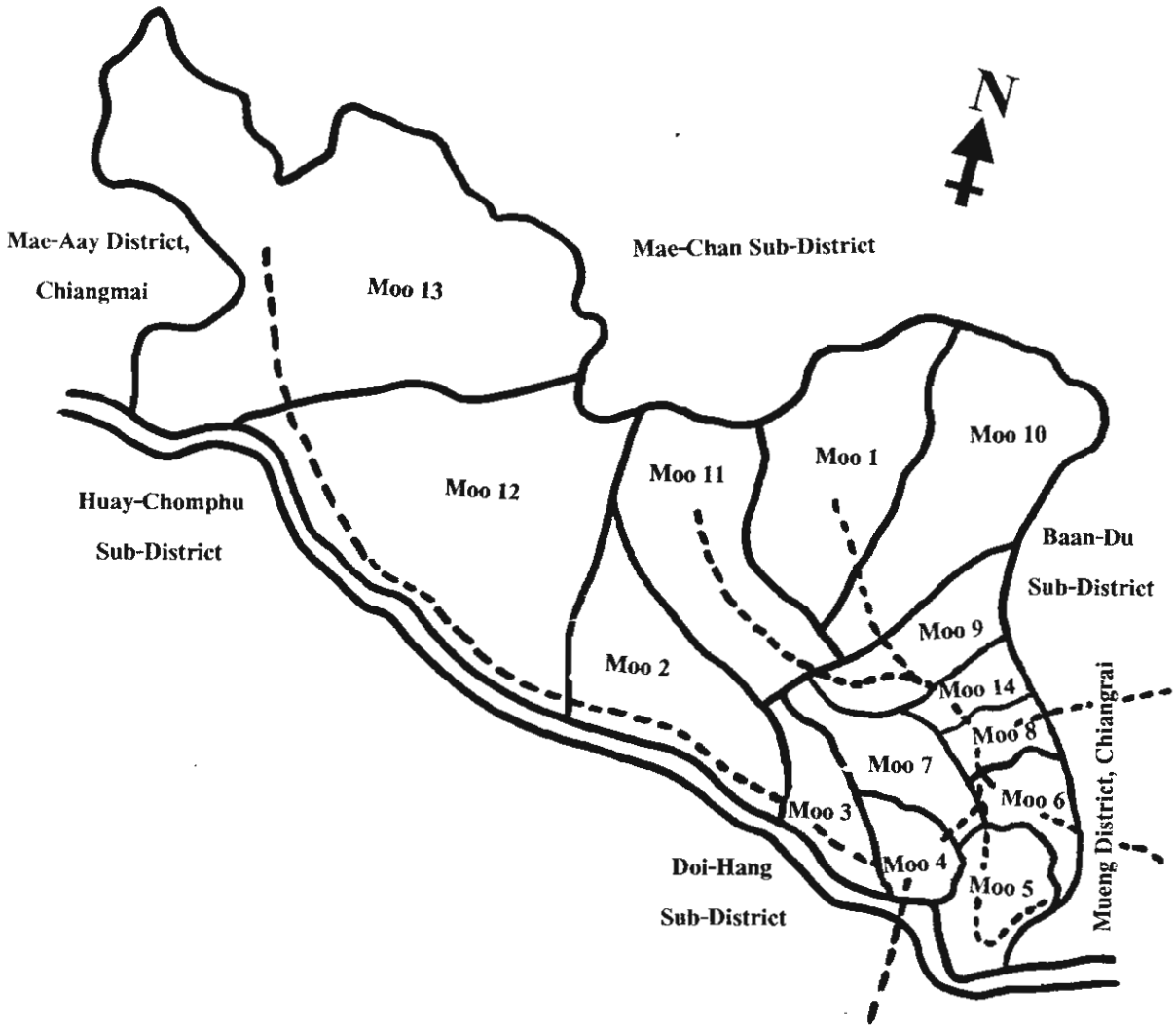
1. Aiwa stereo radio cassette recorder, version JS479.
2. Forty cassettes (Sony EF60).
3. Pictures.
4. A computer software program CECIL version 2.2.

3.4 Method of Gathering Data

At the beginning of March, 2000, I went to survey field information at Mae-Yao sub-district, Mueng district, Chiangrai province.

At first, I had contacted the leader of Mae-Yao and asked for the map and the list of village names in this area. The villages at Mae-Yao are as follows:

1. Moo 1, Huaykhomnai village
2. Moo 2, Ruammit village
3. Moo 3, Huaysaikhaaw village
4. Moo 4, Rimkok village
5. Moo 5, Paa-ao village
6. Moo 6, Sanpaayaang village
7. Moo 7, Klaangtung village
8. Moo 8, Saimoon village
9. Moo 9, Tungluang village
10. Moo 10, Huaykhomnok village
11. Moo 11, Huaymaesai village
12. Moo 12, Kwaewuadam village
13. Moo 13, Panasawan village
14. Moo 14, Siriraat village



1. Moo 1, Huaykhomnai village
2. Moo 2, Ruammit village
3. Moo 3, Huaysaikhaaw village
4. Moo 4, Rimkok village
5. Moo 5, Paa-ao village
6. Moo 6, Sanpaayaang village
7. Moo 7, Klaangtung village
8. Moo 8, Saimoon village
9. Moo 9, Tungluang village
10. Moo 10, Huaykhomnok village
11. Moo 11, Huaymaesai village
12. Moo 12, Kwaewuadam village
13. Moo 13, Panasawan village
14. Moo 14, Siriraat village

Figure 4 : ***Map of Mae-Yao Sub-district***

But there are merely 9 villages where the hilltribe lives. They are:

1. Moo 1, Huaykhomnai village
2. Moo 2, Ruammit village
3. Moo 3, Huaysaikhaaw village
4. Moo 6, Sanpaayaang village
5. Moo 7, Klaangtung village
6. Moo 10, Huaykhomnok village
7. Moo 11, Huaymaesai village
8. Moo 12, Kwaewuadam village
9. Moo 13, Panasawan village

Since I knew the name and location of the villages, I decided to survey the lifestyles of people in each village first. Thereafter, I started to gather data in every village where the hilltribes live, except Moo 12, Khwaewuadam village, and Moo 13, Panasawan village, because both villages are very far away from the other villages.

For data gathering, I interviewed a total of forty informants and recorded their pronunciation in both citation form and connected speech into the cassette recorder. The methods are as follows:

1.) Citation form

For Chiangrai's Northern Thai dialect, each of informants was presented with the picture catalog and was asked to pronounce the wordlist with the sentence frame, "Au kam waa.....song tuea (to say a word.....twice.)", following each picture. There were 100 words for each informant and 4,000 words for all informants.

For the native languages, Lahu, Akha, and Karen, the informants were asked to pronounce the selected words from a wordlist. They would then repeated each word after me in their native languages. That is, I said the word in Chiangrai's Northern Thai dialect first and then the informant pronounced that word in his native language clearly and slowly.

2.) Connected speech

In both Chiangrai's Northern Thai dialect and the native languages of each group, the informants could talk about whatever they want such as biography, farming, tradition, etc. Each word chosen from connected speech must be stressed and does not occur at initial or final position of utterance.

3.5 Methods of Data Analyzing

3.5.1 To analyze the tonal systems of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, Karen and native speaker

Auditory judgement was used in analyzing the tonal systems of Chiangrai's Northern Thai dialect. The tonal system of each informant was divided into 4 groups. They are:

Group 1 tonal system of Chiangrai's Northern Thai dialect pronounced by Lahu.

Group 2 tonal system of Chiangrai's Northern Thai dialect pronounced by Akha.

Group 3 tonal system of Chiangrai's Northern Thai dialect pronounced by Karen.

Group 4 tonal system of Chiangrai's Northern Thai dialect pronounced by native speaker.

3.5.2 To analyze the tone features of Chiangrai's Northern Thai dialect pronounced by the Lahu, Akha, Karen and native speaker

1. A computer software program called "CECIL" was used to analyze the tone features by considering fundamental frequency and fundamental frequency curve of each utterance. The procedures are as follows:

1.1 Turn on the computer and click ***wincecil*** icon.
1.2 Click ***setting*** > ***general program setting*** > ***use color*** for convenience to consider the fundamental frequency curve.
1.3 Click ***record utterance*** > press ***play*** button on cassette recorder > ***record*** > ***ok***.
1.4 Click ***frequency graph derivation*** to adjust the fundamental frequency range.
1.5 Set the origin of word by pressing ***shift*** button while clicking the left of mouse
1.6 Set the end of word by clicking the left of mouse.
1.7 Set the duration of every word by normalization.
1.8 Measure fundamental frequency every 10% interval beginning with 0% until 100%, total 11 points.

For example, the duration of a word is 159 milliseconds.

10% of all of duration is $\frac{159}{10} = 15.9 \approx 16$ milliseconds.

0% = 0 millisecond
Fo = 109.7 Hz

10% = 16 milliseconds
Fo = 108.4 Hz

20% = 32 milliseconds
Fo = 107.4 Hz

30% = 48 milliseconds
Fo = 106.3 Hz

40% = 64 milliseconds
Fo = 106.1 Hz

50% = 80 milliseconds
Fo = 106.2 Hz

60% = 96 milliseconds
Fo = 106.7 Hz

70% = 112 milliseconds
Fo = 107.4 Hz

80% = 128 milliseconds
Fo = 107.2 Hz

90% = 144 milliseconds
Fo = 107.7 Hz

100% = 160 milliseconds
Fo = 108.8 Hz

1.9 Record the results into the table below.

Table 9 : *Fundamental frequency and duration of "khaw"*

Name *Achong Mayer* **Age** *38 years old* **Village** *Huaysaikhaaw* **Ethnic group** *Akha*												
word ***'knee'***	*Duration (ms)*	*0%*	*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*
khaw No.1	90.0	122.6	122.6	121.8	120.6	119.4	118.4	117.5	116.1	114.3	112.6	111.7
khaw No.2	168.0	111.1	110.3	108.7	107.7	106.6	106.4	106.2	106.0	105.2	102.9	101.3
khaw No.3	199.0	111.7	109.6	107.9	107.2	106.9	106.8	106.4	106.1	106.6	105.8	105.2
khaw No.4	159.0	109.7	108.4	107.4	106.3	106.1	106.2	106.7	107.4	107.2	107.7	108.8
khaw No.5	136.0	115.8	111.1	107.4	106.4	106.1	106.0	106.4	107.0	107.4	106.9	106.6

2. Compile the fundamental frequency for chart plotting by Microsoft Excel as follows:

2.1 Insert the results, the same as 1.9, but no duration data into the table.

Table 10 : *Fundamental frequency of "khaw"in MS Excel*

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Name** *Achong Mayer* **Age** *38 years old* **Village** *Huaysaikhaaw* **Group** *Akha*											
2		*0%*	*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*
3	*khaw No.1*	122.6	122.6	121.8	120.6	119.4	118.4	117.5	116.1	114.3	112.6	111.7
4	*khaw No.2*	111.1	110.3	108.7	107.7	106.6	106.4	106.2	106.0	105.2	102.9	101.3
5	*khaw No.3*	111.7	109.6	107.9	107.2	106.9	106.8	106.4	106.1	106.6	105.8	105.2
6	*khaw No.4*	109.7	108.4	107.4	106.3	106.1	106.2	106.7	107.4	107.2	107.7	108.8
7	*khaw No.5*	115.8	111.1	107.4	106.4	106.1	106.0	106.4	107.0	107.4	106.9	106.6
8												

2.2 Calculate the average of fundamental frequency of the word.

2.2.1 Click on ***B8***.

2.2.2 Highlight ***B8*** to ***B3*** by pressing ***Shift*** and arrow key (↑).

2.2.3 Click ***insert function > average > ok***.

2.2.4 Insert ***B3:B7*** average at ***number 1*** block then click ***ok***.

2.2.5 The average of "*khaw*" at 0% is **114.2**.

Table 11 : *The average of "khaw" at 0%*

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Name** *Achong Mayer* **Age** *38 years old* **Village** *Huaysaikhaaw* **Group** *Akha*											
2		*0%*	*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*
3	*khaw No.1*	122.6	122.6	121.8	120.6	119.4	118.4	117.5	116.1	114.3	112.6	111.7
4	*khaw No.2*	111.1	110.3	108.7	107.7	106.6	106.4	106.2	106.0	105.2	102.9	101.3
5	*khaw No.3*	111.7	109.6	107.9	107.2	106.9	106.8	106.4	106.1	106.6	105.8	105.2
6	*khaw No.4*	109.7	108.4	107.4	106.3	106.1	106.2	106.7	107.4	107.2	107.7	108.8
7	*khaw No.5*	115.8	111.1	107.4	106.4	106.1	106.0	106.4	107.0	107.4	106.9	106.6
8	*Average*	**114.2**										

2.2.6 Click on ***B8 > copy***.
2.2.7 Click on ***C8 > paste*** then the average of "khaw" at 10% is ***112.4***.
2.2.8 Click on ***D8 > paste, E8 > paste, F8 > paste, ... ,L8 > paste*** then the average of "khaw" at 20% - 100% will present.

Table 12 : *The average of "khaw" at 0%-100%*

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Name** *Achong Mayer* **Age** *38 years old* **Village** *Huaysaikhaaw* **Group** *Akha*											
2		*0%*	*10%*	*20%*	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*	*100%*
3	*khaw No.1*	122.6	122.6	121.8	120.6	119.4	118.4	117.5	116.1	114.3	112.6	111.7
4	*khaw No.2*	111.1	110.3	108.7	107.7	106.6	106.4	106.2	106.0	105.2	102.9	101.3
5	*khaw No.3*	111.7	109.6	107.9	107.2	106.9	106.8	106.4	106.1	106.6	105.8	105.2
6	*khaw No.4*	109.7	108.4	107.4	106.3	106.1	106.2	106.7	107.4	107.2	107.7	108.8
7	*khaw No.5*	115.8	111.1	107.4	106.4	106.1	106.0	106.4	107.0	107.4	106.9	106.6
8	*Average*	**114.2**	**112.4**	**110.6**	**109.6**	**109.0**	**108.8**	**108.6**	**108.5**	**108.1**	**107.2**	**106.7**

2.3 Highlight ***A2*** to ***L8*** by mouse.
2.4 Click ***insert chart*** > select chart type '***line***' > ***next*** > select series in ***rows*** > ***next***.
2.5 Chart title: ***The average of fundamental frequency of "khaw"***.
Category [X] axis : ***duration (%)***.
Value [Y] axis : ***Fo (Hz)***.
Then click ***next***.
2.6 Place chart as a new sheet.
2.7 Click ***finish***.
2.8 Adjust the chart properly.

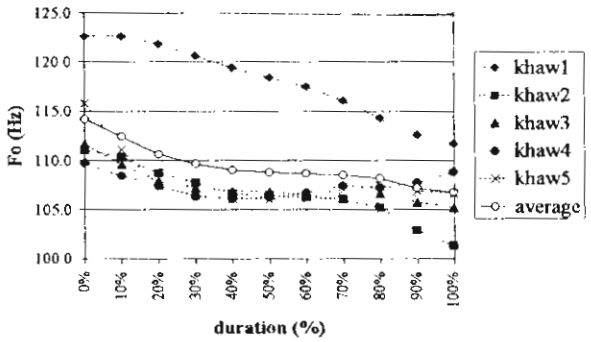


Figure 5 : *The average of fundamental frequency of "khaw (knee)"*

3. Use the same procedure with other words then put each chart into the same diagram for analyzing tone features as follows:

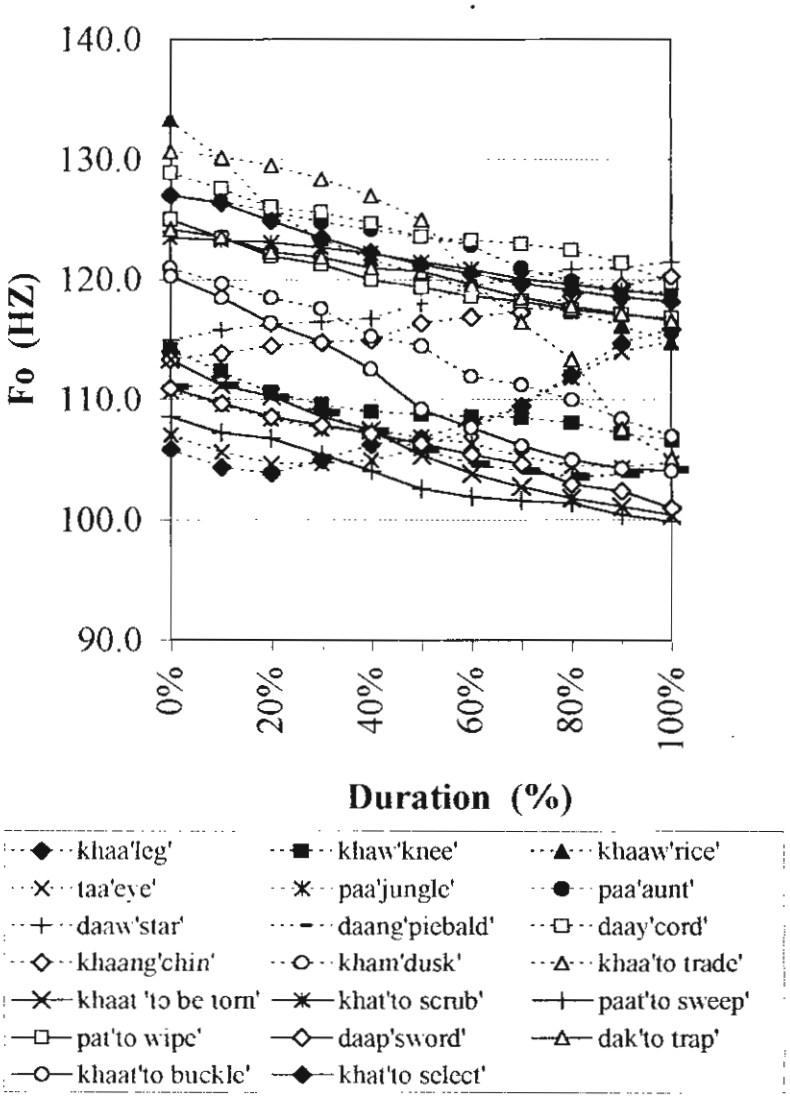


Figure 6 : ***The average of each word pronounced by Achong Mayer***

3.1 Draw the parallel line with X axis from 0% to 100% at the lowest range of fundamental frequency curve and draw the parallel again at the highest range of fundamental frequency curve of the chart.

3.2 The six lines are drawn horizontally to divide the fundamental frequency range into 5 sections. The first two lines represent the first fundamental frequency range (Pornsri, 1989). Note that if the five lines are drawn, the first line will also represent the first fundamental frequency range. Kalaya (1990) states that if the fundamental frequency range is divided into five sections (six horizontal lines), the fundamental frequency range can be studied in more detail than other studies.

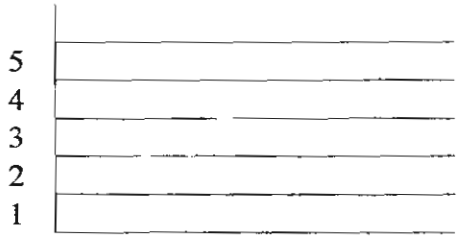


Figure 7 : ***The fundamental frequency range divided into 5 sections***

1st section means low pitch
2nd section means mid-low pitch
3rd section means mid pitch
4th section means mid-high pitch
5th section means high pitch

To describe the pitch of each tone, I use the 2 or 3 numeral to describe the beginning point, change point, and the end of the point of fundamental frequency curve. For example:

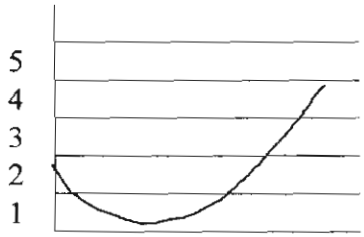


Figure 8 : ***Low-falling-rising tone***

From the chart, the beginning point of fundamental frequency curve is at the 2nd section; the change point is at the 1st section; and the end of the point is at the 4th section then describe [214] as low-falling-rising tone.

4. After finishing the analysis of the tone features of all informants, I divide them into 4 groups, the same as analyzing tonal systems.

Group 1 tone features of Chiangrai's Northern Thai dialect pronounced by Lahu.

Group 2 tone features of Chiangrai's Northern Thai dialect pronounced by Akha.

Group 3 tone features of Chiangrai's Northern Thai dialect pronounced by Karen.

Group 4 tone features of Chiangrai's Northern Thai dialect pronounced by native speakers.

5. Calculate the average of each group. As if the apparent difference is found in the same group then separate it as a sub-tone feature in the ethnic group.

6. Compare the tone features of Chiangrai's Northern Thai dialect of each group.

3.5.3 To analyze the tonal systems and the tone features of the Lahu, Akha, and Karen languages

Analyze the record data of each group by WinCECIL program which is the same as 3.5.2. The tonal system is based on smooth syllables only, because the Lahu, Akha, and Karen languages have no checked syllables.

3.5.4 To compare the tonal systems and the tone features

After finishing the data analysis, the tonal systems and tone features of Chiangrai s Northern Thai dialect pronounced by the Lahu, Akha, and Karen people will be compared in three ways as follows:

(i) To be compared with their native languages in only citation form because the researcher has not yet mastered the whole systems of the Lahu, Akha, and Karen languages, so it is difficult for the researcher to single out the words from the connected speech.

(ii) To be compared with Chiangrai s Northern Thai dialect pronounced by the native speakers in both citation form and connected speech.

(iii) To be compared with each other in both citation form and connected speech.

CHAPTER IV

TONAL SYSTEMS AND TONE FEATURES OF CHIANGRAI'S NORTHERN THAI DIALECT, LAHU, AKHA, AND KAREN PRONOUNCED BY NATIVE SPEAKERS

The results of the analysis indicate that there are 6 tones in Chiangrai's Northern Thai Dialect, 7 tones in Lahu, 5 tones in Akha, and 6 tones in Karen as follows:

4.1 Tonal Systems and Tone Features of Chiangrai's Northern Thai Dialect

4.1.1 Tonal system in citation form

Table 13 : ***Pattern of tones in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

A	*B*	*C*	*DL*	*DS*
Tone 1	*Tone 3*	*Tone 5*	*Tone 3*	*Tone 2*
Tone 2	*Tone 4*	*Tone 6*	*Tone 4*	*Tone 5*

Following table 13, the tonal system, it is interesting to note that tone ***A*** reflects the glottalization split and the tones in other columns, ***B***, ***C***, ***DL***, and ***DS***, always reflect the voiced-voiceless split.

4.1.2 Tone features in citation form

1) Tone 1 : Low - falling - rising tone [212]

The pitch pattern of this tone starts at 105.3 Hz, and glides down to about 98.3 Hz, then rises quickly to about 107.5 Hz (see figures 9 and 17).

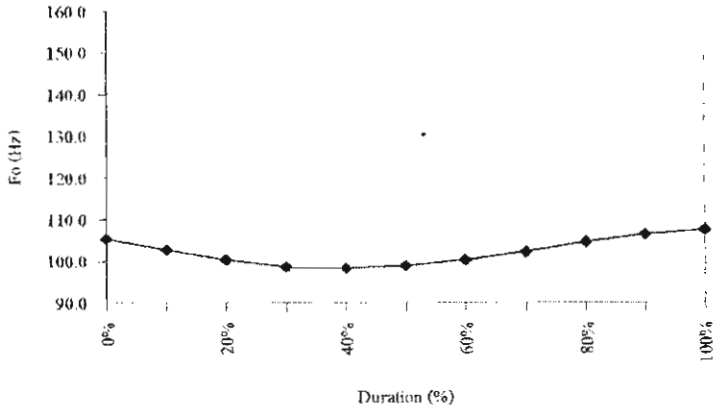


Figure 9 : ***Tone 1 in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[hu:^{212}]	'ear'
	[k^{h}a:^{212}]	'leg'
	[pi:^{212}]	'year'
	[kin^{212}]	'to eat'

2.) Tone 2 has 2 allotones which are in complementary distribution as follows:

2.1) Low - rising tone (occurs with smooth syllables) [23]

The pitch pattern of this tone starts at 116.5 Hz and glides up to about 126.6 Hz (see figures 10 and 17).

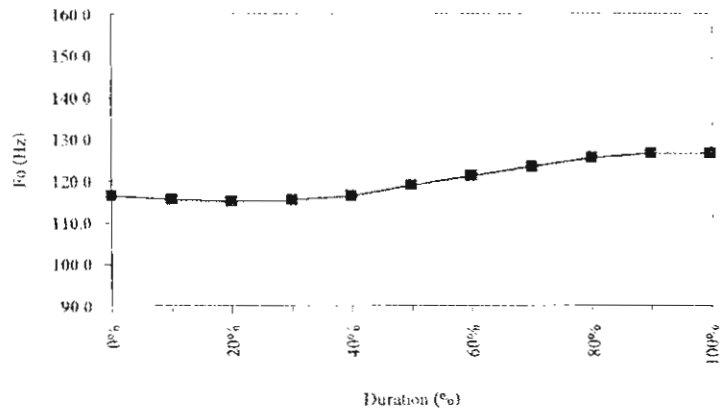


Figure 10 : ***Tone 2 on smooth syllables in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[bin^{23}]	'to fly'
	[dæːŋ^{23}]	'red'
	[miː^{23}]	'hand'
	[nɔːn^{23}]	'to lie down'

2.2) Mid - rising tone (occurs with checked syllables) [35]

The pitch pattern of this tone starts at 127.2 Hz and rises to about 146.4 Hz (see figures 11 and 17).

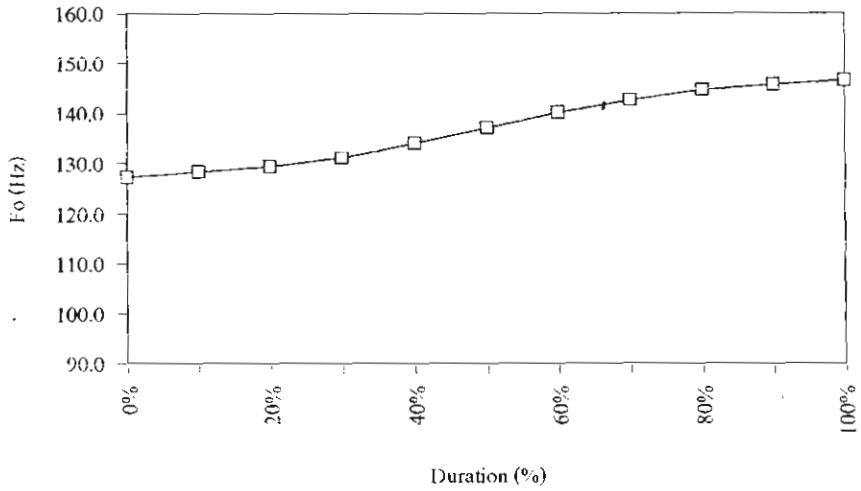


Figure 11 : ***Tone 2 on checked syllables in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[pʰak^{35}]	'vegetable'
	[sip^{35}]	'ten'
	[tok^{35}]	'to fall'
	[ʔok^{35}]	'chest'

3.) Tone 3 : Low - level tone [22]

The pitch pattern of this tone starts at 120.7 Hz on smooth syllables and 120.3 Hz on checked syllables and glides down a little to about 110.0 Hz on smooth syllables and 112.4 Hz on checked syllables (see figures 12 and 17).

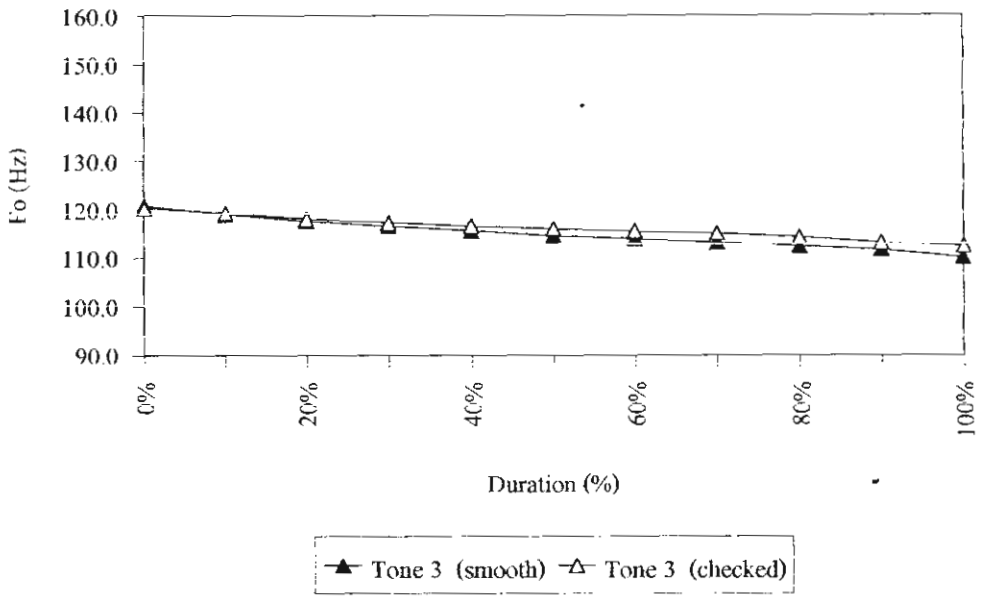


Figure 12 : ***Tone 3 on smooth and checked syllables in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[si:^{22}]	'four'
	[taw^{22}]	'turtle'
	[bæŋ^{22}]	'to divide'
	[k^{h}a:t^{22}]	'to be torn'
	[kɔ:t^{22}]	'to embrace'
	[bɔ:t^{22}]	'blind'

4.) Tone 4 : Mid - falling tone [31]

The pitch pattern of this tone starts at 124.1 Hz on smooth syllables and 125.4 Hz on checked syllables and falls to about 95.1 Hz on smooth syllables and 103.1 Hz on checked syllables (see figures 13 and 17)

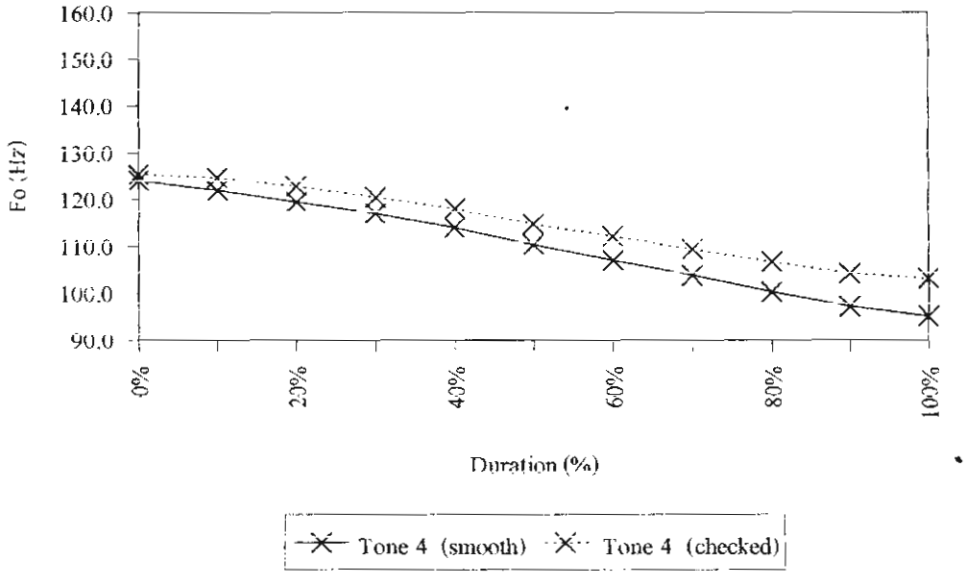


Figure 13 : ***Tone 4 on smooth and checked syllables in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[pɔ:^{31}]	'father'
	[hay^{31}]	'plantation'
	[liət^{31}]	'blood'
	[ha:k^{31}]	'root'

5.) Tone 5 has 2 allotones which are in complementary distribution as follows:

5.1) High-mid-falling tone (occurs with smooth syllables) [43]

The pitch pattern of this tone starts at 138.1 Hz and glides down to about 122.6 Hz (see figures 14 and 17).

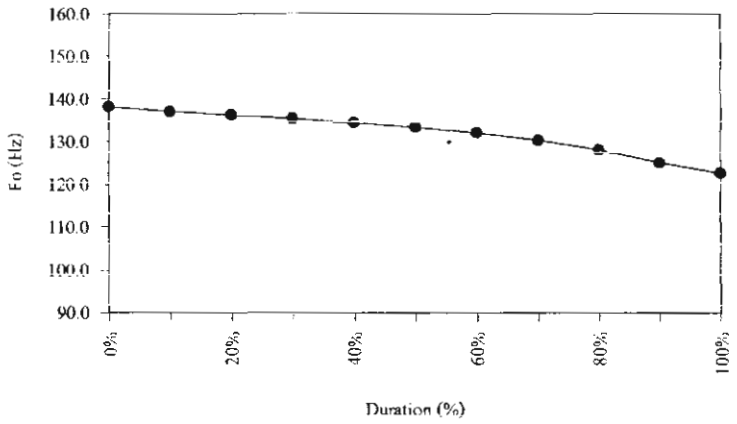


Figure 14 : ***Tone 5 on smooth syllables in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[ya:^{43}]	'grass'
	[ka:w^{43}]	'nine'
	[tom^{43}]	'to boil'
	[da:y^{43}]	'cord'

5.2) High-high-falling tone (occurs with checked syllables) [54]

The pitch pattern of this tone starts at 152.9 Hz and glides down to about 140.2 Hz (see figures 15 and 17).

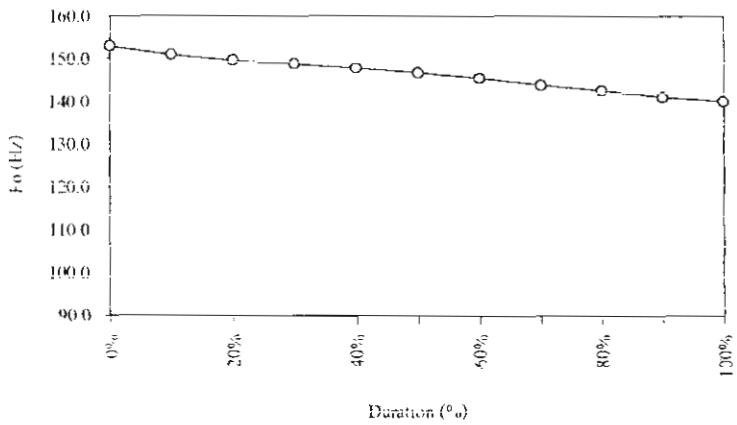


Figure 15 : ***Tone 5 on checked syllables in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[hak^{54}]	'to love'
	[nok^{54}]	'bird'
	[wat^{54}]	'temple'
	[k^{h}at^{54}]	'to select'
	[lep^{54}]	'nail'
	[mot^{54}]	'ant'

6.) Tone 6 : High - low falling tone [52]

The pitch pattern of this tone starts at 154.0 Hz and falls quickly to about 106.7 Hz (see figures 16 and 17).

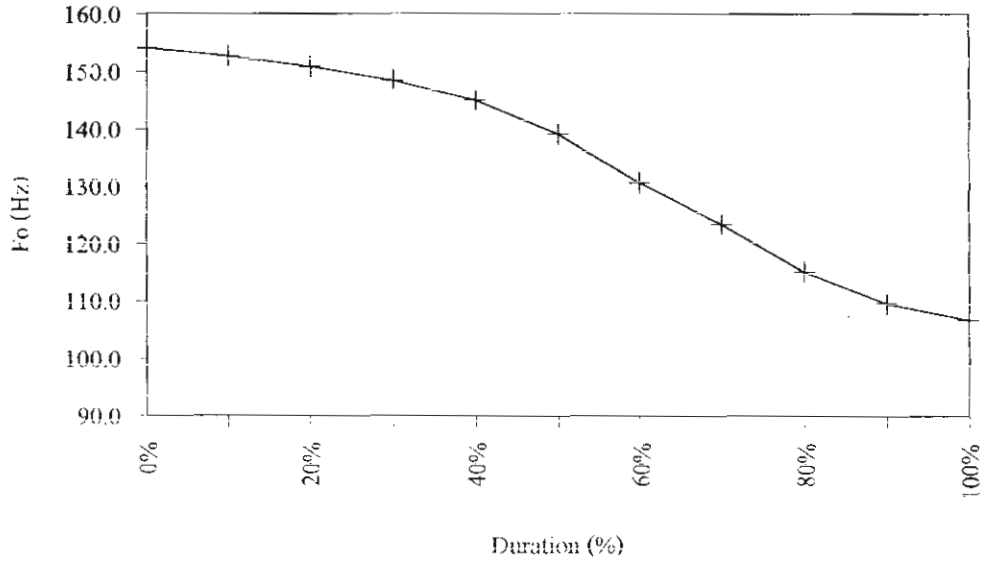


Figure 16 : ***Tone 6 in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[kiw^{52}]	'eyebrows'
	[to:ŋ^{52}]	'stomach'
	[na:m^{52}]	'water'
	[lin^{52}]	'tongue'
	[ma:^{52}]	'horse'

All the tones on smooth and checked syllables are put into the same diagram as follows:

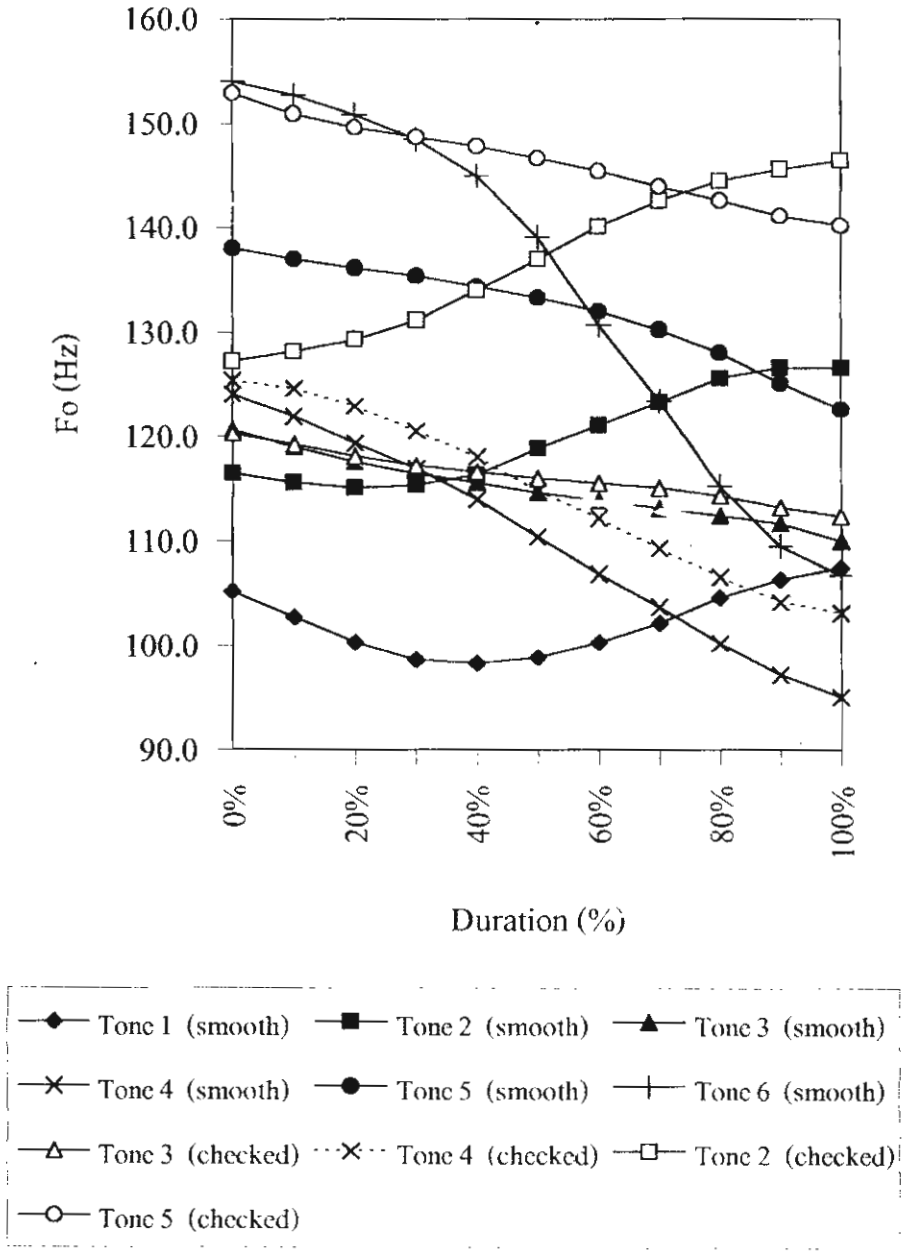


Figure 17 : ***Tone features in citation form of Chiangrai's Northern Thai dialect pronounced by native speakers***

4.1.3 Tonal system in connected speech

Table 14 : ***Pattern of tones in connected speech of Chiangrai's Northern Thai dialect pronounced by the native speakers***

A	*B*	*C*	*DL*	*DS*
Tone 1	*Tone 3*	*Tone 5*	*Tone 3*	*Tone 2*
Tone 2	*Tone 4*	*Tone 6*	*Tone 4*	*Tone 5*

Following table 14, the tonal system, it is interesting to note that tone ***A*** reflects the glottalization split and the tones in other columns, ***B***, ***C***, ***DL***, and ***DS***, always reflect the voiced-voiceless split.

4.1.4 Tone features in connected speech

1.) Tone 1 : Low - falling - rising tone [212]

The pitch pattern of this tone starts at 123.6 Hz, and glides down to about 112.6 Hz, then rises quickly to about 126.9 Hz (see figures 18 and 26).

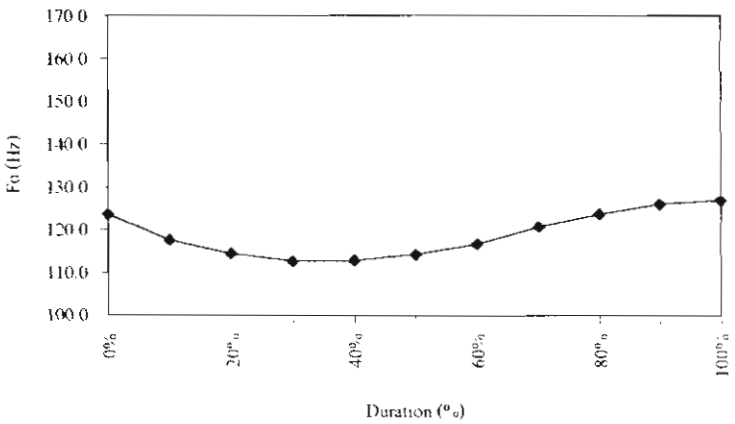


Figure 18 : ***Tone 1 in connected speech of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[si:^{212}]	'color'
	[mu:^{212}]	'pig'
	[tæ:ŋ^{212}]	'cucumber or melon'
	[kɔ:ŋ^{212}]	'pile'

2.) Tone 2 has 2 allotones which are in complementary distribution as follows:

2.1) Mid - rising tone (occurs with smooth syllables) [35]

The pitch pattern of this tone starts at 134.5 Hz and rises quickly to about 158.7 Hz (see figures 19 and 26).

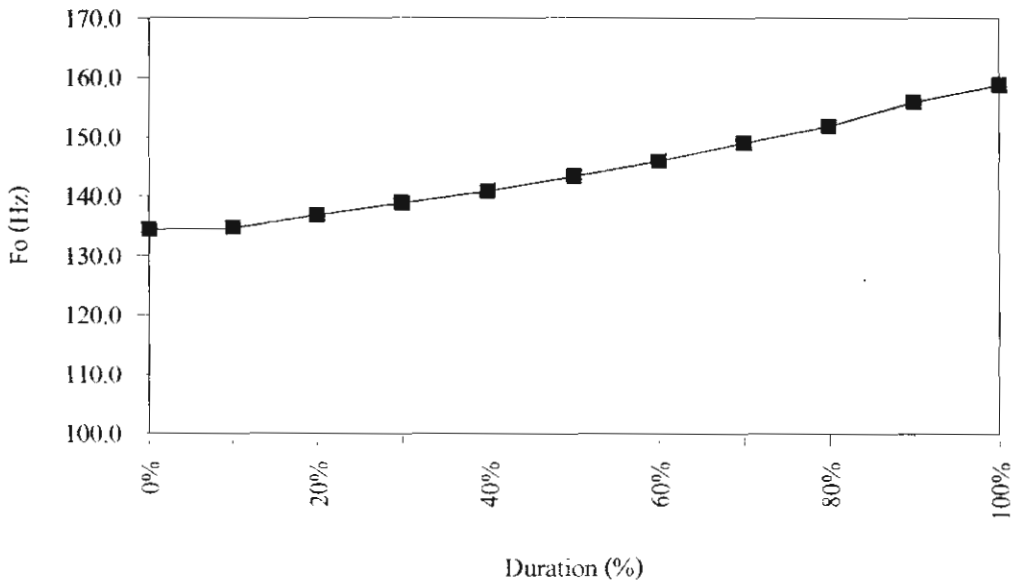


Figure 19 : ***Tone 2 on smooth syllables in connected speech of Chiangrai's Northern Thai dialect pronounced by native speakers***

Ex.	[diən^{35}]	'month'
	[di:^{35}]	'good'
	[mi:^{35}]	'to have'
	[pæ:ŋ^{35}]	'expensive'