TONAL GEOGRAPHY OF THE PROVINCES OF CENTRAL THAILAND

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Progress in Thai tone geography has two important obstacles: lack of interest among scholars, and incompatibility of research results. This reasonable claim was made by M.R. Kalaya Tingsabadh (2001) about the future development of Thai tone geography. I do agree with this statement since originally had not felt very confident in my ability to work on tones in terms of scientific methods. In fact, in the beginning I even had no idea how to conduct time-consuming fieldwork on my own. Lack of experience in dialectology, not lack of interest, gave me difficulties, much like climbing a steep mountain slope. People often say that the first hard work in life becomes harder as you work your way through it. To me, it is absolutely true.

The journey through this tone study had been very long but worth sacrificing for. Priceless experiences and activities during this trip were meaningfully internalized including the study itself. This linguistic work has yielded many great changes in my life and has opened up lots of challenges along the way. I can say it is my best friend now, after having spent such a very long time with it.

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TONAL GEOGRAPHY OF THE PROVINCES OF CENTRAL THAILAND

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ABSTRACT

Thai is a tonal language in which each syllable has a distinctive lexical tone. Central Thai not only consists of Bangkok Thai but also other varieties spoken in various provinces in the central region of Thailand. This study investigates the tone variation of Central Thai spoken in ten provinces in Central Thailand. The focus is on the tone systems: tone patterns and characteristics, tone classification, and geographical distribution of Central Thai varieties based on tone variation. The continuous speech data were spontaneously elicited from ninety Central Thai native speakers living in thirty districts (Amphoes) in the central plains of Thailand. Three speakers and three districts were selected to represent each district and province respectively. The data analysis was carried out with both auditory stimuli [Tone box method devised by Gedney (1972)] and speech analysis instruments (Computer software programs: Cool Edit Pro, PRAAT 4.5.08, and Microsoft Excel Version 2003).

The findings revealed that there are two Central Thai subdialects with regard to tone patterns: subdialect A1-234 and subdialect A1-23(-)4. Most of their distribution on linguistic maps shows that Central Thai varieties can be classified into eastern and western groups. Two to four accents with regard to phonetic characteristics are similarly found, which can be used for classifying Central Thai varieties into seven groups, i.e., Group I: Chainat Thai, Sing Buri Thai, Ang Thong Thai, and Samut Songkhram Thai; Group II: Phra Nakhon Si Ayutthaya Thai; Group III: Suphanburi Thai; Group IV: Kanchanburi Thai; Group V: Ratchaburi Thai; Group VI: Phetchaburi Thai; and Group VII: Prachuap Khiri Khan Thai. The local varieties spoken in Central Thailand are substantially different from Standard Thai, especially in terms of tonal characteristics.

KEY WORDS: LINGUISTIC GEOGRAPHY / TONE / TONE VARIATION / CENTRAL THAI DIALECT / CENTRAL THAILAND

151 pages

ภูมิศาสตร์วรรณยุกต์ของจังหวัดในภาคกลางของประเทศไทย
TONAL GEOGRAPHY OF THE PROVINCES OF CENTRAL THAILAND

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บทคัดย่อ

ภาษาไทยเป็นภาษาคำพยางค์เดี่ยวที่มีวรรณยุกต์เป็นเกณฑ์เพื่อแยกความแตกต่างทางความหมายของคำที่ประกอบด้วยพยัญชนะและสระเดียวกันหรือคล้ายคลึงกัน ภาษาไทยถิ่นกลางมิได้ประกอบด้วยภาษาไทยสำเนียงกรุงเทพฯสำเนียงเดียวเท่านั้น หากแต่มีหลากหลายสำเนียงที่พูดกันในจังหวัดต่างๆบริเวณตอนกลางของประเทศไทย วิทยานิพนธ์ฉบับนี้มีวัตถุประสงค์เพื่อวิเคราะห์เปรียบเทียบความแตกต่างหรือการแปรทางเสียงของวรรณยุกต์ของภาษาไทยถิ่นกลางใน 10 จังหวัดในภาคกลางของประเทศไทย โดยเน้นศึกษาระบบเสียงวรรณยุกต์ อันประกอบด้วยรูปแบบการรวมตัว การแตกตัว และการกระจายของวรรณยุกต์ที่ปรากฏในกล่องวรรณยุกต์ของเก็ดนีย์ (Gedney, 1972) และสัทลักษณะของวรรณยุกต์เป็นหลัก โดยนำผลการศึกษาที่ได้มาใช้เป็นเกณฑ์ในการจัดกลุ่มวรรณยุกต์ รวมทั้งนำเสนอพื้นที่ที่เสียงวรรณยุกต์นั้นๆปรากฏในรูปแบบของแผนที่ภาษาไทยถิ่น ข้อมูลที่นำมาศึกษาเป็นข้อมูลเสียงที่ได้มาจากคำพูดสนทนาต่อเนื่องของผู้บอกภาษาจำนวน 90 คนที่อาศัยอยู่ใน 30 อำเภอใน 10 จังหวัดบริเวณภาคกลางของประเทศไทย ในแต่ละจังหวัดเลือกเก็บข้อมูลใน 3 อำเภอ และในแต่ละอำเภอใช้ผู้บอกภาษา 3 คน การวิเคราะห์ข้อมูลใช้วิธีการฟัง และวิธีทางกลสัทศาสตร์ โดยใช้ตารางคำทดสอบเสียงวรรณยุกต์ของเก็ดนีย์ และโปรแกรมวิเคราะห์เสียงสำเร็จรูป Cool Edit Pro และ PRAAT 4.5.08 ตามลำดับ จากนั้นใช้โปรแกรม Microsoft Excel รุ่น 2003 ในการประมวลผล

ผลการศึกษาพบว่าภาษาไทยถิ่นกลางที่พูดในบริเวณพื้นที่ที่ศึกษาประกอบด้วยภาษาไทยถิ่นย่อย 2 ถิ่นตามรูปแบบวรรณยุกต์ที่ปรากฏในกล่องวรรณยุกต์ช่อง A คือภาษาไทยกลางถิ่นตะวันออก (A1-234) และภาษาไทยกลางถิ่นตะวันตก [A1-23(-)4] ในส่วนของสำเนียงภาษาพบว่าภาษาไทยถิ่นกลางประกอบด้วย 2 ถึง 4 สำเนียงตามสัทลักษณะหรือรูปแปรทางสัทศาสตร์ที่ปรากฏในกล่องวรรณยุกต์แต่ละช่องของช่อง A (A1) B (B123) และ C (C4) จากลักษณะสำเนียงดังกล่าว สามารถจัดกลุ่มภาษาไทยถิ่นกลางได้ 7 กลุ่ม คือ กลุ่มที่ 1 ได้แก่ ภาษาไทยสำเนียงชัยนาท สำเนียงสิงห์บุรี สำเนียงอ่างทอง และสำเนียงสมุทรสงคราม กลุ่มที่ 2 ได้แก่ ภาษาไทยสำเนียงพระนครศรีอยุธยา กลุ่มที่ 3 ได้แก่ ภาษาไทยสำเนียงสุพรรณบุรี กลุ่มที่ 4 ได้แก่ ภาษาไทยสำเนียงกาญจนบุรี กลุ่มที่ 5 ได้แก่ ภาษาไทยสำเนียงราชบุรี กลุ่มที่ 6 ได้แก่ ภาษาไทยสำเนียงเพชรบุรี และกลุ่มที่ 7 ได้แก่ ภาษาไทยสำเนียงประจวบคีรีขันธ์ จากการศึกษาเปรียบเทียบระบบเสียงวรรณยุกต์ของภาษาไทยถิ่นกลางทั้ง 30 อำเภอไม่พบภาษาไทยถิ่นย่อยใดหรือภาษาไทยสำเนียงใดที่มีรูปวรรณยุกต์เหมือนภาษาไทยมาตรฐานโดยเฉพาะลักษณะทางสัทศาสตร์ของวรรณยุกต์

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CHAPTER I
INTRODUCTION

1.1 Background

Dialect differences and linguistic diversity have been in place for as long as groups of people have been talking to one another. “Dialects of a language tend to differ more from one another the more remote they are from one another geographically” (Romaine, 2000: 2). By the eighteenth century, dialect geography or dialectology seemed to be restricted to a certain area. Dialect dictionaries were, according to Petyt (1980) and Bloomfield (1984), created at first to provide information on the lexical peculiarities of local speech. Later, during the nineteenth century, grammatical and/or phonological structures of whole areas were scrutinized comparatively and historically. As a result, linguistic changes, language relations, language family trees and geographic distribution among different or related languages/dialects were established.

The study of dialect geography has developed incrementally since the first language survey of Georg Wenker (1876) in Germany. During these early studies, postal questionnaires were distributed to the target areas of the research prior to being followed up by conducting fieldwork to observe the linguistic characteristics of the sites. Thai dialectology, as mentioned by Tingsabadh (1985) and Tingsabadh and Deeprasert (1997), was initiated around fifty years ago with the study of variation between Bangkok dialect of Central Thailand and Songkhla dialect of Southern Thailand (Chantavibulya, 1956) and of phonology of the Thai varieties of Nakhon Sithammarat (Miller, 1956). Tone geography, according to Tingsabadh (2001), is a part of dialect geography. Thai tone geography can be studied at the level of dialects, sub-dialects, and accents/varieties as long as different linguistic varieties have appeared to some extent, not only among dialects of the different Thai regions, but also within the same province, district, sub-district, and/or village (Panupong, 1976 AD; วิจินตน์ 2519 BE). In Thailand, both lexical items and tone systems have been

used as criteria in dividing linguistic boundaries among languages and/or the main Thai dialects (Central Thai, Northern Thai, Northeastern Thai, and Southern Thai) and sub-dialects and/or varieties respectively, in keeping up with the classification procedures developed by the pioneering Tai comparativist, Fang Kuei Li (1959, 1960).

The tonal geography of the provinces of Central Thailand has interested a number of linguists for some time. Standard Thai, the official language of Thailand, was analyzed by Abramson (1962/1976) and Brown (1965/1985) as having five phonemic tones: mid, low, falling, high, and rising. Among the Central Thai varieties studied by Thai linguists, four to six numbers of tones are observed and tone split, mergers, and complementary distribution are *A*1-234/ *A*1-23-4, *B*4=*C*123, and *B*=*DL*.

Thai is a tone language in which each syllable has a distinctive tone. The system of tone contrasts in any particular language or dialect is unique, both as to the phonetic characteristics of tones and as to the pattern and number of tone contrasts. The most effective criterion for dialect boundary identification is possibly that of tone systems (Gedney, 1972).

My empirical study explores synchronic phonetic and phonological variations in tone systems in ten provinces of Central Thailand as inspired by Brown's (1985) outstanding work *From Ancient Thai to Modern Dialects*, which outlines tone development of the *Sukhothai-Southern Thai branch* and the *Ayuthaya-Central Thai branch* of his "Ancient Thai" using traditional Thai High-Mid-Low syllable initial categories and comparative tones of the fifty-nine ancient-modern dialects. This challenging work on Central Thai casual speech may greatly provide actual contemporary tone systems of Central Thai dialect, of which patterns (split, mergers, and complementary distribution) and characteristics (tone graphs) may not be the *ideal* ones of Standard Thai, especially the dynamic tones.

The tones of any given dialect differ from one another in pitch height and in contour. Several Thai linguists use the contrastive characteristics of tones to divide one region from another, such as the division between Central Thai and Southern Thai (Hartmann, 1980b, Debavalya, 1983 AD; เกศมณี 2526 BE) and to draw differences and/or similarities among varieties of speech.

Despite the close resemblance of so-called Standard Thai, Bangkok Thai, and Central Thai, each of them represents a distinctive variety in this study. Standard Thai is a desired or idealized variation of Thai dialects; it is, according to Gething (1972), cited in Beebe (1974), spoken and written as first language by educated or cultivated natives of central plains of Thailand. In addition, this variety is used as a lingua franca in most newspapers, radio, and television broadcasts, as well as in the schools, universities, and governmental offices throughout the country. Bangkok Thai, according to Lauriston et al. (1956), Beebe (1974), and Bickner and Hudak (1992), among others, is an accommodation utilized by a wide variety of people in metropolitan Bangkok in formal settings.

Central Thai is, roughly speaking, one of four major regional dialects of Thailand, together with Northern Thai, Northeastern Thai, and Southern Thai. Despite sharing a majority of lexical items and grammatical structures, it includes a number of spoken variations. In this study of Central Thai, I have chosen all authentic speech varieties of native speakers of the central region of Thailand except Bangkok and its suburban provinces: Nonthaburi, Pathum Thani, Samut Prakan, Samut Sakorn, and Nakhon Pathom. These five provinces are adjacent to Bangkok; therefore, it is highly likely that Bangkok Thai and/or Standard Thai is greatly dispersed via regular contact or communication between people living in the provinces and those who live in the city, occasionally called *Greater Bangkok*. In my opinion, urban dialectology would rather be more applicable in studying speech varieties used in these areas, of which both spatial and social dimensions are taken into account. Three provinces of Central and Northeastern Thai (Isan Thai) hybrid: Lopburi, Saraburi, and Nakhon Nayok have also not been included.

Standard Thai, which is the official or national language, is itself a variety of Central Thai. According to Smalley (1994), even though Standard Thai takes on a different level in the language hierarchy, it is mutually intelligible with other Central Thai varieties. Speakers of distinct dialects have different accents; at the same time speakers of the same dialect may exhibit distinguishing individual varieties or idiolects as well.

Among the varieties of Central Thai, various accents or distinctive pronunciations may be observed, not only in traveling from town to town, but also

between one village to another. I, myself, used to have a Kanchanaburi Thai accent, a variety of Central Thai. However during my childhood having used the local tones, I never listened to my unique speech or idiolect; I thought that it was Standard Thai or Bangkok Thai as used by people living in Bangkok. I owe my primary school friends in Chiang Mai a special thanks you for pointing out the differences between my Kanchanaburi Thai and Standard Thai. Their perfect imitation of my local accent proved that in the central region of Thailand there is not only a single Standard Thai variety but also local dialects in many areas. Up until now, whenever I travel in provincial communities of Central Thailand or stay with the residents of other areas, I now notice some significant distinctions in linguistic varieties. Nevertheless, to define their specific varieties of speech or to describe how different they are has become problematic. Unlike English, Thai accents involve tones. It is not easy to tell where someone is from in Thailand except by studying a sample of speech to identify someone's spatial and social background most readily identified by tone differences. Sometimes, according to Hartmann (personal communication, 2010), even on the tone of a single word, such as the third person pronoun, which is pronounced with a high tone in modern Bangkok Thai, but with a rising tone in the outer provinces, such as Ratchaburi. Some Bangkokians have been known to label those who use the rising tone pronunciation as "country bumpkins."

Central Thai dialect has been investigated often as to its geographical spread of use in Thailand. According to Teerarojanarat (2009 AD; ศิริวิไล 2552 BE)'s boundary map of Central and non-Central Thai dialects, Central Thai speech has appeared in thirty-five provinces following a list of record of lexical items. As far as I am concerned, previous studies of Central Thai tone dialectology and its acoustic phonetics are problematic regarding the scope, materials, and techniques. Research site selection was limited to a few areas and/or provinces. Moreover, mere citation forms and/or two to four syllabic connected speech commonly recorded by subjects' reading from printed texts were collected and presented as authentic, spontaneous speech, while in fact, they were not. In addition, to establish the canonical forms of the five Thai tones, Standard Thai was the mere focus using a limited number of informants in studies of acoustic tones. It would be more advantageous to Thai tone

geography if these two linguistic fields, i.e. dialectology and acoustic phonetics could meet in a greater degree. That is to say, acoustical measurements of tones can be scientific evidence of variety distribution of Thai dialect geography, of which large geographical area, great numbers of informants, and conversation method are taken into account.

My study of tone geography encountered two main difficulties. The first is that large areas (thirty sites in ten provinces) were involved ninety Central Thai local speakers. The second serious problem was that targeted data were conversational running speech in which the speech recording and monosyllabic word selecting and cutting involved a great investment in time. Nevertheless, this long time-consuming study, to some extent, hopes to bridge the gap between Thai tone dialectology and Thai tone acoustic phonetics. The tone analysis based on spontaneous running speech provided in this study hopefully yields meaningful features of Central Thai varieties, which may be different from those concerning only citation forms. In addition, new linguistic maps displaying tone varieties of Central Thai dialect synchronized acoustically from a great number of local casual speech data can lay the groundwork for a new kind of linguistic atlas.

Central Thai, as Burusphat (personal communication, 2005) points out is composed of distinctive varieties based on geographic distribution. The variety of differences and similarities of tone systems in the provinces of Central Thailand can be described in a single piece in order to give a clearer linguistic picture or map of Central Thai dialect. This mosaic of Central Thai dialect may eventually be used to a certain extent to identify relationships among Thai inhabitants, their varieties of speech, geographic distribution or origins in cases where migration may be involved. Brown (1965), cited in Comrie (2000) by Hudak, claims that Southern Thai is related to Sukhothai dialects, whereas Central Thai is derived from an earlier Ayutthaya dialect based on the hypothesized linguistic explanations from two major historic Thai kingdoms, namely Sukhothai and Ayutthaya. This present work on tones hopefully can shed additional light on Thai language ancestry.

1.2 Objectives

1.2.1 To study tone variation of Central Thai dialect of the provinces of Central Thailand with regard to tone systems of spontaneous running speech, namely tone patterns and characteristics.

1.2.2 To delineate Thai subdialect boundaries among the provinces of Central Thailand with regard to the tone systems.

1.2.3 To classify Central Thai varieties into linguistic groups with regard to the tone systems.

1.2.4 To draw a linguistic map of Central Thai varieties of the provinces of Central Thailand.

1.3 Expected results

1.3.1 Tone variation of Central Thai dialect of the provinces of Central Thailand can be systematically delineated.

1.3.2 Central Thai varieties can be classified into sub-dialect and accent levels according to the distinctive patterns and characteristics of the tones derived from continuous speech.

1.3.3 A Central Thai dialect map of the provinces of Central Thailand can be drawn.

1.3.4 The tone system of Central Thai varieties can be used, to a certain degree, to form a possible complete linguistic atlas of Central Thai and/or Thai tone geography as proposed by Tingsabadh (2001: 220).

1.3.5 This tone study would be, to a greater or lesser degree, beneficial to historical and comparative studies of tones in Thai.

1.4 Methodology

This study is a qualitative analysis. The following methods are employed.

1.4.1 Two sets of lexical word were used. The first set of eighty monosyllabic words was adapted from Gedney's (1972) checklist shown in his "tone

boxes" used to investigate patterns of tone splits and coalescences and to distinguish acoustic characteristics of Central Thai varieties. The second set was taken from Akharawatthanakun's (2003 AD; พิณรัตน์ 2546 BE) analogous *'khaa'* set which was adapted from Tingsabadh (1990 AD; กัลยา 2533 BE). This set of word was used to find a canonical tone baseline of each dialectal variety in case of unexpected tone errors in continuous speech and to have a rough idea of the tone system.

1.4.2 Speech data were composed of two parts. The first part included monosyllabic words extracted (cut) from spontaneous conversation. And the second part consisted of monosyllabic words pronounced in isolation or in citation style. In this study, the former was considered for the most part of the analysis and proved to be most challenging. The contrastive variation of tones is greatly evident among Central Thai varieties if the study words were in the running speech context. Tone variation, on the other hand, disappears in the case of the latter (monosyllabic utterance). In fact, the tones derived from the same citation forms of different localities became similar or identical in the case of monosyllabic utterance. During observation and interview, the traditional questioning method was used to minimize interference from Standard Thai. The speeches were recorded on an integrated-circuit recorder before transferring to a portable computer.

1.4.3 Study sites were mainly selected from the layered-color criterion proposed in the *Ethnolinguistic maps of Thailand* (Premsrirat et al., 2004 AD; สุวิไล และคณะ 2547 BE). According to the maps, the dark green areas of Central Thailand represent the most Central Thai speaking part of each province without or with merely a few speakers of other Thai dialects and/or minority languages. However, a few sites were, in the same time, investigated with regard to the native speakers' recommendation in case that some green areas observed were not of Central Thai dialect.

1.4.4 The traditional criterion of informant selection imposed by Chambers and Trudgill (1998) were mainly employed, namely **n**onmobile, **o**lder, and **r**ural **m**ale**s** (NORMs). To examine the evidence for the existence of a uniform and consistent local tone and to establish an accurate tone system for a particular Central Thai local

variety, three native speakers having a redundant tone pattern and accent for each Amphoe (district) were observed and interviewed. Eventually, one informant was selected as representing a Central Thai tone of a particular speech variety. This group of speakers would have greater excursion size (Nitisaroj, 2006) or larger size of contours' slope and could produce the greatest number of stressed syllables to be used to produce valid tone graphs.

1.4.5 The tone patterns, namely tone split, coalescences, and complementary distribution were generalized by auditory impression. At the same time, the characteristics of tones, namely tone height and shape were identified by employing the PRAAT 4.5.08 speech software program constructed and continuously improved by Boersma and Weenink (*www.praat.org*). They were then plotted on tone graphs by employing the Microsoft Excel program (version 2003). Furthermore, to extract a monosyllabic word from running speech, another speech software program, namely Cool Edit Pro was used.

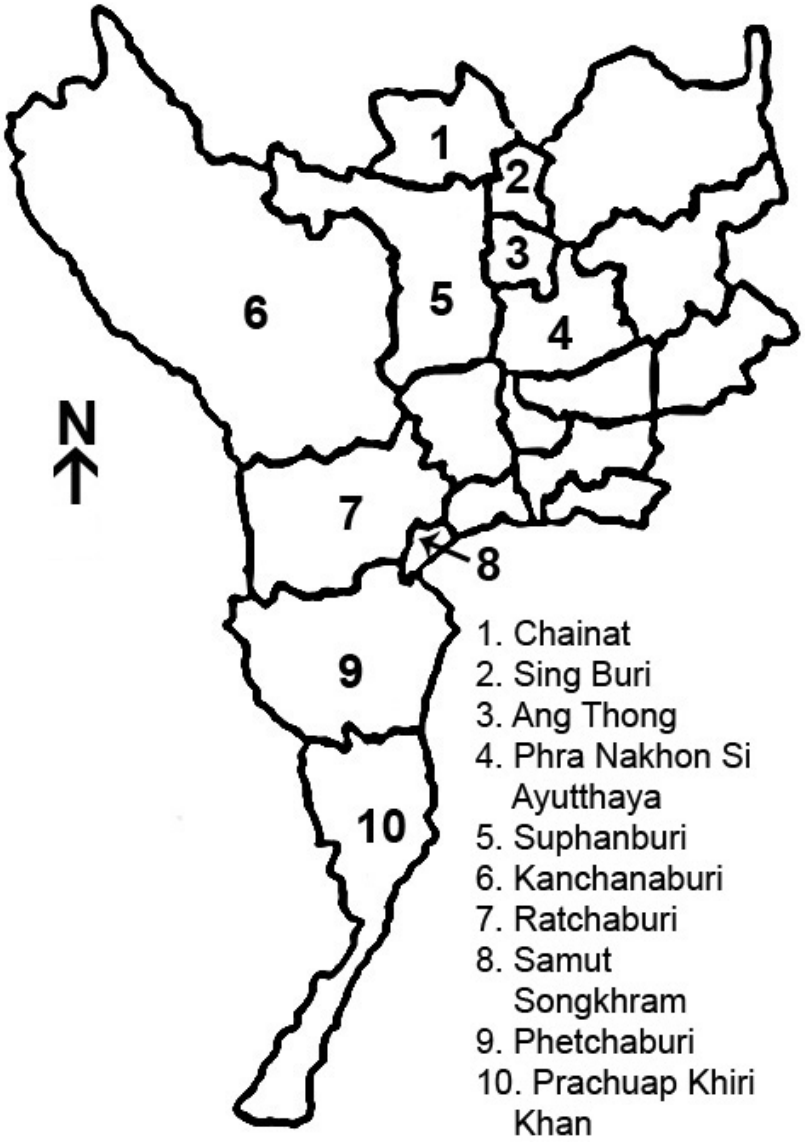
1.4.6 The new synthetic system of Central Thai tones was finally superimposed on a Central Thai dialectal map.

1.5 Scope of the study

1.5.1 The study focuses on present-day Central Thai local speech used in thirty Amphoes in ten provinces in Central Thailand with regard to the geographical-administrative map presenting five regions of the country designed by Wikimedia Commons (2005). These ten provinces include Chainat, Sing Buri, Ang Thong, Phra Nakhon Si Ayutthaya, Suphanburi, Kanchanaburi, Ratchaburi, Samut Songkhram, Phetchaburi, and Pracuap Khiri Khan. However, Bangkok and its surrounding provinces or Greater Bangkok (Wikipedia, 2009), namely Pathum Thani, Nonthaburi, Samut Prakan, Samut Sakorn, and Nakhon Pathom were excluded. In addition, according to the planned field trip, three other provinces were not included as well: Lopburi, Saraburi, and Nakhon Nayok.

Five regions of Thailand and provinces of Central Thailand are presented on the following maps after *Thailandsworld*'s (2008) outline maps (www.thailandsworld.com).

Map 1: Five regions of Thailand and provinces of Central Thailand



Map 2: Targeted provinces of Central Thai local varieties in Central Thailand

1.5.2 Lexical tones derived from conversational speech and produced by Central Thai monodialectal subjects are focused. Ninety local speakers are over fifty years old, nonmobile, and semi-literate. They have no defects in hearing and speaking. All speakers represent thirty districts (three informants/one district) of ten provinces of Central Thailand.

1.5.3 Tone classification of Central Thai varieties is based on the present-day tone system, namely tone patterns and characteristics.

1.5.4 Central Thai tone geography is carried out at sub-dialect and accent levels based on the tone patterns and characteristics respectively.

1.5.5 Contextual tone variation may be pointed out occasionally in the acoustic characteristics of tones. Nevertheless, it is not a critical issue in the study.

1.5.6 Contour or dynamic tones that are associated with rising and falling movements are represented phonologically as single indivisible units.

1.6 Theoretical orientation

The theoretical framework of the study is based on the dialectology approach of Chambers and Trudgill (1998) and of Burusphat (2000 AD; สมทรง 2543 BE), the checklist for determining tones in Tai dialects of Gedney (1972), and on High-Mid-Low (H-M-L) terminology of Brown (1985).

1.7 Research hypotheses

1.7.1 The tone system of Central Thai dialect, particularly its characteristics (tone height and shape), based on the stressed syllables spoken in a conversation would be considerably different from the surface tone contrasts obtained from monosyllabic utterances.

1.7.2 In regard to tone characteristics and continuous speech data, some contextual co-articulation phenomena may affect the curves of tones (starting point, slope, and end point of a syllable), namely carry-over and anticipatory effects. However, tone directions and movements should be consistent and the five-way contrast still maintained. Moreover, they should work systematically as tone representations to be used to classify Central Thai varieties.

1.7.3 As a heuristic, three distinctive tones, namely high, falling, and rising would play significant role in generalizing and classifying Central Thai varieties.

1.7.4 The Central Thai sub-dialectal boundary drawn in this study would be different from the division on administrative maps.

1.7.5 The Central Thai tone system given in this study would represent, to a certain degree, some old forms of Central Thai tones, with respect to Brown (1985)'s ancient-modern Thai dialectal work.

1.8 Definition of terminology

Tone is a phonological trait referring to the distinctive pitch level of a syllable. Tones which vary and do not vary in pitch range: contour or dynamic and level or static tones respectively, carry the contrastive meaning of words.

Pitch is an auditory phonetic feature, corresponding to some degree with the acoustic feature of frequency, measured in hertz (Hz). In the speech study, pitch or the high or low quality of a sound is based on the number of complete cycles of vibration of the vocal cords. The changes in pitch or frequency: rising and falling occur naturally in speaking (Crystal, 1991; Finch, 2005).

Tone language is the system of communication within a community in which contrastive variations in pitch structures are used to distinguish lexical meaning.

Tone geography is a linguistic study in which spatial distribution is drawn on the basis of tone and/or pitch variation on a map.

Tone variation is phonological differences of pitch range and form. It is the main factor used to divide and classify varieties or sub-dialects of tone language.

Standard Thai is a desired or idealized variation of Thai dialects. It is spoken and written as first language by educated or cultivated natives of central plains of Thailand. In addition, this variety is used as a lingua franca in most newspapers, radio, and television broadcasts, as well as in the schools, universities, and governmental offices throughout the country (Gething, 1972; Beebe, 1974). Standard Thai, which is the official or national language, is itself a variety of Central Thai.

Bangkok Thai is an accommodation utilized by a wide variety of people in metropolitan Bangkok in formal settings. It is the native speech of the Bangkok-Thonburi area (Lauriston et al., 1956, Beebe, 1974, and Bickner and Hudak, 1992).

Central Thai is one of four major regional dialects of Thailand, together with Northern Thai, Northeastern Thai (Isan Thai), and Southern Thai. It is spoken natively in the central plains of Thailand, including Bangkok and Thonburi. Central Thai dialect consists of a number of spoken variations.

Dialect is a geographically based language variety which is phonologically, grammatically, and perhaps lexically different from other varieties.

Subdialect is a member of a dialect, sharing the same distinctive pattern of that dialect. But its splits and mergers of tone differ at other places in Gedney's tone box (Tingsabadh, 2001).

Variety is a particular entity of language which has some linguistic features in common. It is, in this study, a single spoken Central Thai sub-dialect sharing the same distinctive tone pattern of Central Thai dialect. At the same time, its split and coalescences may differ to other varieties at some places in the tone box.

Accent is the set of pronunciation features that is phonetically and/or phonologically different from other varieties. It is, according to Tingsabadh (2001: 216), a member of a subdialect and differs in the phonetic characteristics of its tones.

Tone system is derived from auditory and acoustic analysis of Central Thai tones. In this study, it includes both tone pattern and characteristic.

Tone pattern is a form of tones based on auditory impression. It is, in this study, the split, coalescences, and complementary distribution of tones were laid out in Gedney's (1972) tone boxes. Following the tone box and check list method, the number of tones is given. The patterns found in the study are used to classify Central Thai varieties.

Tone characteristic is an acoustic part of the study in which the speech software programs are needed to demonstrate shapes of tones. Tone range, directions, and movements are illuminated on line graphs from Microsoft Excel. The characteristics found in the study are taken into consideration to classify the varieties as well.

Tone coarticulation is the f_0 characteristics of a syllable affected by the f_0 forms of neighboring syllables, namely carry-over and anticipatory effects. The relative height of a syllable is respectively influenced by preceding and/or following syllables.

Central Thailand is one of the main regions in the central plain areas of Thailand which includes nineteen administrative provinces according to the five-regional division.

Linguistic map is a geographical form of publication displaying a dialectal variation. In the study, the variation in the tone system and dialectal classification are plotted on dialectal maps of Central Thailand.

Isogloss is a line drawn on a map to mark the boundary of an area in which a particular linguistic feature is used (Finch, 2005).

1.9 Sources of data

The primary source includes speech data elicited from Central Thai monodialectal speakers. They were collected by using the two sets of wordlists. The secondary source consists of printed documents of related research on Central Thai tones. In addition, related texts or articles in e-journals were collected as well. The second source was taken from university libraries in Thailand and the central library of Northern Illinois University and of National University of Singapore.

CHAPTER II
LITERATURE REVIEW

This chapter describes primary work and research studies relative to the tonal geography of the provinces of Central Thailand. It covers dialectology research on ancient-to-modern Thai dialects, and major tone studies of the provinces of Central Thailand.

2.1 Dialect geography or dialectology

Among the brightest beacons lighting the way in the study of tonal geography of the provinces of Central Thailand are J. K. Chambers and Peter Trudgill (1998) and Somsonge Burusphat (2000 AD; สมทรง 2543 BE). They have shed light on the fundamentals of studying language variation between and within communities. While Chambers and Trudgill's textbook, *Dialectology*, outlined the coherent contemporary discipline of traditional and urban dialectology and made its way around Europe and the United States, Burusphat's dialect geography textbook of Thailand, namely *ภูมิศาสตร์ภาษาถิ่น: Dialect Geography*, focused specifically on the traditional dialect geography of regional Thai dialects and the methodology for studying lexical and tonal differences.

In spite of their different focus, both textbooks provide similar background and outline the history of dialect geography, as well as a set of methods for studying Indo-European and American dialect geography.

2.1.1 Background and history of dialect geography

While there have been observations about and interest in dialect differences for centuries, dialect geography emerged in systematic studies only in the latter half of the nineteenth century. At the beginning, it grew out of historical linguistics by using

comparative methods and the general principles of sound changes. Two different claims about the major phonological change from Proto Indo-European to the Germanic dialects were proposed. The former, stated as Grimm's Law, claimed that the phonological changes can have exceptions or show irregularities. The Neogrammarians, who formulated Verner's Law, had hypothesized that all sound changes are exceptionless, regular, or rule-governed.

Because of the conflicting arguments presented by the two theories, empirical evidence of dialect differences was needed to prove their contrasting claims. As a result, methods for gathering dialectal variation or dialect geography were systematically set up. Interestingly, the results of dialect studies gave different impression of phonological realities. The dialectal variations found in the field surveys did not support Verner's Law. Instead, the linguistic variants derived from dialect geography seem to develop followed a different set of principles. It was observed that languages and/or dialects change or vary according to geographical distribution.

The first large-scale dialect geography investigation was began in Germany by Georg Wenker in 1876, 134 years ago. Wenker sent postal questionnaires containing a list of sentences written in Standard German to nearly 50,000 schoolmasters in Northern Germany. The schoolmasters were asked to provide equivalents for 40 sentences in the local dialect. Within ten years, Wenker was able to collect 45,000 completed questionnaires.

However, some problems with the enormous amount of data and on method of gathering data appeared in Wenker's German project. Wenker's large amount of data covering all of Germany seemed to be unmanageable. The dialect variation was not accurately recorded by the subjects. And the complex variants could not be plotted on a set of maps. Eventually, he limited his work to the variants of certain words used in Northern and Central Germany. Moreover, two sets of maps showing a single feature each were made and bound by Wenker himself under the name *Sprachatlas des Deutschen Reichs*.

Despite the problems illustrated above, Wenker's pioneering work greatly encouraged and inspired further work on dialect geography. In addition, his dialect files have been used by other scholars as a basis of German dialect geography.

Further, the method of data gathering has been improved. To obtain accurate dialect variation, data recording by trained observers has become the primary approach to dialectology. In 1896, the trained fieldworkers were first sent by Jules Gilliéron, a Swiss director to conduct a linguistic survey of France. This French project stands as one of the most influential work in the history of dialectology. Among Gilliéron's dialectologists, Edmond Edmont was appointed as the leading professional fieldworker because of his accurate phonetic recording techniques. For four years, he cycled through the French local areas to conduct direct interviews with 700 informants from 639 different sites. The *Atlas linguistique de la France* was subsequently published in thirteen volumes within eight years from 1902 to 1910. Not only did his research reinforce a great number of regional surveys in Europe such as in Italy, Southern Switzerland, Spain, Romania, and England, but Gilliéron's dialectology also fostered several dialect surveys in the United States and Canada. In the first half of the twentieth century, the Linguistic Atlas of the United States and Canada (LAUSC) was released. The fieldworkers were trained by Jakob Jud, one of Gilliéron's students who worked on Italian dialectal project and Paul Scheurmeier, one of the observers of the Italian dialectology.

Due to the expansive geography of the land and the recent settlement background of many regions in the States, the U.S. survey area was divided into eight regions, namely the New England States, the Middle Atlantic and Atlantic States South of New England, the North-Central States, the Upper Midwest, the Rocky Mountain States, the Pacific Coast, the Gulf States of southeastern region, and the Inland South. Each project had its own directors and fieldworkers. However to obtain one-piece results, the whole LAUSC project was coordinated by Hans Kurath, who was, at the same time, the director of the New England States project.

According to the *Word Geography of the Eastern United States,* one of Kurath's project in 1949 and in 1972, there are three main dialects from the Eastern States to the Pacific Coast, namely North, Midland, and South.

Even though works on dialect geography were not productive during the middle of the century, dialectal studies were later developed with a new conceptual framework and technologies for researching dialect variation of actual speech. Social

factors and computer science were incorporated into dialect analysis and played an important role in studying actual speech variability and in storing, sorting, as well as analyzing dialect data respectively. The dialectal survey which is based on the relationships between language and social features investigating dialects used in towns and cities is now known as urban dialectology.

All in all, dialect geography contributes a vital premise or fact that languages and dialects change variously depending on theirs environments and/or other phenomena within community or society. Different history, geography, inhabitants' socio-economic background, such as education, sex, status, ethnicity, gender, and so on has all yielded variability of linguistic forms and functions, changes, and innovations.

This present tonal study of Central Thai dialect geography follows the path of traditional dialectology, which is based on the relationship between local dialects and geographical distribution.

2.1.2 The methods of traditional dialect geography

As in other linguistic or dialectal surveys or studies, traditional methodology of dialect geography covers preliminary surveys of areas and language use, the selection of a speech community, the selection of subjects or informants, questionnaires, data collection, data analysis, and linguistic maps respectively.

According to dialectology textbooks, three crucial issues are involved and will be detailed in the following pages.

2.1.2.1 Informant selection

Unlike urban dialectology, informants selected for traditional dialectology are, according to Chambers and Trudgill, (1998: 29), non-mobile, older, and rural males (NORMs). They should be natives of the local community where they are interviewed and have never lived in other areas. From this respect, their typical speech is likely to be preserved. The subjects should be of the older generation and rural in order to represent the authentic speech or language use of the local dialect. In urban communities, on the other hand, multi-dialects are evidently caused by flux of people traveling or moving from other regions. That is to say, due to the size and

social complexity of urban areas, it is difficult for fieldworkers to obtain reliable informants and to elicit typical speech data. In addition, Chambers and Trudgill claim that the informants should be male because in western countries, men's speech is unlikely to be as self-conscious as women's.

Moreover, according to Burusphat (2000: 90), the informants should have the same domain of career, which is mostly related to agriculture. They should, despite lacking in formal education, be knowledgeable, informative, and patient. Moreover, the subjects' communicative organs such as mouth, eyes, and ears, should be able to function effectively in spoken communication. Speakers selected at random from the total population of targeted points are representatives of an entire sample population.

In Europe and the United States, despite focusing on dialects spoken in rural communities, some dialectal projects took, at the same time, different backgrounds of local speakers into consideration such as sex, age, education, and career, in order to study many more varieties of language use. However, in this Central Thai dialectal study, all informants shared primarily the identical background for the purpose of determining comparable typical features of tone variants. The methods of informant selection described above were applied except the restriction of speakers' sex. Both males and females who were willing to cooperate with the study were interviewed. Contrary to Chambers and Trudgill's declarations about gender, I found that women speak, according to my fieldwork data, the vernacular more frequently and consistently than men. And men's speech turned out to be more self-conscious than women's. It was wondering if it was because the interviewers were females or if it was intrinsically their own style of speech. Many observers of Thai social behavior, especially in a rural setting, have commented on the relative equality of the sexes, especially among older people. In my study, only 28 % were men.

2.1.2.2 Questionnaires

The questionnaire is the main component of fieldwork. To conduct surveys or interviews, fieldworkers use it as their guideline. To design and/or invent a questionnaire, fieldworkers need to focus on the interview's objective and goal, the information they need to collect, as well as the form and method of data gathering. According to both Chambers and Trudgill and Burusphat, an effective questionnaire requires a composite of standard and vital information or questions which can provide comparable outcomes of the study. Using a standardized questionnaire, different fieldworkers can use it in varying cases of interviews.

Questionnaires on dialects can be postal or oral. It can be used both directly and indirectly. On the early dialect projects, direct questions were applied, such as 'what do you call a "cup"?' or 'how do you say "fifty"?' However, to elicit more spontaneous responses, indirect questions were then introduced and have been used later by the most surveys. For example, instead of asking 'what do you call a "cup"?', the interviewer would say 'what is this?' while holding a cup.

Various types of indirect questions are illustrated on both of the dialectology work as follows:

Naming and completing questions are basically raised by dialectologists or fieldworkers. Naming questionnaires are mostly used in cases in which a particular word or phrase and/or few words of the same semantic field are required. This type of questionnaire may include simple questions as 'what is in my hand?' or 'what do you say to students if you want them to stop talking in class?' Moreover, naming questionnaire may involve both simply talking and reverse questions in order to elicit more than one word or a particular word by asking for its explanation. For example, fieldworkers may ask an informant 'what can you make from milk? (butter, cheese)' as a talking question or 'what's the barn for, and where is it?' as a reverse question in order to get the speakers to talk about the barn at some length (Chambers and Trudgill, 1998: 22).

Completing a questionnaire consists of converting questions which require completing a blank in a sentence. For example, the fieldworkers may set up questions as 'you sweeten coffee with….?' or 'there are …. days in one week.'

In addition, to elicit some challenging responses, the teacher-pupil questions for which their answers are obvious may be necessary. For example, 'two plus five becomes ….?' or 'in an extremely sunny day, your skin may get…., if you go out.'

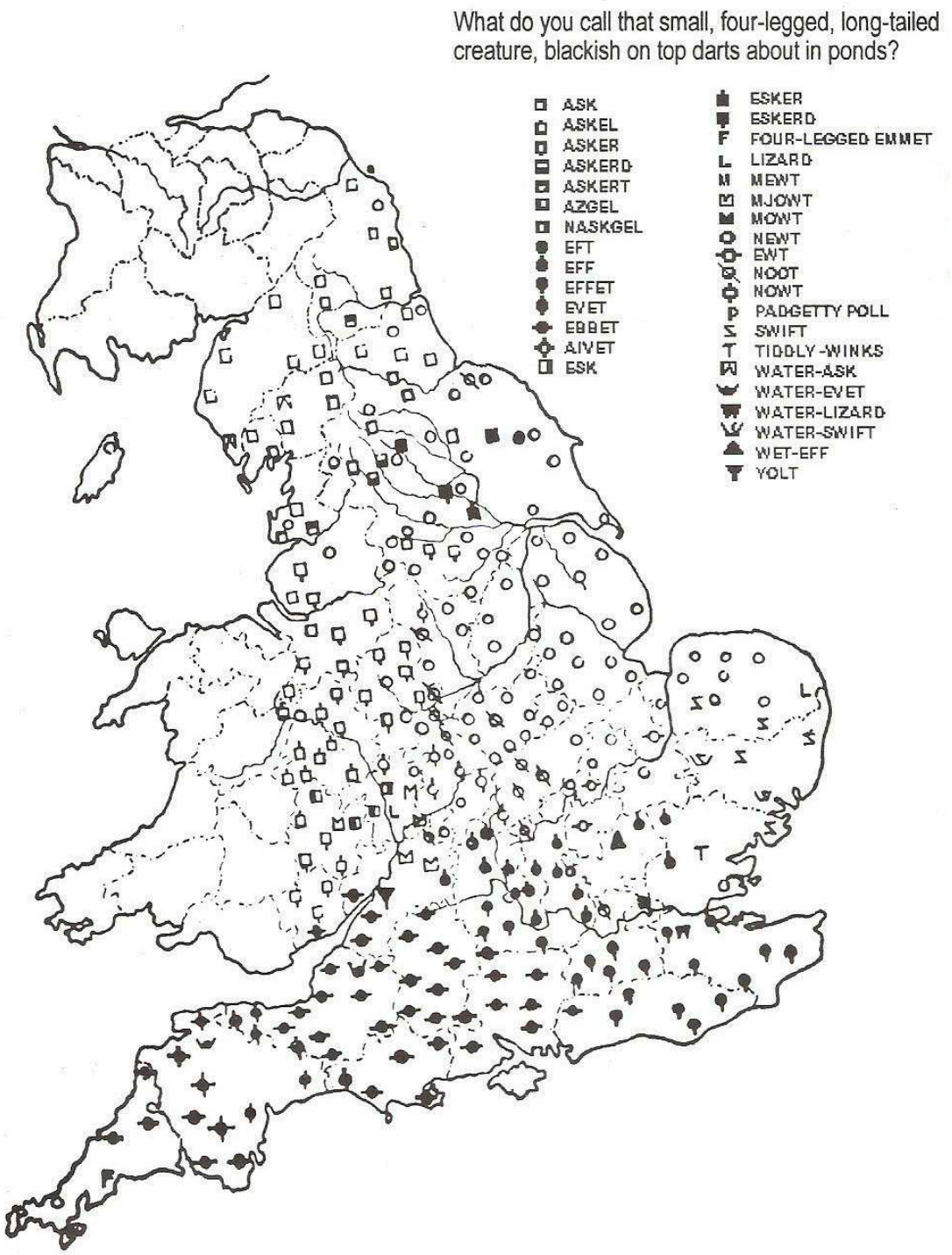
Altogether, various kinds of the indirect questionnaires given above appear to be a very practical and useful guideline for this tone study. To elicit the desired responses, all types of the questions were set up and adapted according to the informants' different background and experience, during the informal interviews. The data recorded for the tonal study was comprised primarily of conversational speech, which greatly increased the contrastive range of Central Thai tones. Thus, to meet the data requirement, several naming questions which can provide word repletion and explanation were mainly used during the interviews. However, the challenging or no-brainer questions were occasionally raised, in spite of the speakers' embarrassment, in case that some desired answers or words were rare or hardly used by a few of the speakers.

Clearly, unlike other traditional studies of dialectology, various types of indirect questionnaires or questions were developed and applied in the same way as used in urban dialectology, of which the required data included mostly spontaneous conversational speech. Even so, unlike urban dialectology, the relationships of language or dialect and social factors such as informants' social class, stylistic differentiation of speech, sex differentiation, and social networks were not taken into account in this Central Thai dialect geography.

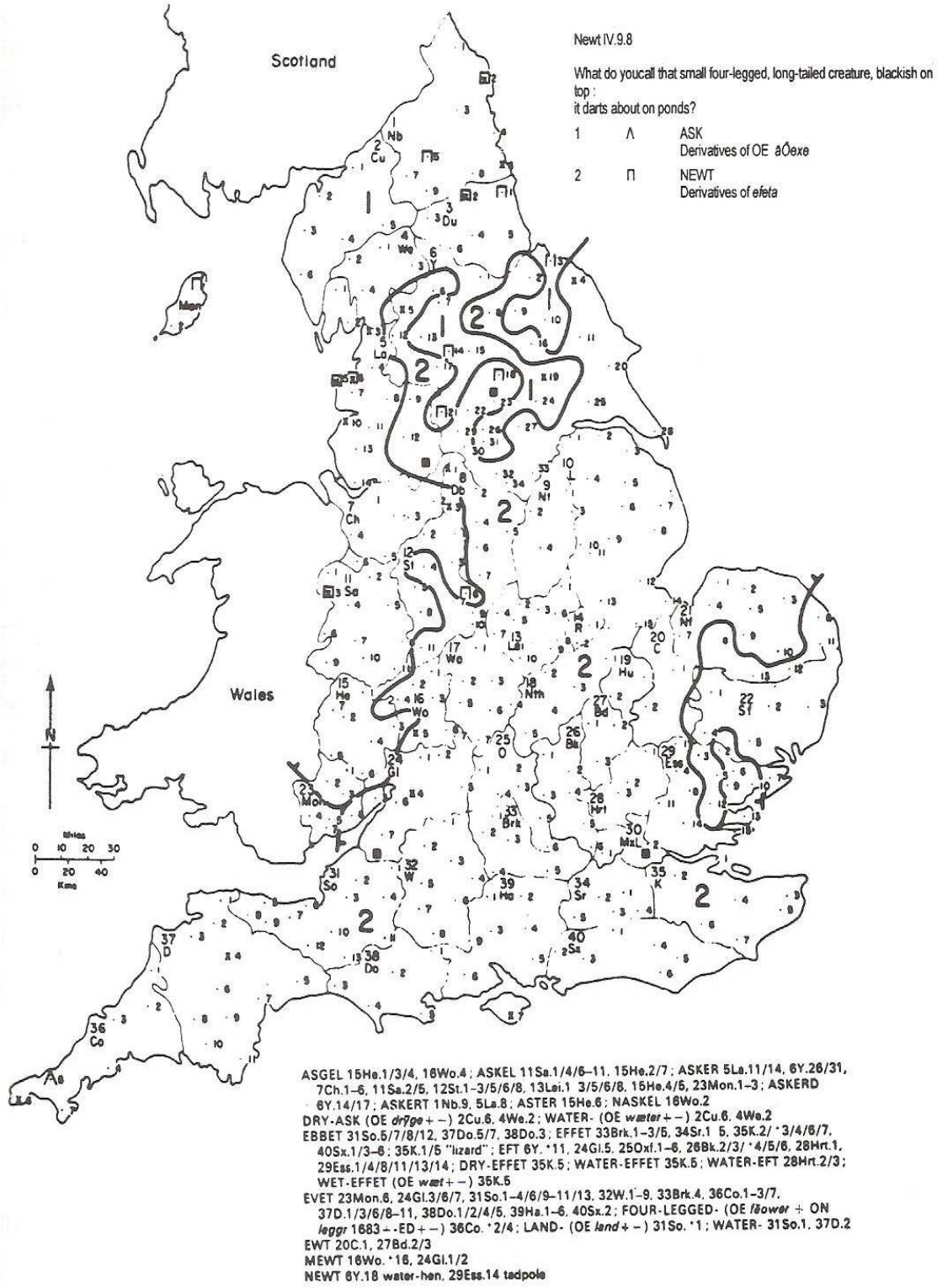
2.1.2.3 Linguistic maps

To present forms or systems of dialectal variation on a set of maps is the final crucial work of dialectology. A linguistic map not only shows the areas of language and/or dialect use, but also the relationship between dialectal variation and geographical distribution and/or perspective. Two types of linguistic map have been in use, namely display and interpretive maps. Display maps are used for showing a tabular item of raw data, while interpretive maps include synthesized results based on the raw data. Given below are the examples of display and interpretive maps respectively taken from Chamber and Trudgill (1998: 26, 28). The

display map was constructed in 1960 by Harold Orton in *the Survey of English Dialects (SED)*, whereas the interpretive map was produced based on the display map in 1974 by Harold Orton and Nathalia Wright in *Word Geography of England*.



Map 3: Display map of thirty-four responses for ‘newt’



Map 4: Interpretive map of two categories for ‘newt’

In this present tone geography of Central Thai dialect, interpretive maps based on tabular data given in chapter IV and V were illustrated in chapter VI, on which the system and classification of Central Thai tones were identified. At the same time, various symbols, numbers, and shades were designed to represent the distinctive tone patterns and/or groups. Note that, due to the one-piece study of tone variation in one region or dialect, namely Central Thai, accent isoglosses were not drawn among the regions.

As far as I am concerned, the methodology proposed in both *Dialectology* (Chambers and Trudgill, 1998) and *Dialect Geography* (Burusphat, 2000) provides predominantly a similar strategy in the study of dialect geography. However, to work on Tai and/or Thai dialectology, especially tone geography, Burusphat's textbook covers great details of how to select study sites and how to present the interpretive results. It is a very useful guideline for analyzing, classifying or grouping on the one hand and designing the presentation forms of Central Thai varieties on the other. As a result, the display and interpretive data of tones were drawn in the various ways as shown in chapter IV-VI, namely the use of tone sticks in Gedney's tone boxes, tone shapes lined by graphs and various kinds of symbols represented on the linguistic maps.

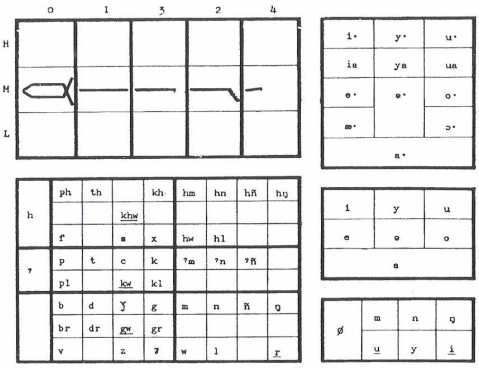
2.2 From ancient Thai to modern dialects

J. Marvin Brown's (1985) writings on *From Ancient Thai to Modern dialects and Other Writings on Historical Thai Linguistics* inspired a great number of linguistic works on historical Thai. The original book on *From Ancient Thai to Modern Dialects* was Brown's 1962 doctoral dissertation, in which ancient Thai phonological systems and their changes were the primary concern. It can be said that this contributing research seems to be a different but related version of Li's (1977) priceless work, namely *A Handbook of Comparative Tai* in which the groundwork for the reconstruction of Proto-Tai phonological system was laid. It should be noted that Brown and Li used contrary ways of the reconstruction. That is to say, Li reconstructed Proto-Tai phonemes of modern Tai dialects, whereas Brown concentrated on how the ancient Thai has branched into the modern dialects. Another

major and critical difference is that Li's study included data from many Tai languages spoken outside of Thailand proper, whereas Brown limited himself largely to the dialects spoken within Thai borders.

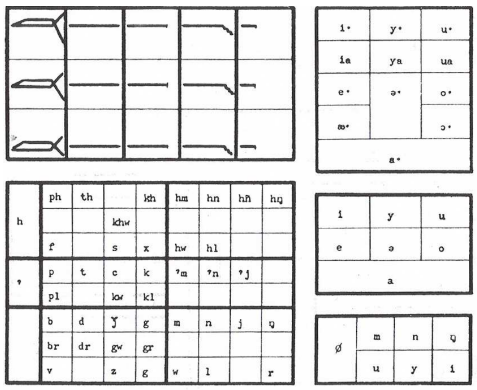
Both Brown's revised dissertation and his later six articles, namely *The Language of Sukhothai: Where did it come from? And where did it go?, Historical Explanations for the Peculiarities of the Thai Writing System, The Great Tone Split: Did it work in two opposite ways?, Dead Consonants or Dead Tones?, Vowel Length in Thai,* and *Phonemics without Sounds,* deal with the history behind the modern Thai dialects. In his dissertation, sixty dialects of seven Tai languages in Thailand, all of which are in Li's southwestern group of Tai language family, were investigated. One of them was Central Thai dialect of Ayutthaya branch, which included U-Thong district of Suphanburi province, Muang of Khorat or Nakhon Ratchasima province, and Bangkok. And another was Southern Thai dialect of Sukhothai branch, which comprised nineteen varieties from the northern most Chumphon to the southern most Yala and Narathiwat. The data consisted of key information on sixty varieties and comparative list of 1549 words taken from Standard Thai dictionaries.

The results of the phonological changes from ancient Thai to modern varieties were illustrated on linear and borrowing transformation charts. Of sixty-three charts, five belong to or are related to Central Thai dialect, namely Sukhothai (1250 AD), Ayutthaya (1650 AD), U-Thong, Bangkok, and Khorat. The changes were respectively from ancient Thai to Sukhothai (1250 AD), Chiang Saen (1150 AD) to Ayutthaya (1650 AD), Ayutthaya (1650 AD) to U-Thong and Bangkok, and Sakon Nakhon (1650 AD) to Khorat. The overall changes of the ancient-modern Central Thai varieties mentioned above are presented on the transformation charts, after Brown (1985), as follows:



1. (3) -Ø
2. (aK) kh
3. (-ŋ0, -K1, -K2) i
   (-K1, -K2) u
4. (-K1, some -K2, some -I) æ ɔ
5. (-ŋ) ə
6. (-I) e· ə· o·
7. (-Ø0, -ØH1, -ØM1) ei ey ou
8. (1, 2, 3) e· ə· o·
9. (L1, 2, 4) æ ɔ
10. (1, 2, 4) æ ɔ
11. (L1, 2) a·i a·u
12. (1, 2) a·i a·u
13. (Q) ua
14. (Q-K) ua
15. (L1, 2) l
16. (-Ø) 4
17. (ʔñ) H

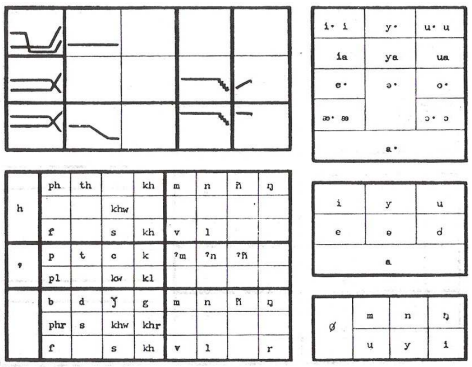
Figure 1: Ancient Thai phonology



Changes from Ancient Thai:

1. **h**, **q**, and **v** cause high, mid, nd low registers respectively.
2. ɬ > g.
3. ñ ʔñ > j ʔj.

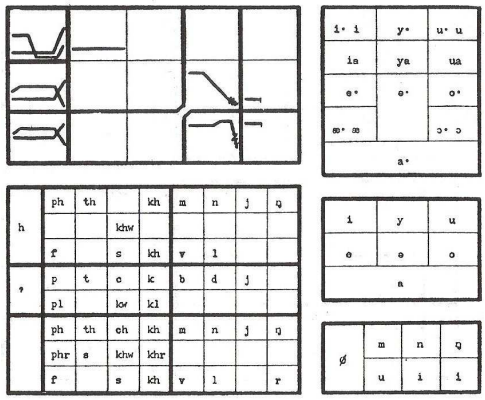
Figure 2: Sukhothai phonology (1250 AD)



Changes from 950 Yunnan:

1. M1 > H1.
2. H2 > M2.
3. L1 lowers.
4. (-Ø) 3 > 4.
5. w > v.
6. H3 – H1, L3 – L1, M4 – H0, L4 – L2.
7. (0,1,2) i·ŋ > iŋ.
8. (-K-1, -K-2) i· u· > i u.
9. (-K-1) æ· ɔ· > æ ɔ.

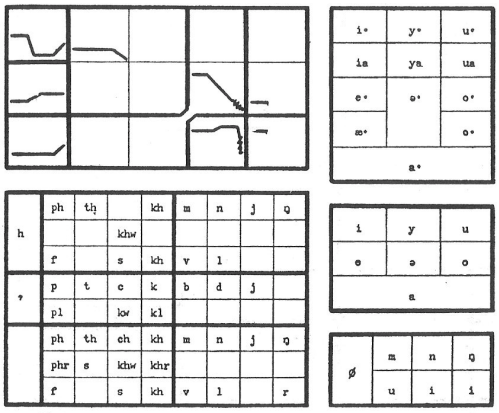
Figure 3: Chiang Saen phonology (1150 AD)



Changes from 1150 Chiang Saen:

1. (S) **v** > **h**.
2. L1 > M2, falls, and raises.
3. ʔm ʔn ʔñ > b d j.
4. -y > -i.
5. ñ > j.
6. L2 humps.
7. M4 falls and levels.

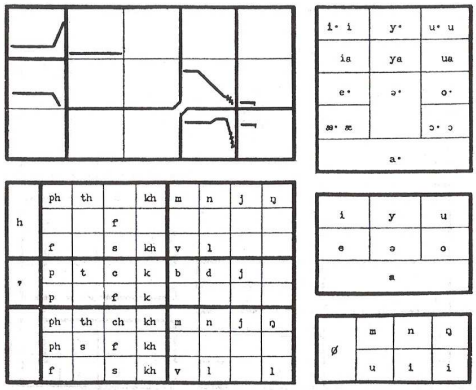
Figure 4: Ayutthaya phonology (1650 AD)



Changes from 1650 Ayuthaya:

1. M0 levels.
2. L0 levels and lowers.
3. H1 falls.

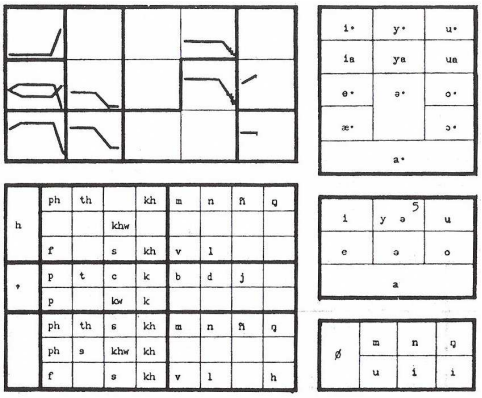
Figure 5: U-Thong phonology



Changes from 1650 Ayuthaya:

1. L0 > M0.
2. H1 lowers.
3. kw khw > f.
4. r > l.
5. Sr Sl > S.
6. tr > k.

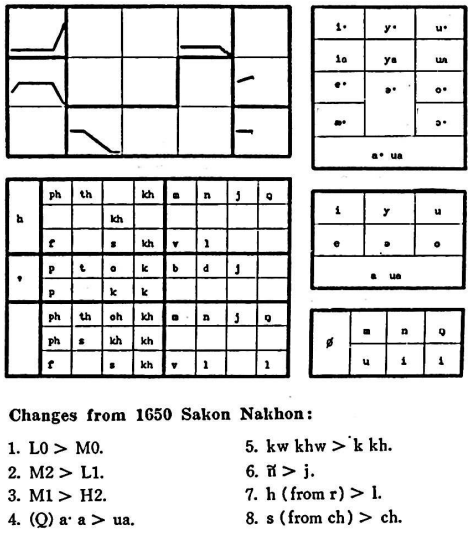
Figure 6: Bangkok phonology



Changes from 1350 Lan Chang:

1. M1 lowers and falls.
2. -y > -i.

Figure 7: Sakon Nakhon phonology (1650 AD)



Changes from 1650 Sakon Nakhon:

1. L0 > M0.
2. M2 > L1.
3. M1 > H2.
4. (Q) a· a > ua.
5. kw khw > k kh.
6. ñ > j.
7. h (from r) > l.
8. s (from ch) > ch.

Figure 8: Khorat phonology

Note that the Khorat variety represents hybrid dialects of Central Thai and Lao. That is to say, it is mutually intelligible with Central Thai, but its phonological system belongs to Lao.

My tone study, however, does not concentrated on Central Thai tone change or development but rather on how the modern Thai varieties are related to Brown's tone patterns. Three of Brown's seven historical articles, namely *The Language of Sukhothai: Where did it come from? And where did it go?, Historical Explanations for the Peculiarities of the Thai Writing System,* and *The Great Tone Split: Did it work in two opposite ways?*

might help, to a greater or lesser degree, to understand and/or answer some questions about modern tone phenomena which were found in my study.

According to Brown's dialectal reconstruction and his family tree relationship, three main linguistic groups were eventually established, namely Ayutthaya-Central Thai branch, Luang Prabang branch, and Sukhothai-Southern Thai branch. Brown claims that the Thai people of Chiang Saen were the ancestors of the modern Central Thais. The parents of the modern Lao-Yo speakers were from the old state of Luang Prabang. And the descendants of Sukhothai Thais were now in Southern Thailand. They had spent two or three hundred years in Myanmar before settling in Sukhothai.

It is interesting to note that after the Thai people resettled in Myanmar from 832 AD to 1050 AD because of the Nanchao-Pyu (Myanmar) war, they might have settled in Thai-Myanmar bordering provinces before moving later to Sukhothai. One of Brown's guesses was that those Thais who had settled in Burma crossed through the nearest pass and settled in Tak in 1096, a province in today's lower Northern Thailand. This might be a relatively helpful hypothesis in my tone study in case where some phonetic and/or phonological features of varieties of Thai-Myanmar neighboring provinces, such as Kanchanaburi and Ratchaburi varieties, remain a puzzle. It is not likely that the phonological features, including tones characteristics have been stable through time. They have changed unavoidably to varying degrees, in keeping with sound change phenomena and/or dialect or language contact. The form of Sukhothai tones of the 13th century and Southern Thai tones of the 21st century, even though related, varied to some extent.

Nevertheless, according to the preliminary classification of Central Thai varieties, what Brown (1985) and Li (1977) claim appears to be applicable in classifying tone systems of different dialects according to the way the initial consonants are grouped and the way in which the tones coalesce rather than a variety's number of tones and/or other phonetic details. Brown (1985: 233) mentions "tone shapes can be borrowed or influenced by neighboring dialects, but patterns of coalescence cannot." In this study, there is considerable evidence in terms of hybrid dialects that, of one variety, its tone pattern may represent Central Thai dialect, but its characteristic or shape may represent Southern Thai dialect or vice versa, such as Bang

Saphan variety of Prachuap Khiri Khan province and some speech varieties of Kanchanaburi province respectively. In this respect, Brown's tone cases and the premise of tone patterns can help classify the local varieties spoken in the central plains of Thailand into the closely relative dialectal or subdialectal groups or branches.

However, as stated in the previous chapter, all speech varieties used in my study belong to one regional dialect, namely Central Thai. It is, therefore, most likely that their primary tone patterns, as seen from Gedney's tone box, seem to be very closely mutually intelligible or the same. Some tone patterns shown at other places in the set of boxes might be more applicable to the study of Central Thai tone variation at a subdialectal level. In addition, tone acoustic characteristic or tone shapes derived from instrumental judgment is another crucial factor I have used to specify the phonological variations in Central Thai tones.

Likewise, in categorizing speech varieties as subdialectal or accent groups with regard to the tone characteristics, Brown's linguistic evidence of the modern Thai dialects points towards the development of two opposite kinds of tone splits: voiced initials lead to low tones (V-L) in one kind and to high tones (V-H) in the other. Brown's historical explanations for the mismatch between written and spoken Thai of Ayutthaya Thai speakers and/or Thai tones' High-Mid-Low terminology, Ayutthaya voiced initials lead to high tones (V-H), instead of low tones (V-L) as of Sukhothai/Southern Thai branch or of other universal phenomena. This is possibly the legacy of borrowing of Sukhothai writing system by Ayutthaya Thais.

In fact, the mismatch between V-L and V-H tone splits of the modern Thai dialects turns out to be great useful to the present study. In other words, it can be one of the main phonological criteria to be used for classifying the local varieties of Central Thailand. That is to say, V-L variety represents Sukhothai-Southern Thai dialect, while V-H variety represents Ayutthaya-Central Thai dialect.

The following is Brown's hypothesized relationship between the Sukhothai and Ayutthaya branches with their hypothesized tone shapes, tone splits, and initial consonant changes.

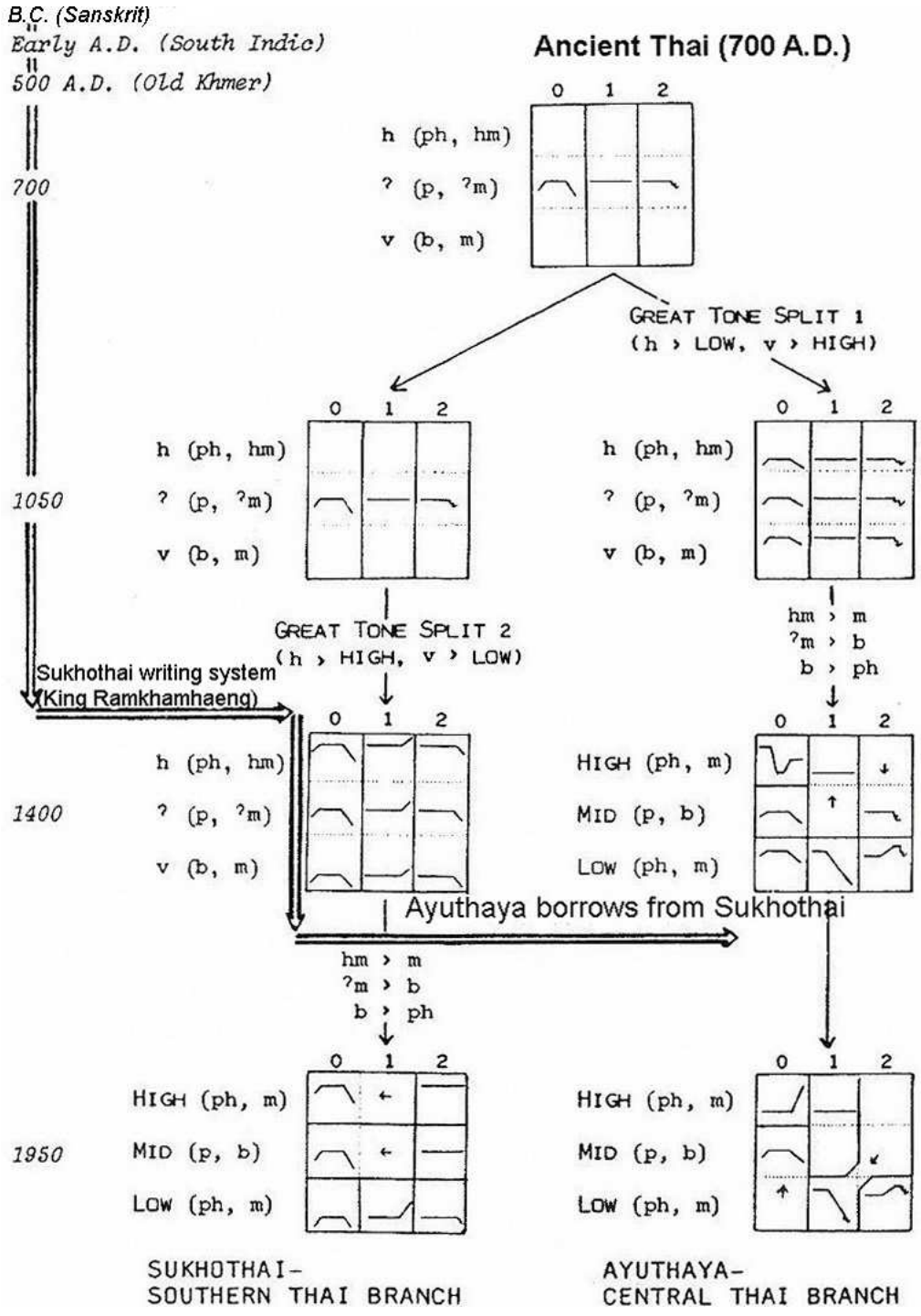


Figure 9: Sukhothai-Ayutthaya relationship of tone systems and initial consonant changes (Brown, 1985: 14)

2.3 Tone studies of the provinces of Central Thailand

Tone studies of Thai dialect began in the 1950s (Miller, 1956; Chantavibulya, 1956; Haas, 1958). Since then, both descriptive and comparative research on Thai tones have been continuously carried out (Tingsabadh, 2001). Despite that, the tone system of a single variety was mostly investigated. Meantime, tone variation of a few areas was also focused on, but its distribution was rarely drawn as a map or a set of maps.

Thai tone geography, of which the areal subdivision on the basis of tone variation was presented on maps, was firstly recorded, according to Tingsabadh (2001), in the 1970s (Diller, 1976 and L. Thongkum, 1978 AD; ธีระพันธ์ 2520 BE). Unlike the study of word geography, up until now, a small number of research projects on tone geography have been conducted. Among them, Southern Thai seems to be the favored variety, on which the dialect boundary of Southern and Central Thai was also of concern (Debavalya, 1983 AD; เกศมณี 2526 BE). Recently, work on tone variation of Northeastern Thai and Central Thai have been carried out as well, but the research on Northern Thai has not been given much attention.

It should be noted that most of the studies on tone geography have some limitations. That is to say, their study sites cover only one or two province (s) and the researchers' auditory judgment is the only method used to figure out the tone systems. Even though the instrumental analysis has been taken into account in these centuries, most of the speech data elicited from native speakers was limited only to monosyllabic words spoken in isolation and/or two-five connected syllables or words. In fact, spontaneous speech obtained from unrehearsed conversation has been, for some time, promoted and initiated into tone variation analysis. An attempt with spontaneous speech sampling was made by Krisnapan (1995 AD; ดารณี 2538 BE), but her work was limited only to one variety of Ban Lat in Phetchaburi province, one informant, and one study method, namely instrumental analysis. The tone geography of the spontaneous conversational speech elicited from 30 sites of Central Thailand, together with both auditory and instrumental analysis, therefore, appears to be new and worth using.

Research on tone geography of Central Thai varieties, which are related to my tone study, are summarized according to their dialectal methodology and study results in the following.

Previous dialectal studies of Central Thai tone variation described below cover seven provinces of Central Thailand, namely Kanchanaburi (Worawong, 2000 AD; เนตรนภา 2543 BE), Phetchaburi (Krisnapan, 1995 AD; ดารณี 2538 BE, Pornsib, 1994 AD; อภิญญา 2537 BE), Prachuap Khiri Khan (Banditkul, 1993 AD; ปัณย์ชนิต 2536 BE), Ang Thong and Phra Nakhon Si Ayutthaya (Malaichalern, 1988 AD; ยาใจ 2531 BE), Ratchaburi (Ratanadilok Na Phuket, 1983 AD; ลอรัตน์ 2526 BE), and Suphanburi (Kobsirikarn, 1992 AD; รตญา 2535 BE, Tingsabadh, 1990 AD; กัลยา 2533 BE, Tingsabadh, 1980). Moreover, a tonal study of a linguistic borderline between Central Thai and Southern Thai (Debavalya, 1983 AD; เกศมณี 2526 BE) is, in the same time, elucidated. The Central Thai tone studies mentioned above aimed predominantly at comparing both the tone systems and the phonetic characteristics of the Central Thai local varieties.

It should be noted that the methodology applied in my tone study is innovative from those of the previous research methodologies. In the present tone study, the targeted sites cover one piece of a widespread area: thirty Amphoes of ten provinces in Central Thailand, which were mostly not investigated in the tone studies mentioned above. Moreover in my tone study, questioning and conversational methods were used on a great number of informants based on the spontaneous continuous speech. Ninety local speakers were involved.

2.3.1 Methodology

2.3.1.1 Study sites selection

Three criteria or methods were primarily applied, according to objective and scope of a local tone study, to select the appropriate sites of Central Thai tone study, namely administrative unit division, geometric grid, and native speakers'

interviewed in the original area representing traditional speech or the accent of a village, sub-district, district, or province.

The administrative unit division was the primary device of a tone study conducted at village, sub-district, and/or district level. It was mostly taken into consideration in case that every village, sub-district, or district of one or two province (s) was investigated. For example, the eight districts divided administratively of Suphanburi province was wholly observed on Tingsabadh's (1980) Thai phonological system research. Similarly, Malaichalern's (1988) dialectal work on tones in the Thai dialects of Ang Thong and Phra Nakhon Si Ayutthaya provinces covers all twenty-three Amphoes of the administrative units: seven of Ang Thong and sixteen of Phra Nakhon Si Ayutthaya. Nevertheless, to specify the particular sites of the study, Malaichalern applied, in the same time, the geometric grid.

The geometric grid would be used in cases where the study areas of equal distance are concerned. Dialectologists would draw tables on the targeted sites illustrated on a map and line a grid in each table. Then, in the table, they would draw a circle around the crossing grid. The area appearing inside the circle would be selected as a specific site of speech elicitation. The tone studies of Ratchaburi Thai (Ratanadilok Na Phuket, 1983) and a linguistic borderline between Central Thai and Southern Thai (Debavalya, 1983) constitute this site selection method.

At the same time, to ask the native speakers themselves for their help on the selection of study site seems to be the favourite method among the number of scholars. It is reasonable to assume that the native speakers who live in the area for a long time or their whole life know well the authentic background of the village, sub-district, district, and/or province they belong to. In this respect, researchers or interviewers would be able to save a lot of time finding the required site. The site selection made in Banditkul's (1993) tone study in monosyllabic and disyllabic words in the Central Thai dialect of Prachuap Khiri Khan, in Pornsib's (1994) study of Phetchaburi Thai tones, and in Worawong's (2000) study of Kanchanaburi Thai tones was done in this practical way.

Note that random sampling was made especially sites located in the small administrative units, such as in a sub-district (Tambon) and/or a village.

Malaichalern (1988) applied sampling in her study on Ang Thong and Ayutthaya Thai subdialects.

2.3.1.2 Informants

The informant selection of all tone studies seems to have been applied with Chambers and Trudgill's (1998) NORMs, namely non-mobile, old, rural, and males. It is clear that most of the researchers prefer male informant (s) owing to their potential conservative speech, good self-control in every situation, and ease of travel for out-of-village interviews. (Worawong, 2000; Krisanapan, 1995; Banditkul, 1993; Tingsabadh, 1990; Malaichalern, 1988; Tingsabadh, 1980). However, a few studies (Pornsib, 1994; Kobsirikarn, 1992; Ratanadilok Na Phuket, 1983; Debavalya, 1983) prefer females as their informants because of infrequent travel outside their village and low dialect contact.

2.3.1.3 Wordlists and elicitation techniques

To study a tone variety, wordlists provide the basis for speech data elicitation. Two model wordlists adapted in Central Thai tone studies include the checklist proposed by Gedney (1972) (see 3.1.3.3) and the tone-set wordlist of ten monosyllabic items created by Tingsabadh (1980). The checklist was mainly used for auditory judgment, whereas the tone-set wordlist was devised for instrumental analysis. Most researchers use Gedney's checklist to investigate numbers of tones and tone pattern, namely split and coalescence. Then they use Tingsabadh's wordlist to figure out phonetic characteristic of tones. The tone-set wordlist of ten monosyllabic words is illustrated in Gedney's tone box as follows:

	A	B	C	DL	DS
1	khǎa ขา	khàa ข่า	khâa ข้า	khàat ขาด	khàt ขัด
2	kaa กา				
3					
4	khaa คา		kháa ค้า	khâat คาด	khát คัด

Diagram 1: Tone-set wordlist (Tingsabadh, 1980)

In addition, a few researchers attempted to apply polysyllabic words to describe Central Thai tones in different context such as Banditkul (1993) and Malaichalern (1988). Further, some of them used one of the monosyllabic wordlists together with polysyllabic words taken from connected speech such as Worawong (2000), Krisanapan (1995), Tingsabadh (1990, 1980), Ratanadilok Na Phuket (1983). The phrases or clauses used in the studies were mostly framed in written form. The native speakers were asked to say or pronounce each phrase or clause based on the form.

The spontaneous speech approach has been gradually developed. Nowadays, researchers attempt to apply running speech spoken spontaneously, especially for the tone study. An example, as mentioned above, is Krisanapan's (1995) tone work on Phetchaburi Thai. Krisanapan's (1995) tone data include three speech types, namely the statement, question, and negation of one to four syllabic words selected from the conversational speech used authentically in everyday life. Based on the spontaneous data, Krisanapan (1995: English abstract) claims that "tones in connected speech manifest many more variants than those in isolated words." Also, she proposes the variants obtained from connected speech would rather

represent Rai Sathon or Ban Lat accent of Phetchaburi Thai than those obtained from isolated words.

As for elicitation techniques of tone study, in the earlier period, the researchers whose speech belonged to the targeted areas of the study used their own speech as the research data, such as Chantavibulya (1959). Later, a new trend of the questioning method was developed and seems to be favored up until now. This technique is used for eliciting monosyllabic, polysyllabic, and/or connected words from the informants.

2.3.1.4 Data analysis and presentation

Earlier tone studies concerned only auditory analysis such as tones of Ang Thong and Phra Nakhon Si Ayutthaya Thai (Malaichalern, 1988), of Ratchaburi Thai (Ratanadilok Na Phuket, 1983), and of Central Thai and Southern Thai linguistic borderline (Debavalya, 1983). Instrumental analysis, thereafter, was devised to supplement or recheck the ear impression. From the very start, Oscilloscope, Pitch meter and Mingograph, and Laryngograph (Tingsabadh, 1980) were promoted as a quantitative analysis. The next generations (Krisanapan, 1995; Pornsib, 1994; Banditkul, 1993) afterwards, brought Sona-Graph Workstation Model 6061B and DSP Sona-Graph Workstation Model 5500 into phonetic analysis of tones. In addition, the speech software program, namely WinCECIL (Computerized Extraction of Components of Intonation in Language) devised by the Summer Institute of Linguistics (SIL) was used to record short utterances and analyze tone characteristics shown by line graphs. Worawong's (2000) applied this instrumental judgment to her study on tone in Kanchanaburi Thai.

The forms of data presentation based on the tone studies consist of Gedney's tone box, line graph showing fundamental frequency (f_0) value, and linguistic maps.

The tone box was used to present the patterns of tone splits and coalescences in cases where the local speech was judged by auditory stimuli. The tone variation analyzed by Malaichalern (1988), Ratanadilok Na Phuket (1983), and Debavalya (1983) was presented in this form. At the same time, Worawong (2000), Krisanapan (1995), Pornsib (1994), Banditkul (1993), and Tingsabadh (1980, 1990)

drew line graphs to show the acoustic variation of the Central Thai tones. Note that only Worawong (2000) and Banditkul (1993) applied both the box and graph. Likewise, it is surprising that among all tone studies, only Yajai (1988) provides the study results on the linguistic maps displaying the areal distribution of tone variation in Ang Thong and Phra Nakhon Si Ayutthaya.

2.3.2 Study results

The results of the tone studied are given below with regard to Central Thai tone pattern and characteristic.

2.3.2.1 Tone pattern

According to the numbers and the complementary distribution of tones, two patterns of Central Thai tones are observed. The former includes five distinctive tones and the A1-234 tone split and merger. The latter consists of six tones and the A1-23-4 tone splits and merger. The tone pattern of Kanchanaburi Thai (Worawong, 2000), Ang Thong and Ayutthaya Thai (Malaichalern, 1988), and Ratchaburi Thai (Ratanadilok Na Phuket, 1983) and a part of Prachuap Khiri Khan Thai (Banditkul, 1993; Debavalya, 1983) and Suphanburi Thai (Tingsabadh, 1980) is categorized into the five-tone and A1-234 group. On the other hands, the pattern of Phetchaburi Thai (Pornsib, 1994; Krisanapan, 1995) and a part of Prachuap Khiri Khan Thai (Banditkul, 1993; Debavalya, 1983) and Suphanburi Thai (Tingsabadh, 1980) belongs to the six-tone and A1-23-4 group. The two tone patterns described above are illustrated in the tone boxes as follows:

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

Diagram 2: Central Thai five-tone pattern (A1-234)

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

Diagram 3: Central Thai six-tone pattern (A1-23-4)

2.3.2.2 Tone characteristics

Based on the instrumental measurements, a great number of acoustic characteristics of Central Thai tones are considerably different from Standard Thai. Owing to the phonetic characteristics, the speech discrepancies can be explained by systematic variation in tone realizations. According to the studies, the variation of rising tones (tone 5) shown in A column appear to be the most crucial characteristic to be used to classify the speech varieties into sub-dialect groups. The comparison of

Central Thai tone characteristics based on tone heights and shapes is given below in Table 1.

Table 1: Comparison of Central Thai tone characteristics, adapted from Worawong (2000: 29)

Central Thai subdialects	**Tone 1**	**Tone 2**	**Tone 3**	**Tone 4**	**Tone 5**	**Tone 6**
Kanchanaburi (Worawong, 2000)	222,231, 242,322	31,32, 332,41	453,452, 351,342	13, 254, 252,233	312,313, 412,325	–
Phetchaburi (Pornsib, 1994)	322,23	43,33,443	441,454	335,45	435,35	323,214
Prachuap Khiri Khan (Banditkul, 1993) (Debavalya, 1983)	21,311 334,35,25 343	31,42 11,22,21 33,22,21	351,441 442,452 452	243 33,35 33,35	412,214 325,215 325,215	25,23 – 115,113
Suphanburi (Tingsabadh,1993) (Tingsabadh,1980)	33 24,33	442 32	343 44,454	34 33,35	551 51,534	32 113,223
Ratchaburi (Ratanadilok Na Phuket, 1983)	33	21	41,441	33	15	–
Ang Thong (Malaichalern, 1988)	33,34	43,443	44	35,45	325,423	–
Phra Nakhon Si Ayutthaya (Malaichalern, 1988)	33,34, 343	43,443, 32,21	452?	35,45	325	–

CHAPTER III
METHODOLOGY

This chapter describes in depth a set of study methods of Central Thai tone geography. It covers data collection, data analysis, and data presentation.

3.1 Data collection

3.1.1 Study sites

According to Smalley (1994: 113), the central region of Thailand is gradually spreading into each of the other regions through processes of language change along its borders. Currently, Central Thai speaking areas are spread out all over the country covering some parts of northern, northeastern, eastern, and southern regions of Thailand (Premsrirat et al., 2004; Teerarojanarat, 2009) because of out-migrations and/or spread of Standard Thai as the medium of education and communication throughout the country. However, a great number of Central Thai native speakers in fact remain in the central plains of the country. From my fieldwork and review of the literature, I posit that the preponderance of Central Thai speakers is restricted to the central plains of Thailand regardless of the pockets of Central Thai speech communities found in the other regions.

To specify localities of the study, geographical judgment of administrative units are primarily taken into account. Both Thailand and Central Thailand maps were used to frame the areas, most of which were employed for political-administrative reasons. A Thailand map of five-regional division (see Map 1 in Chapter I) has been chosen in this Central Thai tone study. The five regions consists of 17 provinces of Northern, 19 provinces of Northeastern, 7 provinces of Eastern, 14 provinces of Southern, and 19 provinces (including Bangkok) of Central Thailand. Some provinces of the central region of Thailand, i.e., Bangkok city and Greater Bangkok (Wikipedia,

2009) where the majority of people speak Standard Thai or Bangkok Thai were not included in the study. Greater Bangkok or the provinces surrounding Bangkok are Nonthaburi, Pathum Thani, Samut Prakan, Samut Sakorn, and Nakorn Pathom. The remaining thirteen provinces in the central region were focused on, namely Chainat, Sing Buri, Ang Thong, Phra Nakhon Si Ayutthaya, Lopburi, Saraburi, Nakorn Nayok, Suphanburi, Kanchanaburi, Ratchaburi, Samut Songkhram, Phetchaburi, and Pracuap Khiri Khan.

Selection of communities or areas in each province was the next step. The study was limited to the Amphoe (District) level. Thus, any Amphoe in which most people use Central Thai dialect as the main medium of communication had to be surveyed. According to the ethnolinguistic maps of Thailand (Premsrirat et al., 2004), the Central Thai speaking sites are highlighted in the different layers of green color. Among them, the darkest color represents the greatest number of people speaking the Central Thai dialect. In the map, the number of Amphoes in each province belonging to the dark green color is around three. A large number of localities in the total of thirty-nine Amphoes in the targeted thirteen provinces were then scrutinized.

Based on preliminary fieldwork conducted in the study, it was apparent that the study sites did not meet the initial criteria of the fieldwork. Three provinces, namely Lopburi, Saraburi, and Nakorn Nayok were excluded due to an excessive amount of Central and Northeastern Thai hybridization. According to the initial interviews, a large number of people had moved continuously to these three areas from the provinces in the northeastern region of Thailand and from neighboring provinces of Central Thailand, i.e., Ang Thong, Sing Buri, Phra Nakorn Si Ayutthaya, and Saraburi. Furthermore, most of the speakers belong to northeastern Thai dialect and/or Lao varieties with respect to several words used. In addition, according to Gedney's (1972) tone box method for investigating tones, their tone patterns appear to belong to Northeastern Thai more than Central Thai (See 3.1.2.3). The total number of Amphoes and provinces under the study therefore decreased from thirty nine to thirty and thirteen to ten respectively.

A list of the study areas in thirty Amphoes from ten provinces, selected with regard to Premsrirat et al.'s (2004) linguistic evidence and native speakers' recommendation are shown in Table 2 as follows:

Table 2: Study areas of Central Thai tone geography

PROVINCE	AMPHOE (DISTRICT)	TAMBON (SUB-DISTRICT)
Chainat	1. Sapphaya	Sapphaya Pho Nang Dam Tok
	2. Sankhaburi	Dong Khon
	3. Hankha	Wang Kai Thuan
Sing Buri	4. In Buri	Ton Pho Thap Ya
	5. Bang Rachan	Mai Dat Pho Chon Kai
	6. Tha Chang	Thon Samo
Ang Thong	7. Sawaeng Ha	Wang Nam Yen
	8. Wiset Chaichan	San Chao
	9. Muang	Pho Sa Bang Kaew
Phra Nakorn Si Ayutthaya	10. Ban Phraek	Samphaniang
	11. Wang Noi	Wang Noi
	12. Bang Sai	Bang Sai Mai Ta
Suphanburi	13. Dan Chang	Nong Makhamong
	14. Sam Chuk	Nong Phak Nak
	15. Song Phi Nong	Thung Khok Bo Suphan

Table 2: Study areas of Central Thai tone geography (cont.)

PROVINCE	AMPHOE (DISTRICT)	TAMBON (SUB-DISTRICT)
Kanchanaburi	16. Bo Ploi	Chong Dan
	17. Tha Muang	Nong Khao
	18. Tha Maka	Wai Niaw Khao SamSipHap
Ratchaburi	19. Chom Bung	Rang Bua
	20. Damnoen Saduak	Si Mun Ban Rai
	21. Pak Tho	Pak Tho
Samut Songkhram	22. Bang Khon Thi	Kradangnga
	23. Amphawa	Amphawa
	24. Muang	Bang Chakreng
Phetchaburi	25. Ban Laem	Laem Phak Bia
	26. Tha Yang	Tha Laeng
	27. Cha-am	Cha-am
Prachuap Khiri Khan	28. Pranburi	Pak Nam Pran
	29. Muang	Ao Noi Ao Manao Khlong Wan
	30.Bang Saphan	Thong Chai

3.1.2 Informants

It is important to note that selection of language subjects depended on the type of data to be collected in the study, i.e., unrehearsed or spontaneous running speech. During the initial stages of the fieldwork, it became apparent that calling on

the informants on our own, i.e. not prearranged by others helped in obtaining natural speech samples.

Informal settings and conversation were needed to bridge the gap between native speakers and interviewers. Conducting an advertising or election campaign, to enlist cooperation from people without any help from leaders of the communities was a very difficult and time-consuming process. Consequently, the fieldworkers had to use a lot of time to prepare for contingencies and unexpected situation in unpredictable environments.

As mentioned in Chapter I, according to the traditional selection of informants proposed by Chambers and Trudgill (1998: 29-30) in the methods of dialect geography, NORMs was mainly applied, i.e., nonmobile, older, rural males. All informants should be natives of a particular Amphoe for their entire lives to guarantee that their local speech truly belonged to the Central Thai area in which they live. The speakers should be older to reflect, to a certain degree, the particular speech and accent originating in the area. Moreover, the speech varieties of an older period can be expressed, more or less, in terms of tone patterns and characteristics. In the study, most of the informants were over fifty and a few over eighty years of age. It seemed that some older forms of speech used approximately between 1930-1960 AD or 2470-2500 BE (Buddhist era) would be established in this cadre of speakers.

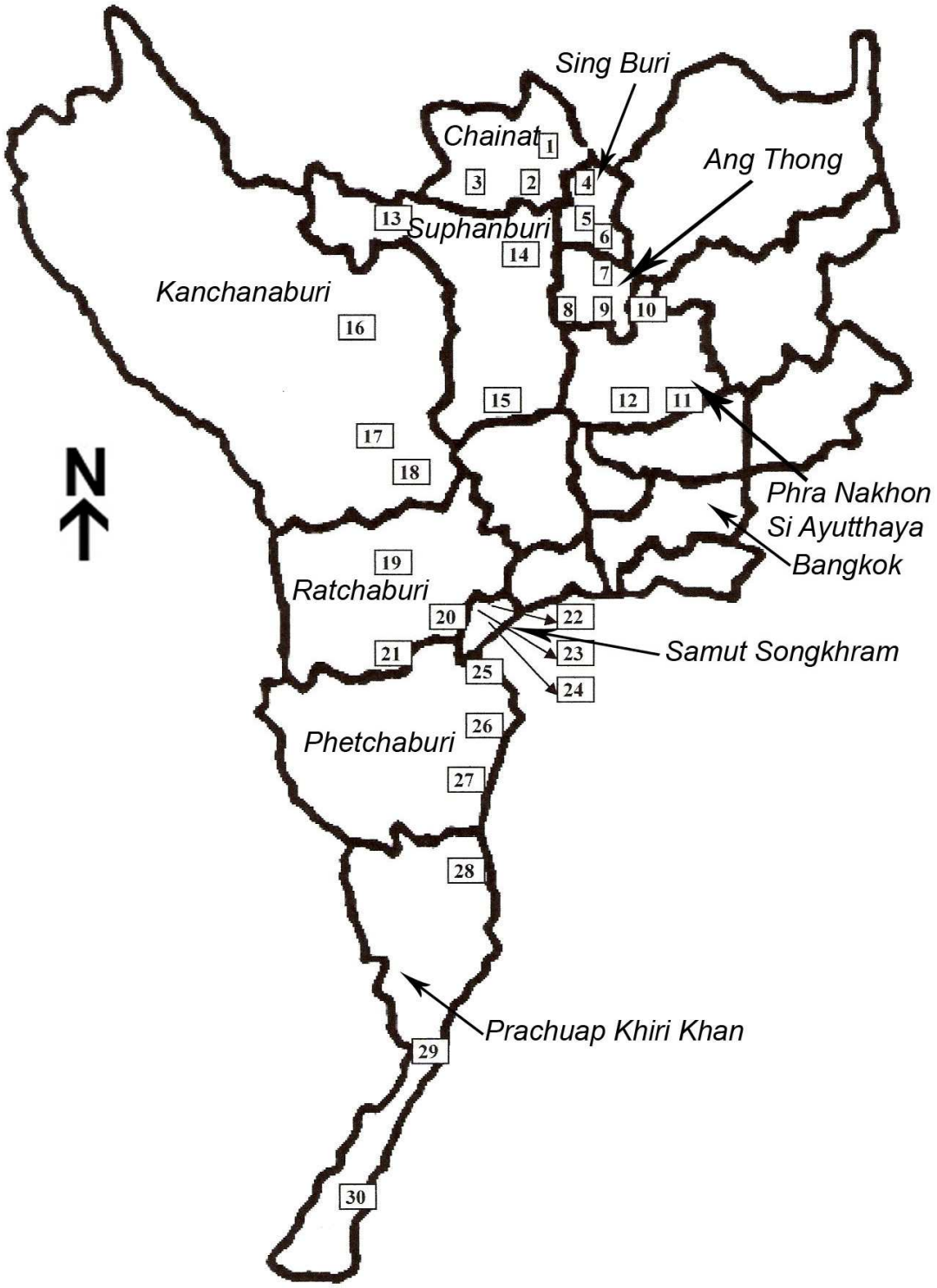
Subjects should be rural because there would be less chance for them to accommodate other speech varieties, especially the Standard Thai or modern Thai accents spoken in a town or city. It is rather evident that in the center of social and ethnic mix such as in Bangkok, several speech varieties combine and are not easily defined or distinguished. In terms of subjects' sex, both male and female were represented. Because of the difficulties of data collection, samples of the speech of any native speaker, either male or female who was accommodating to the field investigator would be appreciated. In the end, of the ninety informants observed and interviewed, 72% were women and 28% were men. We were compelled to modify the NORMs formula to include women along with men in our study.

It is important to note that to examine the evidence of the uniform existence of tones and to establish a reliable tone system of a Central Thai local variety, the number of informants per locality therefore varied between three and five.

At the same time, the average three of five native speakers who shared an identical tone pattern would be Central Thai representatives of each Amphoe. While only one speaker who had the greatest fundamental frequency (f_0) excursion voice and who could provide a large number of stressed syllables of continuous speech would be selected to represent the model or ideal accent for each locality. This model voice would then be analyzed instrumentally in the study.

In addition, most of the speakers were semi-illiterates and/or had finished no more than four years of primary school. They were not very experienced in speaking Standard Thai. Furthermore, they were all Central Thai monodialectals. They had no limitations in hearing and speaking as far as we could determine.

Thirty study sites of ten provinces of Central Thailand, identified on Table 2 are shown on Map 5 as follows:



Map 5: Study sites of tone geography of ten provinces of Central Thailand

3.1.3 Materials and instruments

3.1.3.1 Map of Central Thailand

The ethnolinguistic maps of Thailand (Premsrirat et al., 2004), especially of central region of Thailand and the regional and geographical map of Central Thailand made by Pran Nok (PN) map center were used during the whole fieldwork. The latter is the 75×100 centimeter Thai-English map coding TH103N/04, drawing not only geography of Central Thailand but also boundaries and provinces of Central and Eastern Thailand in accurate details. The map is drawn to 1 centimeter per 7.5 kilometers (1: 750,000) scale.

3.1.3.2 Questionnaire

A questionnaire needs to be used whenever fieldwork is conducted. In my tone study, a questionnaire was composed of three sets of questions. The first part included written indirect questions on subjects' general and dialectal background. The second part consisted of indirect oral questions on speakers' everyday life, family, community, nature, and which of the stories they felt free to share. As for the conversational questionnaire of about eighty lexical items: four related lexical items per one Gedney's (1972) cell (20×4 items= 80), the interviewers were given freedom to frame the informal questions in the guise of charades and word games as long as the desired response or lexical words were elicited. The third part of oral direct questions was prepared for three time-monosyllabic utterances of twenty words (20×3= 60).

3.1.3.3 Tone box and sets of wordlist

To determine the tone system of Central Thai varieties, Gedney's (1972) tone box or tone checklist and two major set wordlists from Akharawatthanakun's (2003), were the main materials in the study.

Tone box method, according to Gedney, is a short-cut to discover the patterning of the tone system of a Tai dialect. It has been used by a great number of scholars who have worked on comparative and historical Tai linguistics for many decades. This method has been applied, to some extent, in the studies of tones in

Tai languages, Thai dialects, and/or subdialects in Thailand. By using the tone box method, tone splits, coalescences, complementary distribution and the number of contrastive tones can be specified.

The basic tone box display includes twenty cells for possible tone contrasts based on the recording of sixty-four Tai monosyllabic words. Each cell is composed of at least three test words sharing the same typical features, namely initial consonant's three fold-division class ('High', 'Middle', 'Low'), syllable type ('Smooth' or 'Checked'), and vowel length (long or short).

Diagram 4 displays four main categories of tones reconstructed in the Proto-Tai language designated as A B C in smooth syllable (kham pen) and D in checked syllable (kham tay). The lexical words end in a vowel, semivowel, or nasal in smooth syllables whereas in checked syllables they end in stops, /-p, -t, -k, -ʔ/. The split and coalescence of tones in each category or between different categories are conditioned by the phonetic nature of initial consonant of each syllable. The initials can be divided into four different classes that appeared historically at the time of the tone split of the three proto-tones: 1) voiceless fricatives, voiceless aspirated stops, and preaspirated sonorants, 2) voiceless unaspirated stops, 3) glottal sounds and preglottalized consonants 4) voiced sounds. The different phonetic features of the initials classified in each class have yielded different degrees of tone heights termed High (H), Middle (M), and Low (L). According to Brown (1965) and Li (1966), the terms 'H', 'M', and 'L' are labeled to indicate pitch levels of ancient Thai varieties spoken in the Sukhothai period. It should be noted that these labels do not agree with the recent tone system of modern Thai dialects, shown in the Thai tone boxes.

Initials at time of tone split	Proto-Tai Tones A	B	C	D-long	D-short
1. Voiceless friction sounds, **s, hm, ph*,etc.	1	5	9	13	17
2. Voiceless unaspirated stops, **p, t*, etc.	2	6	10	14	18
3. Glottal, **ʔ,ʔb*, etc.	3	7	11	15	19
4. Voiced, **b,m,l,z*, etc.	4	8	12	16	20
	Smooth syllables			Checked syllables	

Diagram 4: Tone box showing initial class, tone category, syllable type, and numbers of possible tone distinctions (Gedney, 1972: 434)

Note that in the checked syllable, tone split and coalescence are not only conditioned by the initials but also by whether the vowel is short or long. Furthermore, due to the phonetically most similarity of tones between two types of syllable, most of the tones found in checked syllable would be identified as allophones of the same phonemic tone found in smooth syllable.

In Siamese or Central Thai, another indicator used for determining tones is the use of written tone marks. The tone marks are arranged in smooth syllable as follows: no orthographic mark (ø) in category A, *mai ek* (่) in category B, and *mai tho* (้) in the category C.

Diagram 5 shows the checklist of eighty test words used in the study of both tone pattern and characteristic, which was developed and modified from the syllables used by Gedney (1972) and Akharawatthanakun (2003) in their respective fieldwork.

	A (ø)	B (˦)	C (˩)	D-long	D-short
1	*huu* ‘ear’ *khaa* ‘leg’ *hua* ‘head’ *sɔŋ* ‘two’	*khai* ‘egg’ *phaa* ‘to split’ *khaa* ‘galangal’ *thua* ‘bean’	*khaaw* ‘rice’ *sia* ‘shirt’ *mɔɔ* ‘pot’ *haa* ‘five’	*khuat* ‘bottle’ *muak* ‘hat’ *sɔɔk* ‘elbow’ *saak* ‘pestle’	*mat* ‘flea’ *phak* ‘vegetable’ *hok* ‘six’ *sip* ‘ten’
2	*puu* ‘crab’ *taa* ‘eye’ *kin* ‘to eat’ *kaa* ‘crow’	*kai* ‘chicken’ *paa* ‘forest’ *taw* ‘turtle’ *pii* ‘woodwind’	*kaaw* ‘nine’ *pɔɔn* ‘to feed’ *kaaŋ* ‘fish bone’ *tuu* ‘cupboard’	*piik* ‘wing’ *kɔɔt* ‘to embrace’ *tɔɔk* ‘to pound’ *paak* ‘mouth’	*kop* ‘frog’ *cet* ‘seven’ *teʔ* ‘to kick’ *cap* ‘to catch’
3	*bin* ‘to fly’ *dœœŋ* ‘red’ *baan* ‘to bloom’ *daaw* ‘star’	*baa* ‘shoulder’ *ʔiŋ* ‘toad’ *baaw* ‘man’ *daa* ‘to scold’	*daay* ‘cotton’ *ʔɔi* ‘sugar cane’ *daam* ‘classifier’ *ʔaa* ‘to open’	*dœœt* ‘sunshine’ *biip* ‘to grasp’ *bɔɔt* ‘blind’ *diit* ‘to palm’	*bet* ‘fishing rod’ *dip* ‘raw’ *ʔok* ‘chest’ *det* ‘to pinch off’
4	*mii* ‘hand’ *khwaay* ‘buffalo’ *naa* ‘rice field’ *ŋuu* ‘snake’	*phɔɔ* ‘father’ *waaw* ‘kite’ *liay* ‘wood cutter’ *maay* ‘widow’	*naa* ‘aunt’ *khiu* ‘eyebrow’ *nam* ‘water’ *lin* ‘tongue’	*miit* ‘knife’ *liat* ‘blood’ *chiak* ‘rope’ *mɔɔt* ‘rice bug’	*nok* ‘bird’ *mot* ‘ant’ *khrok* ‘mortar’ *lep* ‘nail’

Smooth syllables Checked syllables

Diagram 5: Checklist of 80 test words for Central Thai tone geography

Apart from the checklist given above, analogous sets of twenty monosyllabic words from Akharawatthanakun (2003), were also utilized to investigate acoustic characteristic of tones in case of occasional errors in monosyllabic words taken from Gedney’s tone boxes, which are extracted from spontaneous speech.

However, note that the tone characteristic of Central Thai varieties would be based solely on the tone realization in conversational running speech.

Diagram 6 presents Akharawatthanakun's analogous set, of which words in all tone categories share the same initials in each class of consonants as follows:

	A(ø)	B (ˈ)	C (ˬ)	D-long	D-short
1.	*khaa*'leg'	*khaa* 'galangal'	*khaa* 'I'	*khaat*'to be torn'	*khat* 'to polish'
2.	*paa* 'to throw'	*paa* 'forest'	*paa* 'aunt'	*paat*'to sweep'	*pat* 'to wipe out'
3.	*baan* 'to bloom'	*baa* 'shoulder'	*baa*'to be crazy'	*baat* 'to be cut'	*bat* 'card'
4.	*khaa*'to be struck'	*khaa* 'value'	*khaa* 'to trade'	*khaat*'to buckle'	*khat* 'to select'
	Smooth syllables			Checked syllables	

Diagram 6: Analogous set of 20 monosyllabic words for Central Thai tone investigation

Furthermore, to obtain reliable data, three tokens of every word (20×3= 60) were put in random order separately between smooth and checked syllables as follows:

Table 3: Analogous set wordlists for Central Thai tone investigation from Akharawatthanakun (2003)

Wordlist 1: Smooth syllables

1.	*khaa* A1	13.	*paa* C2	25.	*khaa* C4
2.	*paa* A2	14.	*baan* A3	26.	*baa* B3
3.	*baan* A3	15.	*khaa* A1	27.	*paa* A2
4.	*khaa* A4	16.	*baa* B3	28.	*khaa* C1
5.	*khaa* B1	17.	*khaa* C1	29.	*paa* B2
6.	*paa* B2	18.	*paa* B2	30.	*baa* C3
7.	*baa* B3	19.	*khaa* C4	31.	*khaa* A4
8.	*khaa* B4	20.	*khaa* A4	32.	*paa* C2
9.	*khaa* C1	21.	*paa* A2	33.	*khaa* B1
10.	*paa* C2	22.	*khaa* B1	34.	*baan* A3
11.	*baa* C3	23.	*baa* C3	35.	*khaa* B4
12.	*khaa* C4	24.	*khaa* B4	36.	*khaa* A1

Wordlist 2: Checked syllables [D-long (DL) and D-short (DS)]

1.	*khaat* DL1	9.	*paat* DL2	17.	*khaat* DL4
2.	*paat* DL2	10.	*khat* DS4	18.	*bat* DS3
3.	*khaat* DL4	11.	*baat* DL3	19.	*khat* DS1
4.	*baat* DL3	12.	*khat* DS1	20.	*paat* DL2
5.	*khat* DS1	13.	*bat* DS3	21.	*khat* DS4
6.	*pat* DS2	14.	*khaat* DL1	22.	*baat* DL3
7.	*khat* DS4	15.	*pat* DS2	23.	*khaat* DL1
8.	*bat* DS3	16.	*khaat* DL4	24.	*pat* DS2

Lastly, to examine if the speech varieties collected are authentic Central Thai dialect and to separate Central Thai dialect from other regional dialects, four distinctive patterns of tones in Thai were taken into account. Based on the tone box method, the followings are the canonical tone split and coalescence of four regions of Thailand (Tingsabadh, 2001).

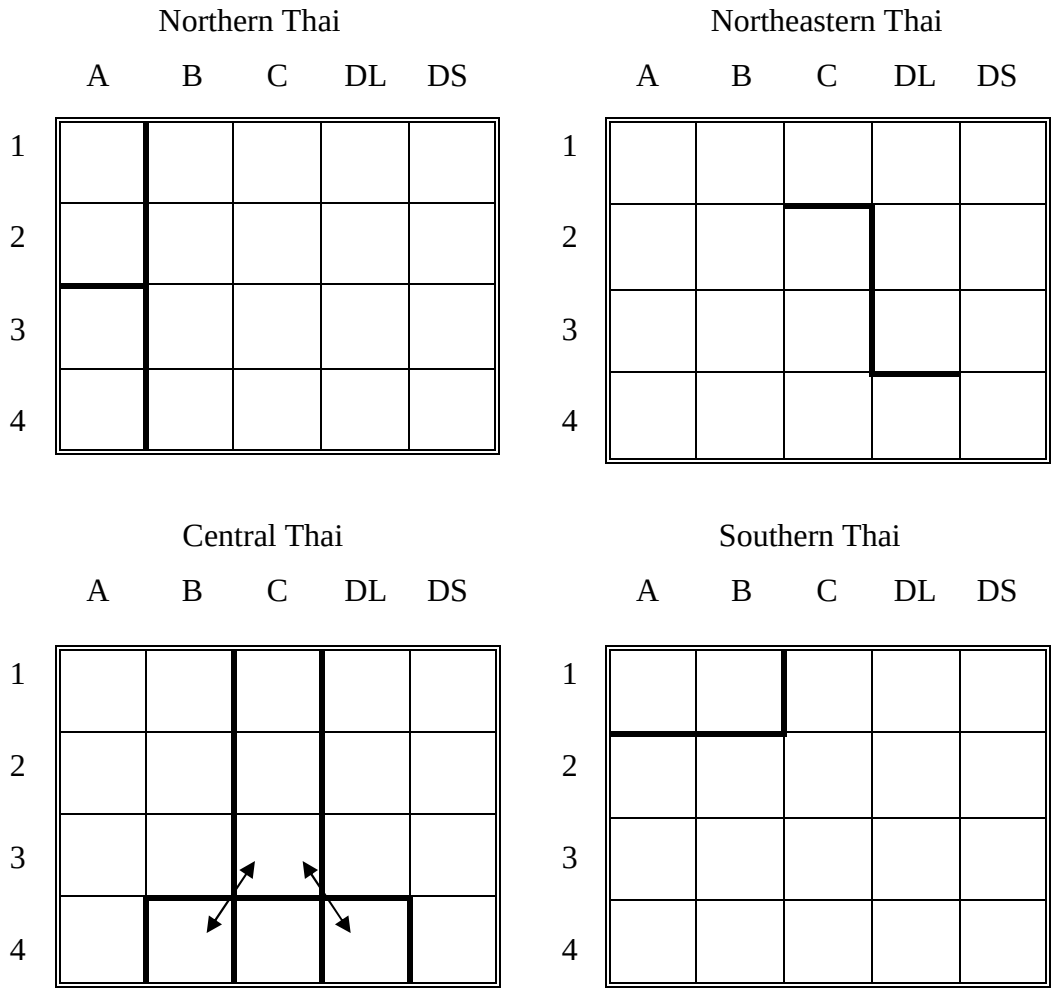


Diagram 7: Four distinctive patterns of tones in Thai

As for the Thai tone patterns illustrated above, the overall synchronic varieties analyzed in the study would belong to the Central Thai tone dialect sharing the salient pattern of tone split and coalescence shown in the Central Thai tone box.

3.1.3.4 Speech data recorder and laptop computer

The speech data were recorded on a Sony integrated circuit (IC) recorder of P series, namely ICD-P210 which was programmed by Digital Voice Editor 2 software. To synchronize and analyze the characteristics of tones, the voice data were afterward stored and transferred to wave files on a Toshiba laptop computer Satellite M 50.

3.1.3.5 Speech software programs: Cool Edit Pro and PRAAT

Two speech software programs, Cool Edit Pro version 1.0 and PRAAT version 4.5.08 were utilized respectively to extract a required monosyllable from running speech and to analyze tone characteristics, namely tone height and shape drawn by tone line graphs.

Cool Edit Pro or Adobe Audition, according to Wikipedia (April 2010), is a digital audio editor computer program originally developed by Syntrillium software corporation. It was founded in 1990 by two former Microsoft employees--Robert Ellison and David Johnston. Now this program belongs to Adobe and has been developed further as version 3.0.1 featuring both a multi-track, non-destructive mix or edit environment and a destructive-approach waveform editing view. Cool Edit Pro provides an all-in-one audio solution; it functions mainly as audio recorder, editor, as well as mixer. In terms of tone analysis, Cool Edit Pro can be used for correcting pitch and editing frequency space.

PRAAT was created and developed starting in 1992 by Paul Boersma and David Weenink of the Institute of Phonetics Sciences of the University of Amsterdam. This speech software program was designed specifically for scientific linguistic analysis. I used version 5.1.31. It can be used for analyzing, synthesizing, labeling and segmenting, as well as manipulating speech. Moreover, in case of perception study, PRAAT can also help conducting listening experiments. With PRAAT, spectrograms, pitch, formant, and intensity contours can be effectively analyzed. In addition, it works also for sound recording, reading, and formulating. In the study, the voice processing and tone graph forming were carried out with PRAAT and Microsoft Excel.

3.1.3.6 Microsoft Excel program

Microsoft Excel program version 2003 was utilized for the last part of the tone characteristic analysis. With this program, the fundamental frequency of tones could be presented in the form of line graphs. The contrastive tones of the Central Thai localities could be then compared. At the same time, the tone varieties could eventually be classified more accurately into groups.

3.1.4 Elicitation techniques

The elicitation techniques applied in the study were designed in accordance with the types of required speech data, i.e., monosyllabic segments spoken in everyday-life spontaneous speech and monosyllabic words spoken in isolation or citation forms. To obtain both types of data, the indirect questioning method was used for the most part. According to Tingsabadh (1988: 226), to obtain the most natural form of speech, running speech would be elicited first from casual conversation. To gain a basic idea of the Central Thai tone system, the citation forms would be the preliminary step in the investigation.

Using the questionnaires and checklist described above, the subjects were asked initially to give general background of themselves and their living and work environment. Then, the conversation would continue freely based on the required lexical items of the study. Mostly, the main topics of conversation were the informants' daily life, family, occupation, ways of life, environment, food, and health. It should be noted that, to test the data obtained were real or accurate in some particular areas, the interviewers used the Labovian method, namely observer's paradox for gathering the natural speech. This method was formulated by William Labov (1966), of which the aim was to find out how people talk when they were not being systematically observed. According to the method, the interviewers went to local fresh markets to ask about some goods and/or to interview the sellers about their products. Sometimes, the final part of conversation ended by the interviewers' participating in goods selling. The whole conversation had been recorded without the speakers' notice.

In addition, to collect the citation forms, individual local speakers were asked to say just one word at a time. Altogether, 60 monosyllabic words of three repetitions were pronounced. Before recording, the interviewers gave a cue or question for each word on the lists and trained the speakers to recognize a sign or image representing each word. It is important to note that, in order to avoid interference from Standard Thai (textbook Thai), which may result from reading, the speakers would not see the required monosyllables on the list. All sets of present-day continuous speech and citation forms were recorded at normal speed. It took at least one and a half hours in each interview of ninety informants in thirty localities. According to the elicitation technique of spontaneous speech employed in the study, the Central Thai tones studied in my fieldwork are realized differently compared to previous studies.

3.2 Data analysis

To obtain the overall tone system of the Central Thai varieties, the tone analysis based on the eighty test words, which were cut out of running speech is carried out using two main methods as follows:

3.2.1 Auditory analysis

The auditory impression or analysis was taken into account in order to find out patterns of tone variations drawn in the tone box, namely tone split, coalescence, and complementary distribution. Using auditory perception, the numbers of contrastive tones were determined. The tone pattern of Central Thai varieties was derived from the most redundant distinctive features of tones perceived in each cell.

3.2.2 Instrumental analysis

The instrumental or computational analysis was used to illustrate characteristics of tone variations outlined in tone graphs, namely tone height and shape or curve. To analyze pitch instrumentally, the speech data were firstly transferred from digital voice files to wave files by Digital Voice Editor 2 software program. In addition, to determine more effectively the excursion size of contours, most of the selected monosyllables in the study were stressed at the end of a rhythmic phrase

(Noss, 1975; Nitisaroj, 2006). It is possible that the phonetic variant of a lexical word differs from those of the other words in the same cell, shown in Gedney's tone box. In this case, the acoustic variations drawn in this study are based on the major tone variants found in each cell.

As mentioned above, three software programs were involved in the study, i.e., Cool Edit Pro, PRAAT, and Microsoft Excel in order to extract a required monosyllable from the continuous speech, to find out the average fundamental frequency value of phonemic tones and to set pitch range of every item as well as to normalize tone duration and to plot the tone value on a line graph.

It should be noted that the pitch analysis was based on the location of the turning point or timing of the peak and the consistent movement of the contours drawn on line graphs (Morén & Zsiga, 2006). As regards to the unstopped syllables, some unexpected phenomena might occur, i.e., shift of tone onset and/or contextual variations (contour reduction, peak delay, co-articulatory effects, and so on.). As a result, the second part or sub-syllabic constituency, namely mora of a tone curve and/or tone offset would have to be primary in the pitch analysis.

The outcomes of both auditory and instrumental studies of tones were used as the determinants of Central Thai tone classification.

3.3 Data presentation

The tone system of Central Thai varieties was presented in tone boxes, on line graphs, and dialect maps. In a box, the tone pattern of a local variety was given together with numbers of contrastive tones found on smooth syllables. In addition, the characteristic of tones was also identified by tone sticks derived from tone graphs.

The line graphs of tones were plotted at ten percentage intervals of eleven points of measurement per item. Every five-level graph was of fundamental frequency (Hertz) against duration (%). In the study, different values of fundamental frequency of each item were ranked and labeled mainly according to different levels of tone height and direction of tone movement. The 1-5 numerals represent the lowest to the highest levels of pitch respectively, i.e., 1: low, 2: mid-low, 3: mid, 4: mid-high, and 5: high. Moreover, in the study, some alternate phonetic realizations of a tone on checked

syllables would be drawn simultaneously on a line-graph figure together with a phonemic tone found in smooth syllables. Examples of lexical representatives were given in Thai script, phonemic transcriptions with numerical symbols of tone contours, and English translation.

The tone geography of the provinces of Central Thai dialect was eventually displayed on a Central Thai dialectal map, in which the variations of tone system and classification of Central Thai speech varieties were concomitantly provided. At the same time, the areas (Amphoes and provinces) of speech patterns and the variety boundaries were highlighted on the linguistic map as well.

Likewise, all of the data and the results of the tone studies just mentioned will be presented in Chapter IV and V. In addition, the written questionnaire mentioned above will be given in the Appendix.

CHAPTER IV
TONE SYSTEMS OF CENTRAL THAI VARIETIES

This chapter presents tone variations of the Central Thai subdialects in terms of tone patterns, namely the splits, coalescences, and complementary distribution of tones as shown in Gedney's (1972) tone box (see 3.1.3.3), and tone characteristics, namely acoustic heights and shapes of tones plotted relatively on a line graph. The Central Thai tone system based on the spontaneous continuous speech is analyzed both audibly and instrumentally.

4.1 The tone system of Standard Thai

Spoken Standard Thai is regarded as the official variety of Thai that is used on radio and television. However, according to its tone pattern and other characteristics, Standard Thai appears to be a member of the dialect category of Central Thai. In other words, Spoken Standard Thai is closely related to the other Central Thai varieties with regard the tone systems.

A brief summary of the tone system of Standard Thai given below can be of benefit in the study of comparisons of tone variations within the Central Thai domain as a whole. Standard Thai includes five phonologically contrastive or lexical tones derived from smooth syllables, namely mid, low, falling, high, and rising. It should be noted that the number of phonemic tones laid in the tone box scheme is usually based on smooth syllables (Gedney, 1972; Tingsabadh, 2001; Hartmann, 2004a). Phonetically conditioned tones on checked syllables are allotones of tonemes on smooth syllables. They owe this to their phonetic similarity conditioned by syllable type. The following diagram (Diagram 8) displays the five Standard Thai tones distributed in the boxes showing tone patterns.

4.1.1 Tone pattern of Standard Thai

The pattern of tone splits and coalescences of Standard Thai and the complementary distribution of tones are illustrated in the boxes below. The columns headed by A, B, and C, represent proto-Tai tone categories. The original three tones underwent a two-way split along the lines of proto-voiceless and proto-voiced initial syllables resulting in six lexical tones. In the case of Standard/Central Thai, the synchronic falling tone, i.e., the 3rd tone, is the result of coalescence, and the rising tone A1 displays a split along different phonological lines.

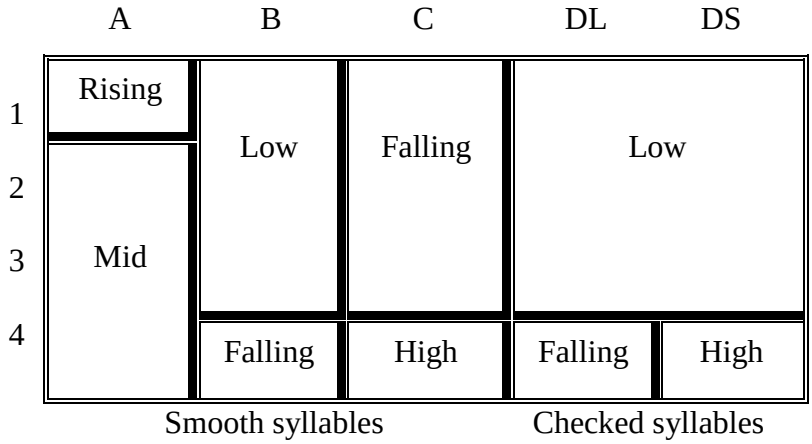


Diagram 8: Standard Thai tone pattern and complementary distribution, adapted from Tingsabadh (2001: 213)

According to the diagram, all five categories of tones shown in column A, B, C, DL, and DS have split into two: A1-234 and BCD 123-4. Nevertheless, the split of tone BCD is common, conditioned by the voiced and voiceless nature of the initials at the time of tone change (Gedney, 1972). The tone split in column A, as indicated above was conditioned by the fricative and/or aspirated features of initial sounds.

However, it is possible, in some of Central Thai subdialects or accents, that tones in column A have split into three: A1-23-4 as those in Northeastern Thai and Southern Thai (Tingsabadh, 2001: 215). As a result, the so-called 6th tone was devised in some of the previous tone studies (see 2.3 and Diagram 9).

The complementary distribution of Standard Thai tones, which are mutually intelligible with the varieties of Central Thai dialects, is B123 = DL; DS123,

B4; C123 = DL4; B = DL; and C4 = DS4. According to Tingsabadh (2001: 215-216), the distinctive feature separating Central Thai dialect from the other three main dialects, namely Northern, Northeastern, and Southern Thai, is B4 and C123 = DL4.

Diagram 9 displays the typical tone pattern of Central Thai dialects, from which the Central Thai distinctive feature and its tone pattern: splits and coalescences are drawn.

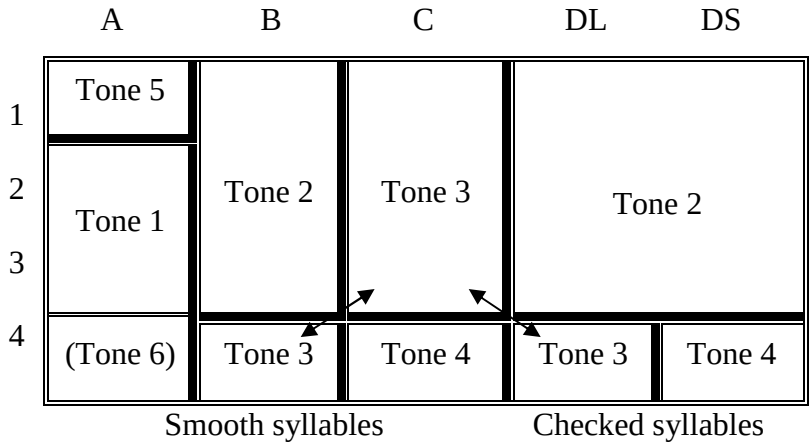


Diagram 9: Typical tone pattern of Central Thai dialect, adapted from Tingsabadh (2001: 215)

As shown in the diagram, the bold lines display the common splits and coalescences of Central Thai tones, while the double line lined between A3 and A4 displays the infrequent split of some Central Thai varieties.

4.1.2 Tone characteristics of Standard Thai

The acoustic characteristics of Standard Thai tones in citation form and connected speech are drawn respectively on the following line graphs. Note that the tone shapes outlined in the latter form are based on stressed syllables of monosyllabic words cut from connected speech recordings.

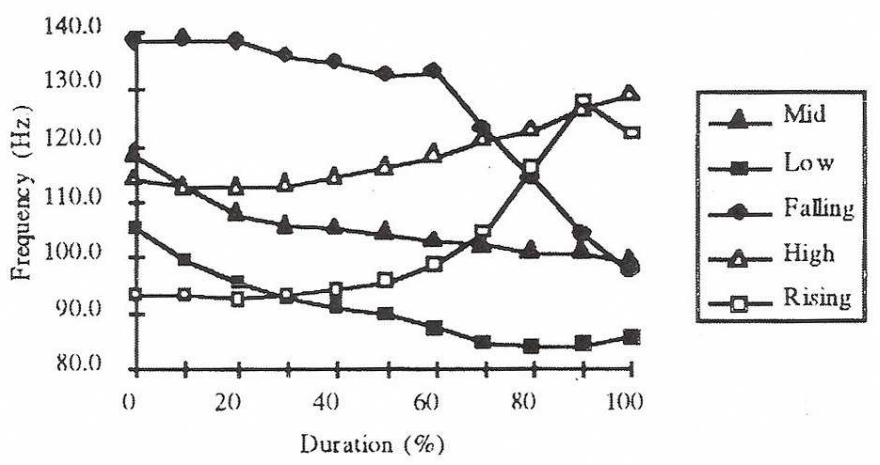


Figure 9: Standard Thai tones in citation form,
after Tingsabadh & Deeprasert (1997: 302)

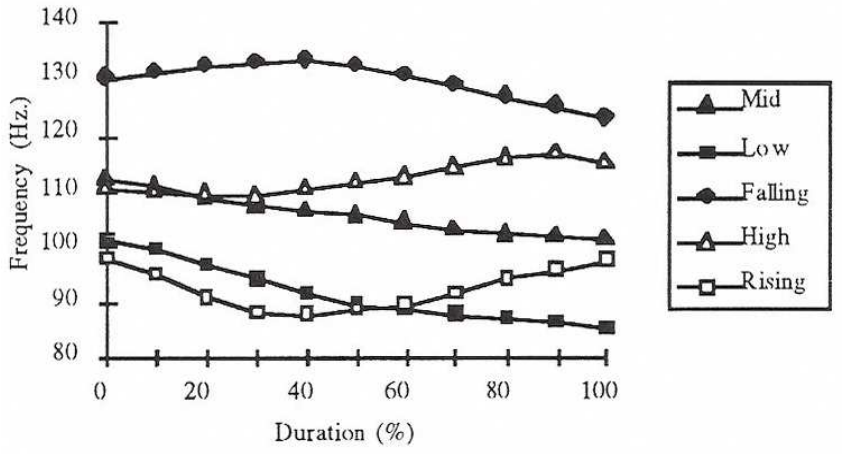


Figure 10: Standard Thai tones in connected speech,
after Tingsabadh & Deeprasert (1997: 302)

Tingsabadh and Deeprasert (1997) claim that the tone realizations in citation form are similar to those in connected speech. However, the pitch range variation of falling and rising tones in citation form is more exaggerated in shape than that in connected speech. The contour tones in particular move down and up abruptly in citation form, whereas those in connected speech display gradual downward and

upward movement. In all cases, the most important premise is that the five-way contrast of tones is still maintained even in connected speech.

Based on tone splits and coalescences on smooth syllables, the Central Thai varieties investigated in the study are of five-tone pattern: a two-way split (A1-234). The simple two-way split in the B and C columns seems to be the same in all dialects of Central Thai: B-C-DL-DS123-4. Nevertheless, in some of western areas of Central Thailand, a three-way split (A1-23-4) is likely to occur because of different tone variants between the typical feature or pitch found in A4 and that realized in A23. It seems very likely that a new lexical tone A4 might emerge in the near future. Hence, the differences in the tone-split pattern shown in column A were used as the basis for dividing the Central Thai varieties, a quick and easy discovery device.

According to the patterns of tone splits in column A, the tone systems of the Central Thai varieties can be classified primarily into two types, namely a five-tone system A1-234 and a five-tone system A1-23(-)4 respectively.

It is interesting to note that a Southern Thai variety displays the four tone of the system A1-234 found in most Central Thai varieties (see 6.2). Bangsaphan Thai spoken in Thong Chai sub-district in Amphoe Bangsaphan of Prachuap Khiri Khan was found to have this split. It thus appears to be a hybrid variety of Southern Thai and Central Thai. The five-tone system of the Central Thai varieties is described respectively below. Note that, in the study, the pitch ranges of the different speakers shown on line graphs vary to a certain degree, from 100 to 420 hertz (Hz.): 100-300 Hz., 100-350 Hz., 100-400 Hz., 120-270 Hz., 145-270 Hz., 150-400 Hz., and 160-420 Hz.

4.2 Tone system I

Tone system I covers most of the Central Thai varieties investigated in the study. It is clear that the tone pattern of the system turns out to be the same as that of Standard Thai. However**,** its characteristic tones derived from relative pitch averaged from a local representative appear to be different from both Standard Thai and other varieties of Central Thai dialect.

Twenty one of thirty varieties represent the first tone system (A1-234) include three varieties each of Chainat (3), Ang Thong (3), Sing Buri (3), Ayutthaya (3), Samut Songkhram (3) and two varieties each of Suphanburi (2) , Ratchaburi (2), and Prachuap Khiri Khan (2) as illustrated on Map 6.

4.2.1 Tone pattern A1-234

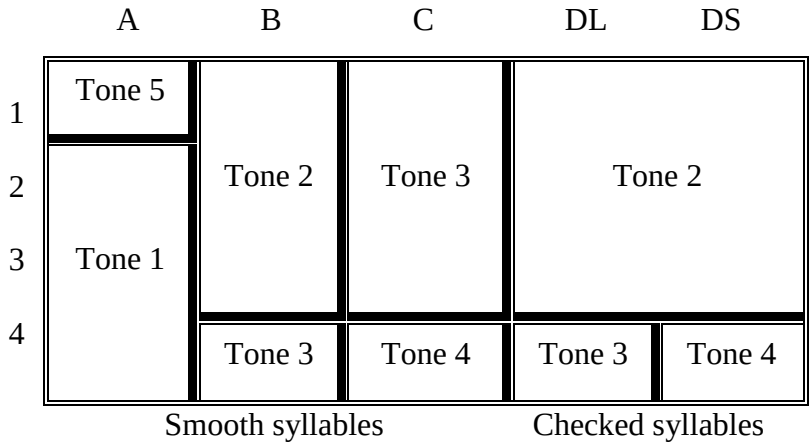


Diagram 10: Tone pattern of system I (A1-234)

The overall tone pattern, namely tone split, tone coalescences, and the complementary distribution of the tone system I is summarized in Table 4 as follows:

Table 4: Tone splits, tone coalescences, and complementary distributions of the tone system I

Tone split and coalescences	Complementary distribution
A1-234	B123 = DL, DS123
B123-4	B4, C123 = DL4
C123-4	B = DL
DL123-4	C4 = DS4
DS123-4	

4.2.2 Tone characteristics

Tone system I consists of five contrastive tones that are realized based on smooth syllables and illustrated on tone graphs as follows:

4.2.2.1 Tone 1: mid level tone [33]

Tone 1 or mid level tone of Central Thai is realized only in smooth syllables shown in column A (A234) of Gedney's tone box. The middle tone is, by all accounts, easily perceived or rarely causes miscommunication among Thai speakers. According to the study, the middle tone elicited from most of the speakers had a range similar to or related to the level as scaled on line graph below.

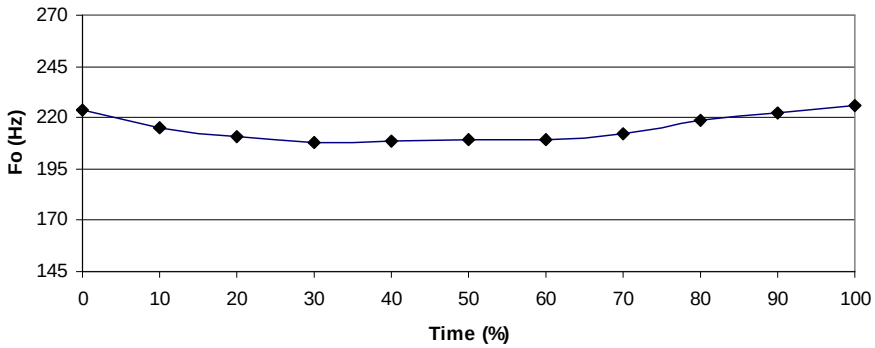


Figure 11: Tone 1 of Central Thai tone system I

e.g.	[dɛːŋ 33]	'red'	"แดง"
	[naː 33]	'paddy field'	"นา"
	[ʔaː 33]	'father's younger brother'	"อา"

According to the relative pitch shown above, the mid level tone of tone pattern A1-234 seems to slope slightly downward from its onset similar to that of Standard Thai. However unlike Standard Thai, it rises gradually upward at the terminus.

4.2.2.2 Tone 2: low-falling [21]

Tone 2 or low falling contour tone is realized in smooth and checked syllables, which constitute both short and long vowels. It is presented in three columns: B (B123), DL (DL123), and DS (DS123), drawn in Gedney's tone box. Due to the different syllable structures, most of Tone 2 realized in checked syllables appear to be static tones, i.e., mid or low level. The low- falling tone found in smooth syllables accounts for some miscommunication both among Central Thai speakers themselves and between Central Thai speakers and monodialectals and/or bidialectals using other Thai dialects. It should be noted that, according to most of the running speech data analyzed audibly in this tone study, Tone 2 representing by this Central Thai tone system is often realized as the unstressed Tone 3 of Standard Thai. For example, a low-falling */khaː/* [21] ('galangal root': ข่า) can be realized as a falling or rising-falling */khaːˇ/* ('I': ข้า). Or a low-falling */khai/* [21] (egg: ไข่) can be perceived as a falling or rising-falling */khaiˇ/* ('fever': ไข้).

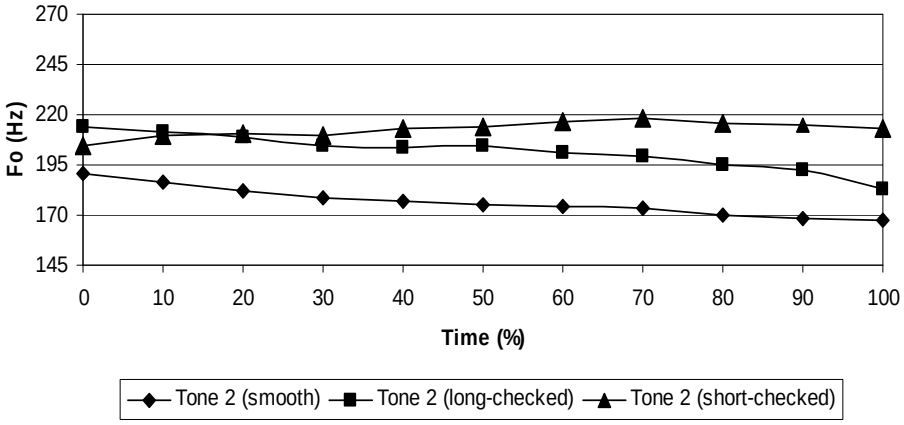


Figure 12: Tone 2 of Central Thai tone system I

e.g.	[kha: 21]	'galangal root'	"ข่า"
	[ʔɔ:k 32]	'to exit'	"ออก"
	[kop 22]	'frog'	"กบ"

4.2.2.3 Tone 3: mid-falling [41]

Tone 3 or mid-falling tone is realized in smooth and long-checked syllables in Gedney's boxes, shown in column B (B4), C (C123), and DL (DL4) respectively. Note that most of tonetic variants found in checked syllables appear to be as static tones, i.e., mid or high level. According to the study, the characteristic realization of the falling tone is closely similar to Standard Thai. The mismatch of Tone 3 and other distinctive tones is rarely found in the study.

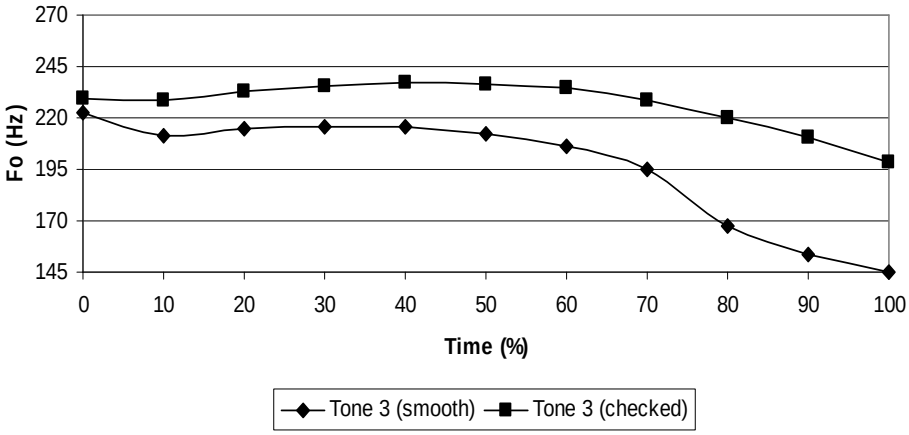


Figure 13: Tone 3 of Central Thai tone system I

e.g.	[phɔː 41]	'father'	"พ่อ"
	[haː 41]	'five'	"ห้า"
	[miːt 42]	'knife'	"มีด"

4.2.2.4 Tone 4: mid-rising tone [35]

Tone 4 or mid-rising tone is realized in two of Gedney's tone boxes, one in smooth and another in short-checked syllables (C4 and DS4). In the checked syllables, most of Tone 4 are realized as static tones, i.e., mid or high level. Tone 4 is realized as the high tone of Standard Thai. Nevertheless, according to the

tone graph displayed below, the upward slope of this Central Thai tone does not reach as high as that of the Standard Thai tone.

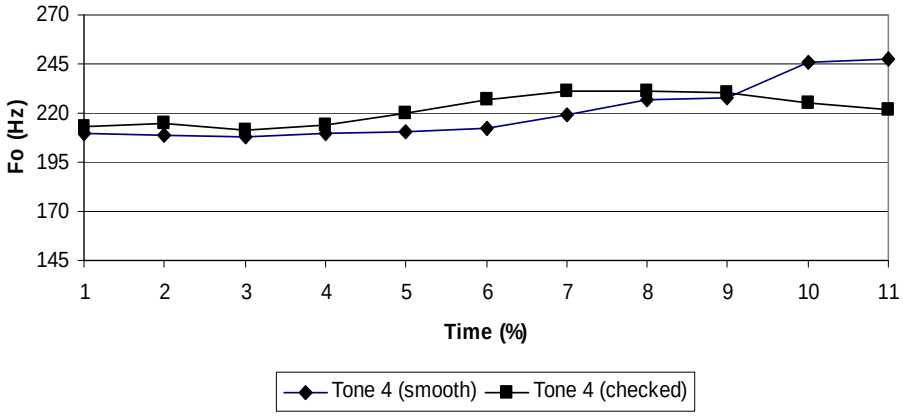


Figure 14: Tone 4 of Central Thai tone system I

e.g.	[naːm 35]	‘water’	“น้ำ”
	[lin 35]	‘tongue’	“ลิ้น”
	[khrok 23]	‘mortar’	“ครก”

4.2.2.5 Tone 5: low-rising tone [24]

Tone 5 or low-rising tone is realized in smooth syllables, shown in column A (A1) of the tone box. It is a rising tone similar to Standard Thai. However, instead of falling and rising abruptly or sharply as it is in Standard Thai, Tone 5 of this Central Thai tone system moves gradually upward and ends at a lower level. Its tone curve, according to the graph given below, appears to increase slightly.

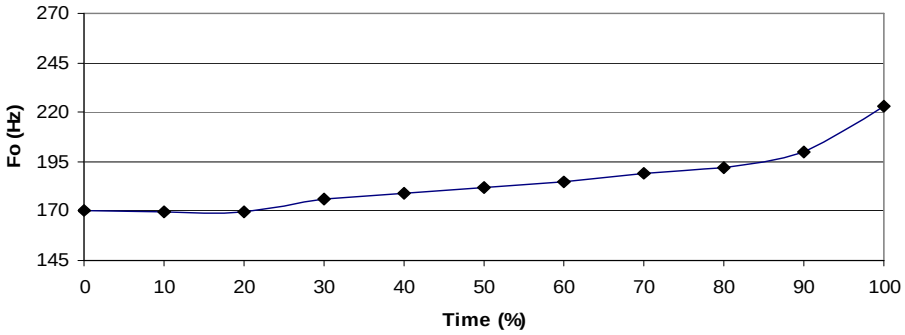
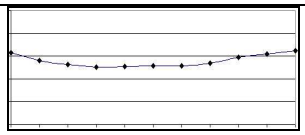
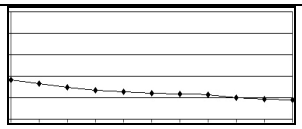
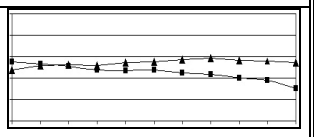
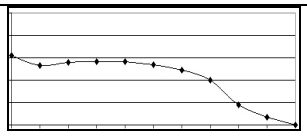
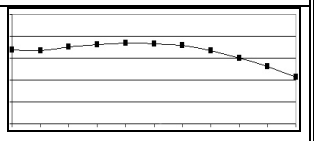
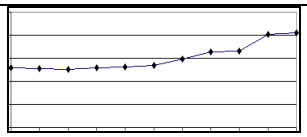
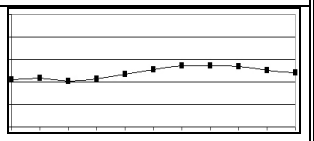
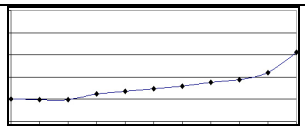


Figure 15: Tone 5 of Central Thai tone system I

e.g.	[kha: 24]	'leg'	"ขา"
	[sɔ:ŋ 24]	'two'	"สอง"
	[hu: 24]	'ear'	"หู"

The variation of the five tone system I is drawn comparably in the following table.

Table 5: Tone characteristics of tone system I

Tones	**Fundamental frequency**	**Smooth syllables**	**Checked syllables**
Tone 1	**Mid level tone** (smooth) 223.6 Hz.-225.7 Hz.		
Tone 2	**Low-falling tone** (smooth) 190.7 Hz.-167.51 Hz. (long checked) 214.01 Hz.-182.6 Hz. (short checked) 214.01 Hz.-182.62 Hz.		
Tone 3	**Mid-falling tone** (smooth) 222.3 Hz.-145.02 Hz. (checked) 229.8 Hz.-237.5 Hz. 198.3 Hz.		
Tone 4	**Mid-rising tone** (smooth) 209.9 Hz.-247.4 Hz. (checked) 212.8 Hz.-221.9 Hz.		
Tone 5	**Low-rising tone** (smooth) 170.4 Hz.-223.3 Hz.		

According to the tone characteristics illustrated above, only one level or static tone: middle pitch, was found in the first tone system (A1-234). On the other hand, the other four lexical tones appear to be contour or dynamic tones: low-falling, mid-falling, mid-rising, and low-rising tones. In addition, the low-falling tone (Tone 2), mid-falling tone (Tone 3), and mid-rising tone (Tone 4) include at least each of two level tone variants, conditioned by different syllable structures, namely smooth and

checked syllables and vowel length. As shown above, the pitch range of Tone 2 and Tone 3 found in checked syllables, appears to be one to two levels higher than that which occurred in smooth syllables at starting and ending points. Moreover, unlike in smooth syllables, the pitch range of Tone 4 found in checked syllables is likely to have a final drop.

The characteristics of Central Thai tone system I are all illustrated comparatively as follows:

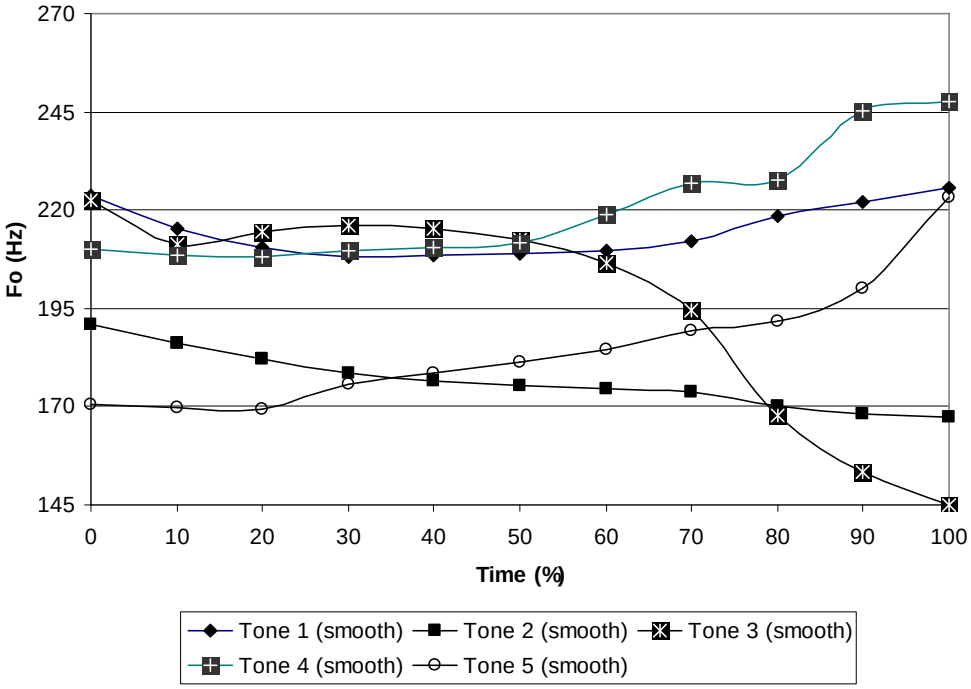


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Figure 16: Central Thai tone characteristics of tone system I

According to the line graph of tones given above, it is clear that the five-distinctive tones of this Central Thai tone system based on spontaneous conversational speech are similar, to a greater or lesser degree, to those based on both the citation forms and the connected speech of Standard Thai. The typical relative heights and directions of the Central Thai low falling (Tone 2), mid rising (Tone 4), and low rising (Tone 5) fall within a similar range and are close in shape found in Standard Thai and most the Central Thai varieties (see 2.3). However, the starting points, endpoints, and

movements of the Central Thai mid level (Tone 1), mid falling (Tone 3), and mid rising (Tone 4) are somewhat at variance in range and directions. That is to say, comparing representative Standard Thai and other Central Thai varieties, the gliding slope of mid level tone, instead of moving directly downwards, raises upwards to an endpoint similar to the low-rising tone (Tone 5). In the mid-falling tone (Tone 3), the starting pitch range appears to be considerably lower than the mid level tone at the middle level, whereas its endpoint moves abruptly downward at the lowest level of the tone pitch ranges.

4.3 Tone system II

Like Tone system I, Tone system II constitutes five distinctive tones in Central Thai. However, as mentioned above, the tone variant (Tone 1/2) of Tone 1 shown in column A4 seems to be a typical feature which might be used in the future for separating one Central Thai subdialect from another. This tone system is closely related to but not the same as the Standard Thai as seen in the previous system, i.e., Tone system I. In addition**,** the phonological characteristics of the tones appear to be different from both Standard Thai and other varieties of Central Thai dialects as well as the other varieties grouped in the same system.

Eight of thirty varieties representing the tone system II include three varieties of Kanchanaburi Thai and Phetchaburi Thai and one variety of Suphanburi Thai and Ratchaburi Thai as located on Map 7. It should be noted, according to the geographical distribution, that the speech areas constituting this variant tone system are all situated in the western part of Central Thailand (see Map 7).

4.3.1 Tone pattern A1-23(-)4

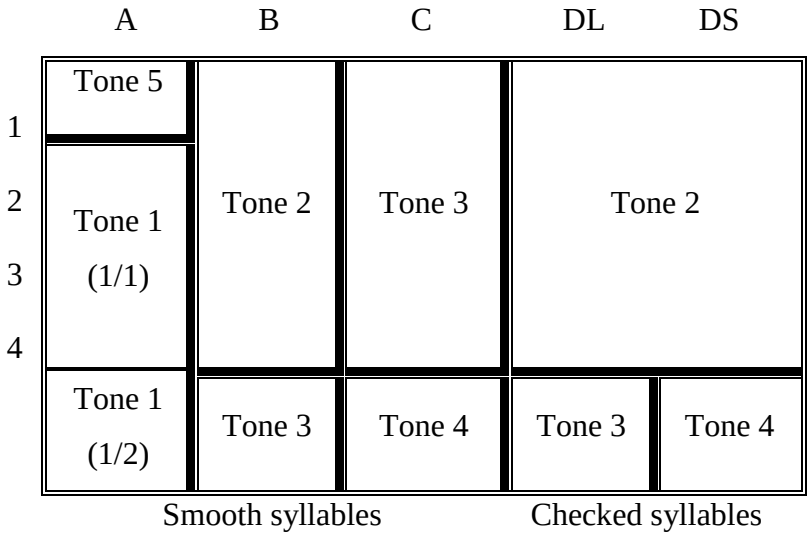


Diagram 11: Tone pattern of system II [A1-23(-)4]

The overall tone pattern, namely tone splits, tone coalescences, and the complementary distributions of tone system II is summarized in Table 5 as follows:

Table 6: Tone splits, tone coalescences, and complementary distributions of the tone system II

Tone split and coalescences	Complementary distribution
A1-23(-)4	B123 = DL, DS123
B123-4	B4, C123 = DL4
C123-4	B = DL
DL123-4	C4 = DS4
DS123-4	

4.3.2 Tone characteristics

The tone system II is composed of five contrastive tones which are realized as follows:

4.3.2.1 Tone 1: 1/1 and 1/2

4.3.2.1.1 Tone 1 (1/1): low-level tone [21]

Tone 1 or low-level tone of Central Thai is, as stated above realized in smooth syllables. The low-level tone of the system II is similar to the mid level tone of Standard Thai and of the Central Thai varieties as previously categorized in Tone system I. According to the study, the low-level tone elicited from 26 % of the speakers shows a similar range as aligned on the following graph.

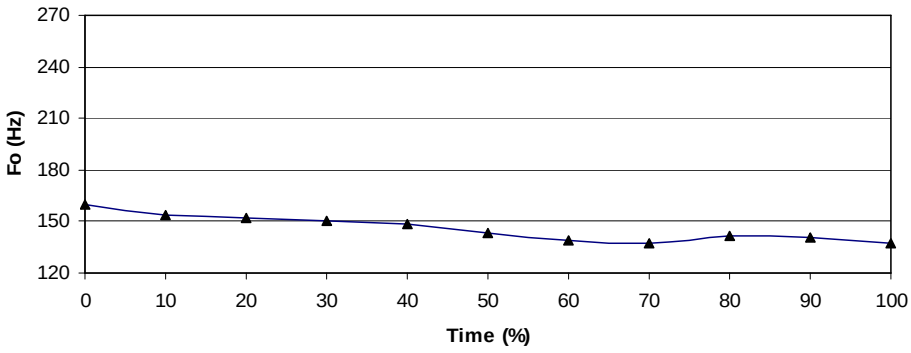


Figure 17: Tone 1/1 of Central Thai tone system II

e.g. [dɛːŋ 21] ‘red’ “แดง”

[daːw 21] ‘star’ “ดาว”

[baːn 21] ‘to bloom’ “บาน”

4.3.2.1.2 Tone 1 (1/2): mid-falling tone [32]

Tone 1/2 is another tone variant of Tone 1. It emerges, according to the tone boxes, from the A4 slot. Some previous tone studies

(see 2.3) analyzed it as the 6th tone in Central Thai. In this study, it is realized as the typical tone variant Tone 1 for lack of contrastive minimal pairs. It is possible that this tone characteristic might yield a lexical Tone 6 in the future. And the three-way split of tones in column A (A1-23-4) due to voicing conditions of the initial consonants would be proposed as the conditioning factor. In this tone system, it is realized as a mid-falling tone, one of the eight varieties, of which its phonetic characteristic appears to be the same as Tone 4 found in column C (C4).

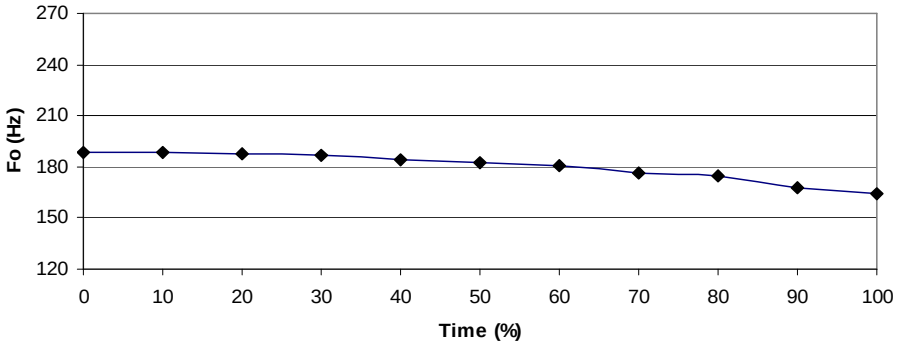


Figure 18: Tone 1/2 of Central Thai tone system II

e.g.	[na: 32]	'paddy field'	"นา"
	[ma: 32]	'to come'	"มา"
	[khwai 32]	'buffalo'	"ควาย"

4.3.2.2 Tone 2: high-rising-falling tone [452]

Tone 2 or the high-rising-falling contour tone is realized in both syllable types: smooth and long-short checked syllables. It is displayed in three columns of the Gedney tone box system: column B (B123), DL (DL123), and DS (DS123), drawn in Gedney's tone box. Tone 2 of the tone system II parallels the low level tone and low-falling tone of Standard Thai and other Central Thai varieties of the tone system I. The high-rising-falling tone realized in smooth syllables has accounted for a great deal of miscommunication even among Central Thai speakers. Note that

Tone 2 represented by this Central Thai tone system can be characterized as the stressed Tone 3 of Standard Thai (see Fig. 13).

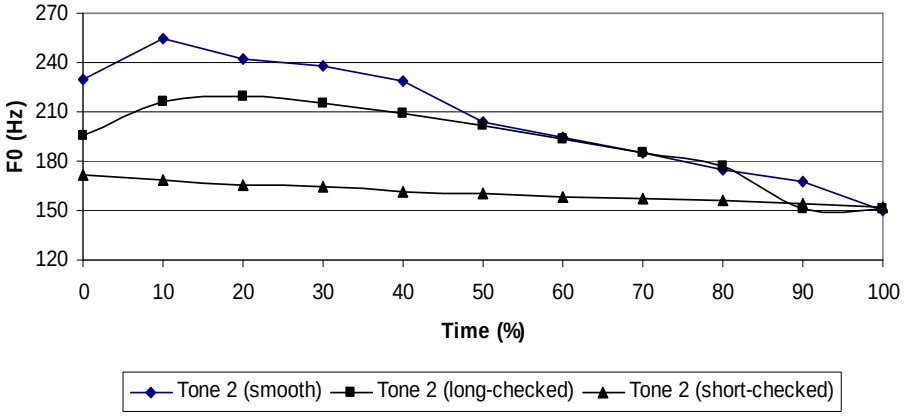


Figure 19: Tone 2 of Central Thai tone system II

e.g.	[khai 452]	‘egg’	“ไข่”
	[kha: 452]	‘galangal root’	“ข่า”
	[dɛ:t 342]	‘sunlight’	“แดด”
	[kop 22]	‘frog’	“กบ”

4.3.2.3 Tone 3: low-rising-falling [242]

Tone 3 or the low-rising-falling tone is realized in smooth and long-checked syllables in Gedney’s tone boxes. It is recorded in column B (B4), C (C123), and DL (DL4) respectively. Note that, in checked syllables, most of Tone 3 appear to be as static tones, i.e., mid or high level. It is clearly, according to the study, that Tone 3 is perceived as the falling tone of Standard Thai. Most of the Central Thai speakers perceive this rising-falling tone similarly.

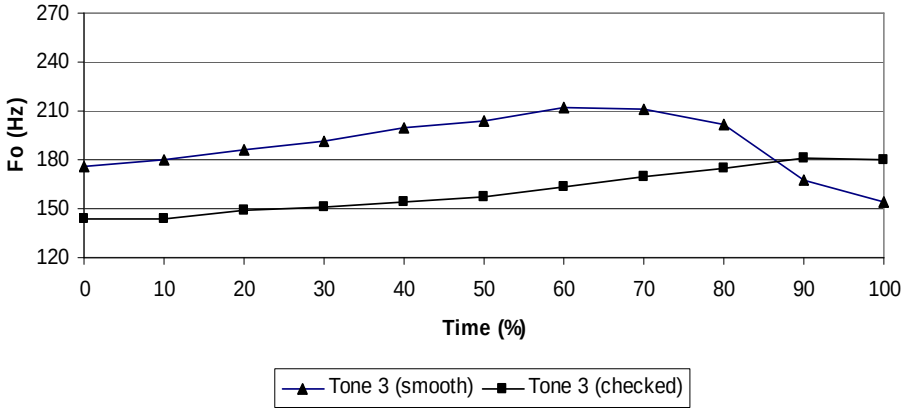


Figure 20: Tone 3 of Central Thai tone system II

e.g.	[phɔː 242]	'father'	"พ่อ"
	[miːt 12]	'knife'	"มีด"
	[mɔːt 12]	'rice bug'	"มอด"

4.3.2.4 Tone 4: mid-rising-falling and mid-falling tone [232 and 31]

Tone 4 is realized as mid-rising-falling tone and mid-falling tone in smooth and short-checked syllables, as shown in column C (C4) and DS (DS4) in Gedney's tone boxes. However, the mid-falling tone is realized only in smooth syllable, as shown in C4. As mentioned above, Tone 4 is perceived as the high tone of Standard Thai. Nevertheless, according to the tone graphs given below, it can be realized at the same time as a mid-falling tone. According to the study, the mid-falling tone representing Tone 4 of the tone system II is spoken in four areas: Tha Muang of Kanchanaburi, Damnoen Saduak of Ratchaburi, Tha Yang of Phetchaburi, and Bangsaphan of Prachuap Khiri Khan. This tone characteristic evidence supports Brown's (1985) High-Mid-Low terminology. It is noticeable that the pitch range of mid-falling tone of Tone 4 is plotted at the same level as Tone 1/2, presented later.

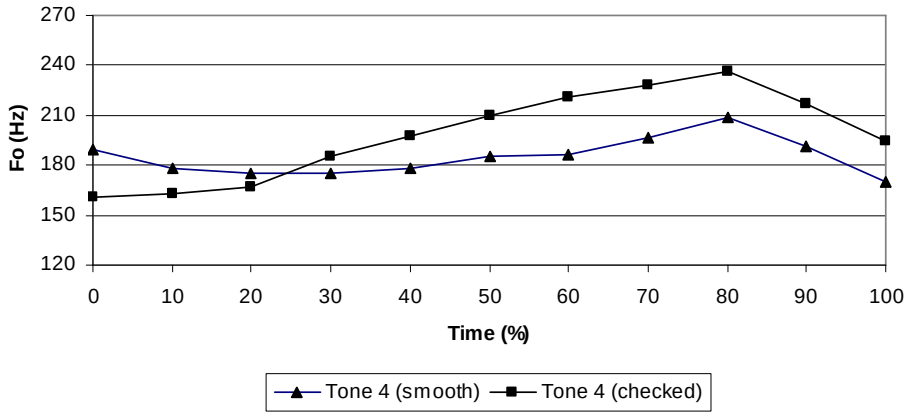


Figure 21: Tone 4/1 of Central Thai tone system II

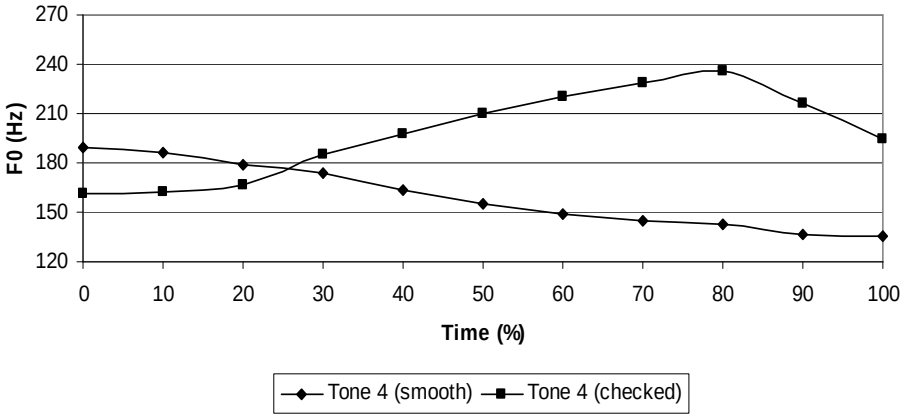


Figure 22: Tone 4/2 of Central Thai tone system II

e.g.	[ma:j 232]	‘wood’	“ไม้”
	[na: 31]	‘aunt’	“น้า”
	[mot 243]	‘ant’	“มด”
	[nok 243]	‘bird’	“นก”

4.3.2.5 Tone 5: low-rising-falling tone [131]

Tone 5 or the low-rising-falling tone is realized in smooth syllables as shown in column A (A1). It is similar to the low-rising tone of Tone system I Tone 5, which rises and falls gradually and slightly also in this system.

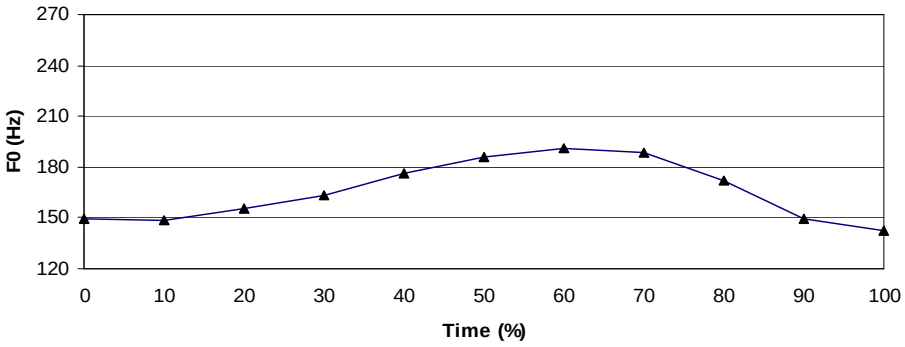
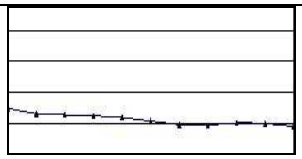
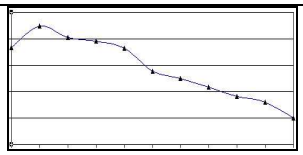
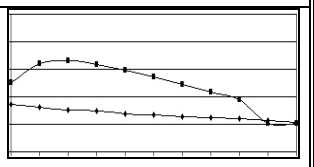
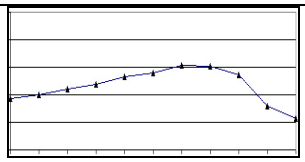
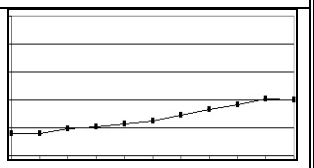
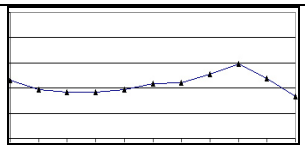
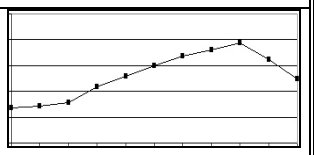
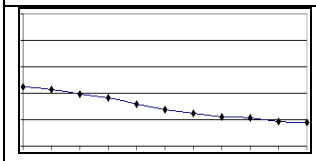
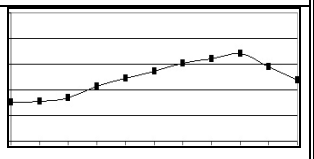
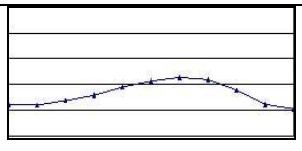


Figure 23: Tone 5 of Central Thai tone system II

e.g.	[laːn 131]	‘niece/nephew’	“หลาน”
	[sɔːn 131]	‘to teach’	“สอน”
	[sɔːŋ 131]	‘two’	“สอง”

The tone characteristics of the five tones of system II is drawn for comparison in the following table.

Table 7: Tone characteristics of tone system II

Tones	**Fundamental frequency**	**Smooth syllables**	**Checked syllables**
Tone 1	**Low-level tone (1/1)** (smooth) 160.1 Hz.-137.5 Hz.		
	Mid-falling tone (1/2) (smooth) 189.5 Hz.-135.9 Hz.		
Tone 2	**High-rising-falling tone** (smooth) 230.1 Hz.-254.6 Hz.-149.9 Hz. (long checked) 195.5 Hz.-219.6 Hz.-151.1 Hz. (short checked) 151.8 Hz.-171.6 Hz.		
Tone 3	**Low-rising-falling tone [232]** (smooth) 176.2 Hz.-212.2 Hz.-153.8 Hz. (checked) 143.7 Hz.-181.4 Hz.-179.5 Hz.		
Tone 4	**Mid-rising-falling tone (4/1)** (smooth) 189.1 Hz.-208.6 Hz.-169.5 Hz. (checked) 161.1 Hz.-236.1 Hz.-194.7 Hz.		
	Mid-falling tone (4/2) (smooth) (checked) -189.5 Hz.-135.9 Hz. -161 Hz.-228.6 Hz.-194.7 Hz.		
Tone 5	**Low-rising-falling tone [131]** (smooth) 149.2 Hz.-191.5 Hz.-142.2 Hz.		

According to the tone characteristics illustrated in Table 7, as in the first tone system, only one level or static tone--a low-level pitch—was found in the last tone system [A1-23(-)4]. The other four lexical tones and tone variants in Tone system II appear to be contour or dynamic tones: mid-falling, high-falling, low-rising-falling, mid-rising-falling, and mid-falling tones. The mid-falling tone variant is realized in each of Tone 1 and Tone 4. In addition, the low-rising-falling tones [242 and 131] are shown in Tone 3 and Tone 5 respectively. It should be noted that both the different shapes of the tones and the range of tone heights play a crucial role in tone discrimination. In Tone 4, the different characteristic form between tone 4/1 and 4/2 shows clearly that tones realized in column C4 consist of two tonetic rising and falling variants. In addition, in Tone 1, two similar tone variants can be realized separately owing to the different pitch ranges pinpointed at the starting and ending part of the line graphs. In the same way, in Tone 3 and Tone 5, the slope of low-rising-falling tones appears to be nearly the same. However, the different levels-- middle and low pitch range shown on the onset of line graphs-- can be used for discriminating lexical tones.

According to the two variants found in Tone 4, as shown in column C4, it is possible to assume that two main accents can be established. Even though Tone 4/1 has been commonly used in widespread areas in Central Thailand, the consistent occurrence of Tone 4/2 found at the same time in the western part of the central plains of Thailand seems to represent another noteworthy accent in evidence in Central Thai. In reflecting on Brown’s (1985) High-Mid-Low terminology, this tone phenomenon can probably be used as a criteria to classify Central Thai varieties into accent groups as well as to elucidate the relationship among Central Thai speakers themselves or between Central Thai and Southern Thai speech. It is possible that Tone 4/2 represents a transitional zone between Central Thai and Southern Thai.

The characteristics of Central Thai tone system II are all illustrated comparatively as follows:

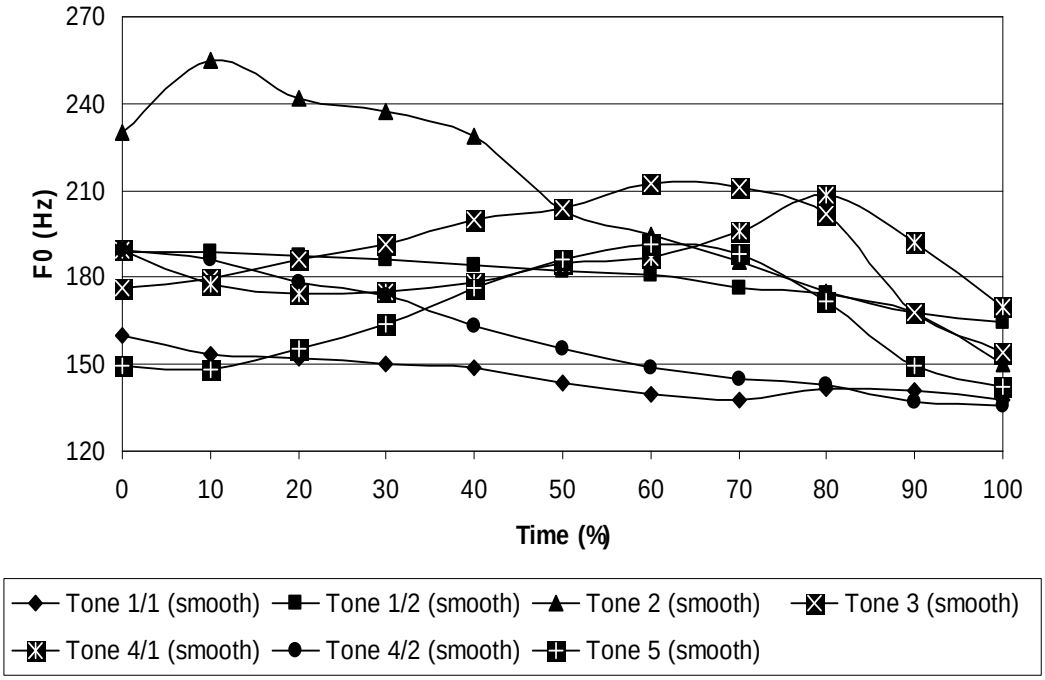


Figure 24: Central Thai tone characteristics of tone system II

According to the line graph given above, the five-distinctive tones of this Central Thai tone system based on spontaneous conversational speech are similar, to a lesser degree, to those based on the citation form and connected speech of Standard Thai tone system. It seems very likely that this Central Thai tone system is mainly composed of three distinctive tone groups, namely low level, falling, and rising-falling tones. It is clear that both of relative heights and directions of tones in Central Thai tone system II are at the mid-low level pitch range and drift downward to lower endpoints. Only in Tone 2, the starting point of tone appears at a very high pitch range before falling sharply downward.

It should be noted, according to the whole audible and instrumental analysis carried out in this tone study, that tone variations realized in Tone 2 and Tone 5 play the key role in identifying different accents among Central Thai varieties. These tone variations can be used satisfactorily for explaining how Central Thai varieties differ significantly from one another. As regards the characteristic of different tone

heights and shapes, three accent variations in Tone 2 and four variations in Tone 5 were realized in the study as follows:

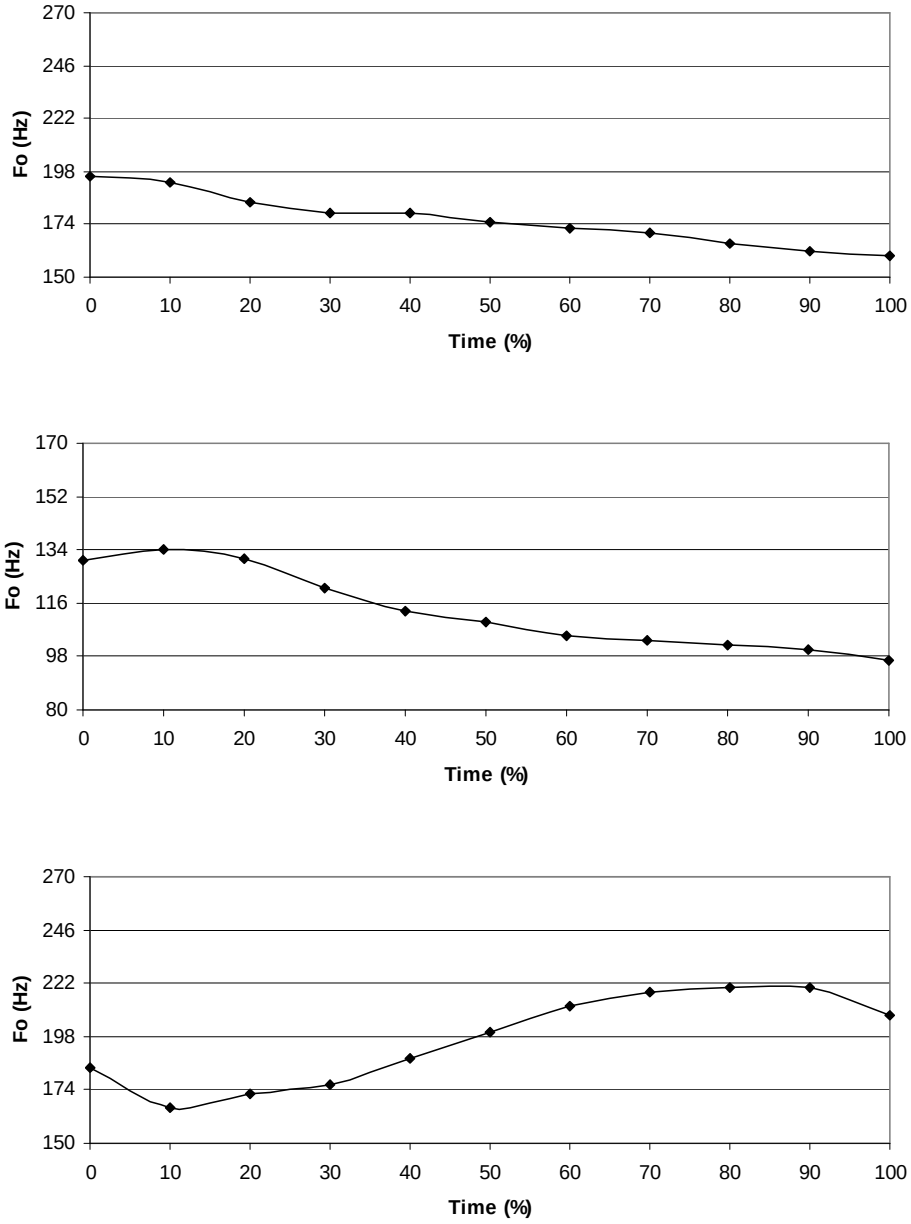


Figure 25: Central Thai tonetic variants of Tone 2

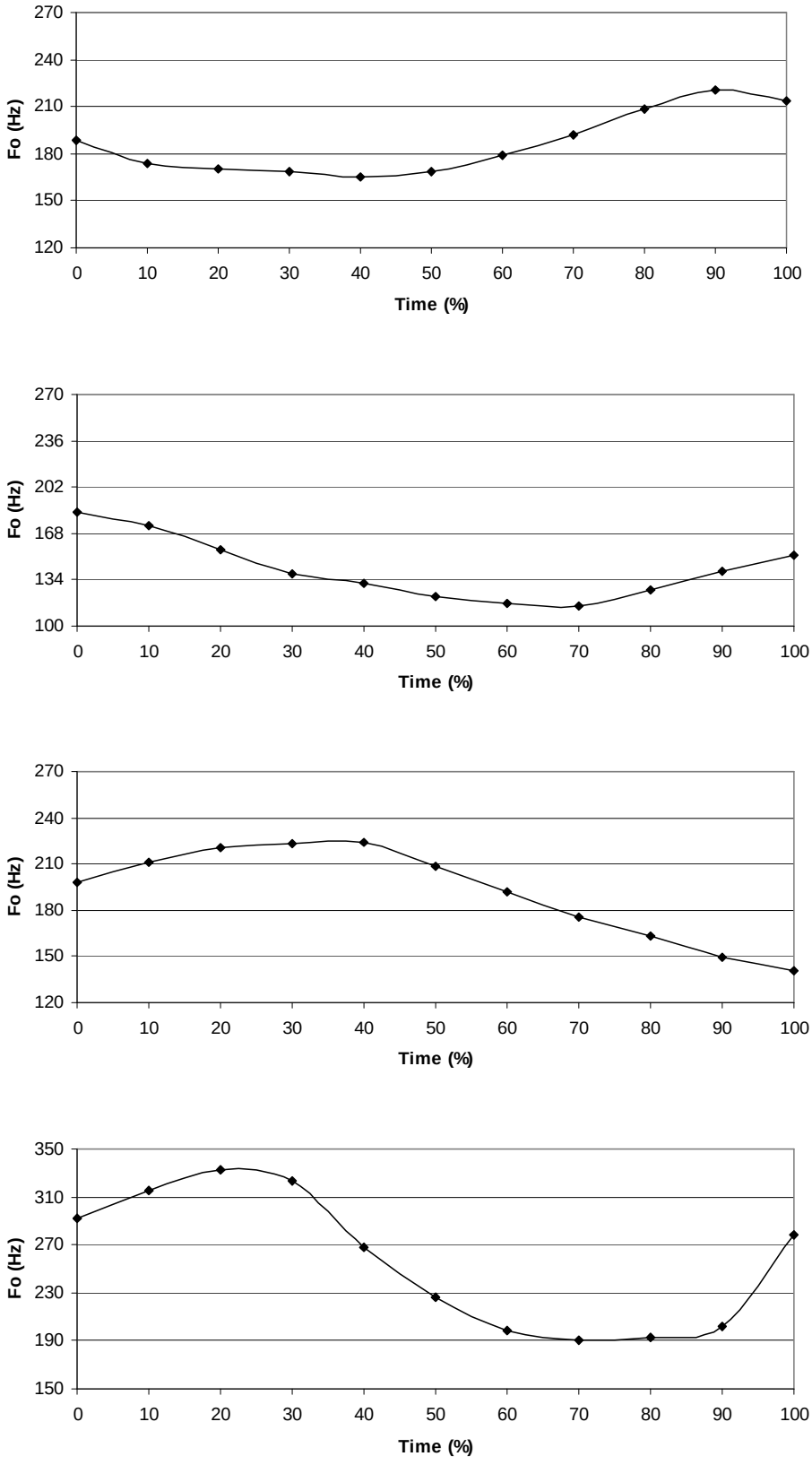


Figure 26: Central Thai tonetic variants of Tone 5

According to the tone graphs illustrated above, the primary tone variants of Tone 2, which appear in column B123 in smooth syllables include low-falling tone [21], mid(-rising)-falling tone [31], and low-falling rising tone [13]. The first variant seems to be closely similar to the low tone of Standard Thai. On the contrary, another two variants appear to have both rising and falling contours in each phonological unit. The most tone variant used widespread in Central Thailand is mid-falling tone [31], of which the line graph raises a little systematically at the beginning before moving downward steadily to the end. In contrast, the tone variant [13] starts at the lower level and falls immediately at the beginning before putting up to the middle level and dropping again at the end.

In Tone 5, four different-scaled tone variants found in column A1 consist of rising tones [24] and [312/413], falling tone [42/131], and falling-rising tone [(3)413/ (4)524]. The first tone variant appears to be similar to that of Standard Thai, of which pitch range starts at the low level, move upward, and drop a little at the end. The second rising tone [312/413] has the same average pitch range as that of the first one, but it moves downward and ends at the lower range on the line graph. As appeared in the second variant of Tone 2, the contours shown in the last two variants of Tone 5 move upward in the first part/mora of the unit. However, in the second part/mora of the tone graph, the falling tone [42/131] falls steadily to the lowest scale, whereas the rising-falling tone [413/524] moves downward and rises again to the high end. Regarding the last tone variant, there seems to have two pitch units, i.e., falling and rising contours in one phonological tone units.

4.4 Conclusion

Tone patterns and characteristics are needed to classify tone varieties into dialects and/or subdialetcs. The tone varieties of Central Thai can now be classified into two subdialects based on the patterns of tone splits, coalescence, and complementary distribution proceeded by the tone box method proposed by Gedney (1972).

Owing to the practicality of the tone box system for determining lexical tones, the contrastive two-way and the likely three-way splits of tones shown in

column A in two sub-dialects (I and II) are exposed, namely A1-234 and A1-23(-)4. In a study of this kind, two systems of Central Thai tones, namely the tone system A1-234 (I) and the tone system A1-23(-)4 (II), have been established.

It should be stressed that to study the tone varieties at a subdialect level, especially those that occur in spontaneous conversational speech, the phonetic characteristics of tones must be brought into account. According to the tone characteristics of the system I and II presented above, it is most certain that the differences in the Central Thai varieties can be explained systematically by the consistent variation in pitch heights on the one hand and the shapes of falling and/or rising tones on the other. In this respect, Central Thai varieties can be classified or elucidated in the same time at an accent level.

CHAPTER V
CLASSIFICATION OF CENTRAL THAI VARIETIES AND TONE GEOGRAPHY OF THE PROVINCES IN CENTRAL THAILAND

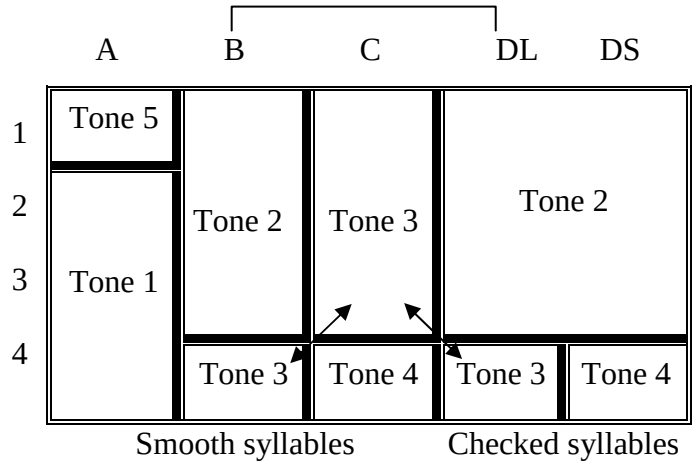
This chapter presents the tone comparisons and classifications of Central Thai varieties with respect to the tone patterns and characteristics illustrated in the previous chapter. Linguistic maps showing tone distribution of Central Thai varieties are similarly proposed.

5.1 Tone comparison of Central Thai varieties

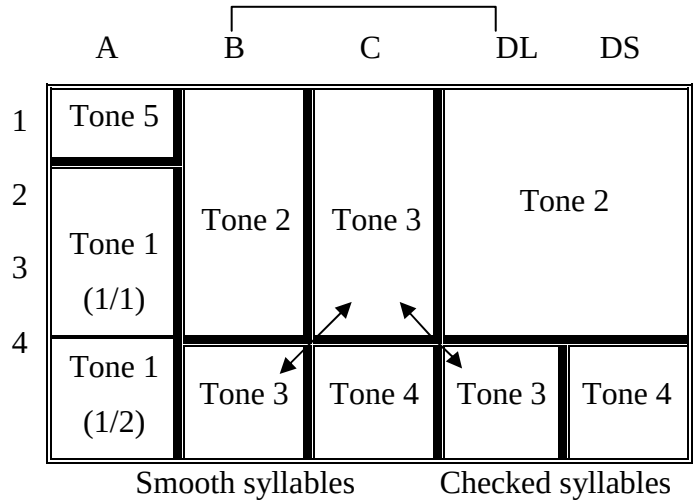
Based on variations of tone patterns and characteristics, the tone comparisons of Central Thai varieties are described below.

5.1.1 Comparison of tone patterns

The two distinctive patterns or sub-dialects found in the study are compared with regard to tone splits, tone coalescences, and complementary distributions of Central Thai tones as shown in Figure 27.



Tone pattern I (A1-234)



Tone pattern II [A1-23(-)4]

Figure 27: Tone patterns of Central Thai varieties

The patterns of the Central Thai tones are categorized into two patterns or groups owing to the typical tone splits shown in column A, i.e., A1-234 and A1-23 (-)4. There is a similar two-way distinctive tone conditioned by the aspiration of the initials in column A (A1-234) and that conditioned by the voicing nature of the initials in column B, C, DL, and DS (B-C-DL-DS123-4). Both patterns include five contrastive tones. It is clear that, the former pattern has merged tone A23 with tone A4

as the pattern of Standard Thai. However, it is most likely that the latter pattern has consistently split A23 (Tone 1/1) from A4 (Tone 1/2). Due to the lack of contrastive minimal pairs, both tones realized in column A23 and A4 are, therefore, tonetic variants of Tone 1 representing mid-level tone in Standard Thai.

All tones: Tone 2, Tone 3, and Tone 4 found in checked syllables are defined as allotones of tonemes in smooth syllables. That is to say, tones in smooth syllables are in complementary distribution to those in checked syllables with regard to vowel length and the distinguishing nature of final consonants.

The tone split, coalescence, and complementary distribution of the two patterns in Central Thai are illustrated comparatively as follows:

Table 8: Comparison of the tone patterns in Central Thai

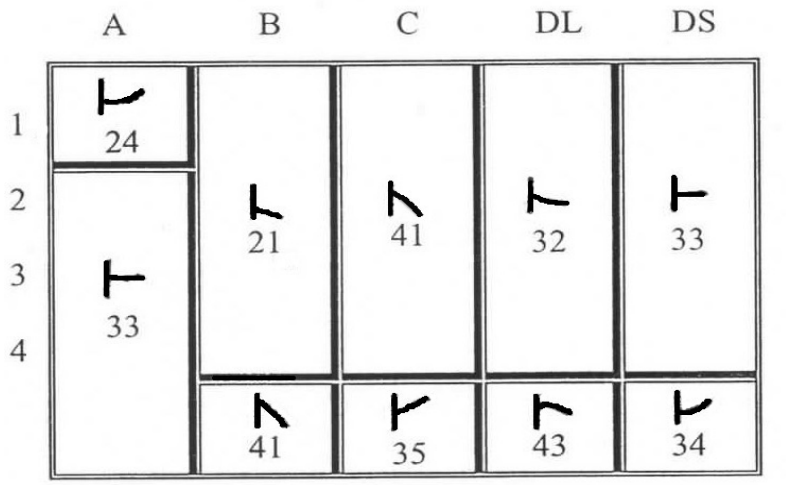
Tone splits and coalescences	
Tone pattern I	Tone pattern II
A1-234	**A1-23(-)4**
B123-4	B123-4
C123-4	C123-4
DL123-4	DL123-4
DS123-4	DS123-4

Complementary distributions	
Tone pattern I	Tone pattern II
B123 = DL, DS123	B123 = DL, DS123
B4, C123 = DL4	B4, C123 = DL4
B = DL	B = DL
C4 = DS4	C4 = DS4

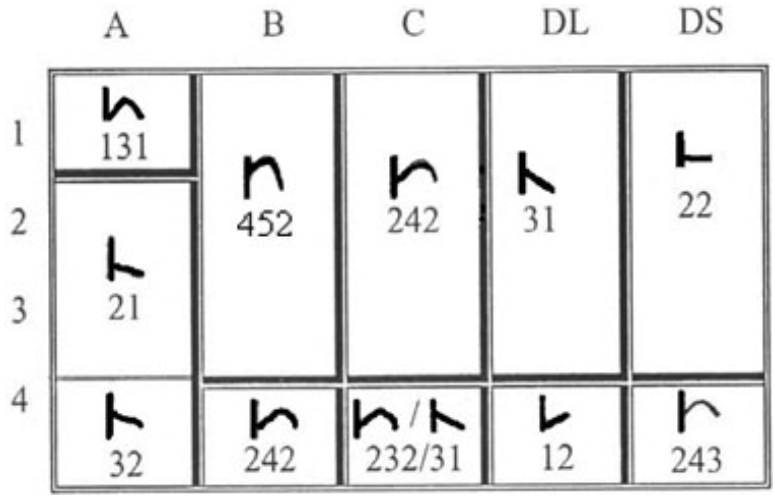
According to the comparison of tone splits and coalescences shown above, the difference of the tone pattern shown in column A is used primarily for classifying Central Thai varieties into subdialects. Thus, it is claimed in this tone study that the Central Thai varieties are composed of two main subdialects, i.e., subdialect A1-234 and subdialect A1-23(-)4, as presented later in Maps 6 and 7 respectively. Likewise, the complementary distributions shown in column B, C, DL, and DS of both Central Thai tone patterns appear to be exactly the same.

5.1.2 Comparison of tone characteristics

The number of phonetic characteristics, namely tone heights and shapes realized in both Central Thai tone patterns A1-234 and A1-23(-)4, appears to vary as illustrated in the following diagrams.



Tone characteristic I



Tone characteristic II

Figure 28: Tone characteristics of Central Thai varieties

According to the tone characteristics drawn above, the mid-level tone is not realized in Tone system A1-23(-)4. The tone characteristic of system I is, to a greater or lesser degree, similar to those of Standard Thai. On the contrary, tones realized in the tone system A1-23(-)4 appear to have multiple variations. It should be noted that the different tone range at the starting and peak area and direction of the rising and falling of tones realized from the tone system A1-23(-)4 can be used as a criteria to classify the Central Thai varieties into the sub-dialectal groups at the phonetic level.

The tone heights and shapes of tone pattern A1-234 and A1-23(-)4 are laid out comparably with regard to tone categories as follows:

Table 9: Comparison of the tone characteristics in Central Thai varieties

Tone pattern / Tone categories	I: A1-234	II: A1-23(-)4
A1	24	131
A234	33	
A23		21
A4		32
B123	21	452
B4	41	242
C123	41	242
C4	35	232/31
DL123	32	31
DL4	43	12
DS123	33	22
DS4	34	243

According to tone categories and patterns, Table 9 shows distinguishing characteristics of Tone patterns A1-234 and A1-23(-)4, which can be used for defining Central Thai accents. As shown in the table given above, the phonetic differences among Central Thai varieties found in Tone system I and II lie mostly in Tone category A and C. Most of the tonetic variants in Tone pattern A1-234 are closely similar to those of Standard Thai, whereas a great number of the tonetic variants in Tone pattern A1-23(-)4 appear to be significantly unique. It is most likely that each tone realized in Tone pattern A1-23(-)4 starts at a low range and has a final drop. It is noticeable, at the same time, that two tone variants [21 and 32], which are both found

in column A23 and A4 respectively have consistently different levels in tone ranges. That is to say, most of these tone variants start and fall systematically in the same direction, but in a different scale or range. Moreover, instead of representing falling-rising tones as that in Standard Thai or in Tone pattern A1-234, Tone A1 realized in Tone pattern A1-23(-)4 constitutes, on the contrary, rising-falling tones [131]. In column B, tone variants realized in pattern A1-234 appear to be falling, while those in pattern A1-23(-)4 become rising-falling. As for Tone category C, again, the tonetic variants belonging to Tone system A1-234 are most likely to be the same as those of Standard Thai, i.e., high-falling tone [41] and mid-rising [35] in C123 and C4 respectively. Nevertheless, in Tone system A1-23(-)4, all tonetic variants realized in this tone category range lower at the beginning and rise a little before moving downward at the end.

In addition, it is noticeable that, in smooth syllables, most of the tones realized in Tone system A1-234 range at least one scale higher than those in Tone system A1-23(-)4.

5.2 Classification of Central Thai varieties

The outcomes of both auditory and instrumental studies of tones, which were carried out in this tone geography, were used as the determinants of Central Thai tone classification. Based on the pattern of tone splits, coalescences, and complementary distributions in column A, the Central Thai varieties can be classified into two groups as follows:

5.2.1 Classification of Central Thai varieties according to the pattern of tones

The local varieties of Central Thai are classified into the following two groups with regard to the tone patterns found in this study.

5.2.1.1 Central Thai sub-dialect group I: Tone system A1-234

The Central Thai sub-dialect group I has two-way split of tones in column A. Tone A1 splits with Tone A234, conditioned by the nature of the

aspiration of initial consonants. As a result, two contrastive tones are found in this column, i.e., low-rising contour in row A1 and mid-level tone in row A234. The sub-dialect group I of Central Thai is spoken in most of the study areas of Central Thailand, namely Sapphaya, Sankhaburi, and Hankha, Chainat province; In Buri, Bang Rachan, and Tha Chang, Sing Buri province; Sawaeng Ha, Wiset Chaichan, and Muang, Ang Thong province; Ban Phraek, Wang Noi, and Bang Sai, Phra Nakhon Si Ayutthaya province; Sam Chuk and Song Phi Nong, Suphanburi province; Chom Bung and Pak Tho, Ratchaburi province; Bang Khon Thi, Amphawa, and Muang, Samut Songkhram province; Pranburi and Muang, Prachuap Khiri Khan province.

5.2.1.2 Central Thai sub-dialect group II: Tone system A1-23 (-)4

The Central Thai sub-dialect group II has two-way or likely three-way splits of tones in column A. Tone A1 splits with Tone A234, conditioned by the nature of aspiration of initial consonants. At the same time, in this tone study, Tone A23 has most likely separated from Tone A4, conditioned by the voicing nature of initial consonants. As a result, two distinctive tones together with one tone variant are found in this column, i.e., low-rising falling in row A1, low falling in row A234, and mid-falling tone variant in row A4. The sub-dialect group II of Central Thai varieties is spoken in some of the study areas of Central Thailand, namely Dan Chang, Suphanburi province; Bo Ploi, Tha Muang, and Tha Maka, Kanchanaburi province; Damnoen Saduak, Ratchaburi province; Ban Laem, Tha Yang, and Cha-am, Phetchaburi province.

Figure 29 shows the study locations in Central Thailand, which are classified into two groups according to the Central Thai tone patterns found in this conversational speech study.

Classification of Central Thai varieties

Subdialect group I

[Tone pattern A1-234]

1) Sapphaya (Chainat)
2) Sankhaburi (Chainat)
3) Hankha (Chainat)
4) In Buri (Sing Buri)
5) Bang Rachan (Sing Buri)
6) Tha Chang (Sing Buri)
7) Sawaeng Ha (Ang Thong)
8) Wiset Chaichan (Ang Thong)
9) Muang (Ang Thong)
10) Ban Phraek (Ayutthaya)
11) Wang Noi (Ayutthaya)
12) Bang Sai (Ayutthaya)
13) Sam Chuk (Suphanburi)
14) Song Phi Nong (Suphanburi)
15) Chom Bung (Ratchaburi)
16) Pak Tho (Ratchaburi)
17) Bang Khon Thi (Samut Songkhram)
18) Amphawa (Samut Songkhram)
19) Muang (Samut Songkhram)
20) Pranburi (Prachuap Khiri Khan)
21) Muang (Prachuap Khiri Khan)

Subdialect group II

[Tone pattern A1-23(-)4]

1) Dan Chang (Suphanburi)
2) Bo Ploi (Kanchanaburi)
3) Tha Muang (Kanchanaburi)
4) Tha Maka (Kanchanaburi)
5) Damnoen Saduak (Ratchaburi)
6) Ban Laem (Phetchaburi)
7) Tha Yang (Phetchaburi)
8) Cha-am (Phetchaburi)

Figure 29: Classification of Central Thai varieties according to the pattern of tones

5.2.2 Classification of Central Thai varieties according to the characteristic of tones

The characteristic of tones analyzed instrumentally in this spontaneous speech study has yielded interesting results on tone variation in Central Thai. The noteworthy tone variants found in the study help a great deal to elucidate tonal phenomena and directions of Central Thai tones in greater details. Based on these tone variants, Central Thai varieties can be classified and described at the accent level.

The local varieties of Central Thai can be classified into the following accent groups according to the phonetic variants of tones displayed in Chapter IV.

The local varieties of Central Thai are classified into the following two groups with regard to the distinguishing characteristics of tone realized in column C in Tone pattern A1-23(-)4.

5.2.2.1 Central Thai accent groups: Tone 4 (C4)

Accent group I (C4: 232)

One of Central Thai tone variants realized in C4 preceded by voiced initials commonly appears to be low-rising falling contour in this accent group. This Central Thai accent is spoken in Dan Chang, Suphanburi province; Bo Ploi and Tha Maka, Kanchanaburi province; Ban Laem and Cha-am, Phetchaburi province.

Accent group II (C4: 31)

Another Central Thai tone variant realized in C4 preceded by voiced initials appear consistently to be mid-falling contour in the accent group II. Note that a V-L correlation (Brown 1985) related to Southern Thai dialect occurs in this accent group. The accent group II is spoken in Tha Muang, Kanchanaburi province; Damnoen Saduak, Ratchaburi province; and Tha Yang, Phetchaburi province.

Figure 30 shows the study locations in Central Thailand, which are classified into two accent groups according to the Central Thai tone characteristics realized in Tone 4.

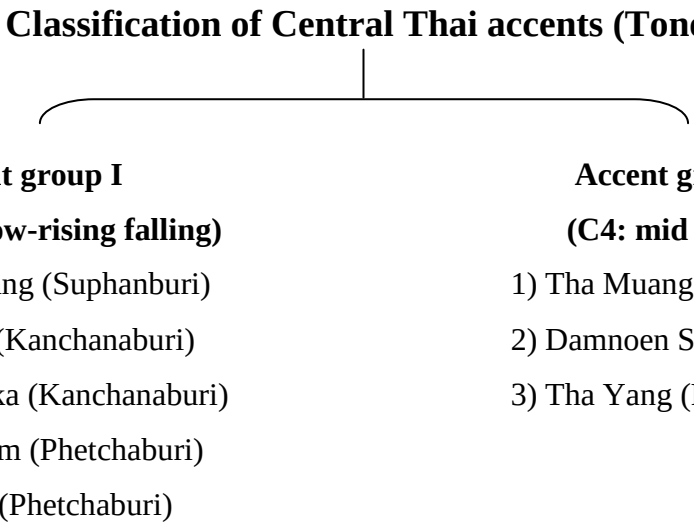


Figure 30: Classification of Central Thai accents according to the distinguishing characteristics of Tone 4

5.2.2.2 Central Thai accent groups: Tone 2 (B123)

The local varieties of Central Thai are classified into three accent groups according to the different tonetic variants of tone realized in column B (B123: Tone 2) found similarly in Tone pattern A1-234 and Tone pattern A1-23(-)4 as follows:

Accent group I (B123: 21)

The first variant of Central Thai Tone 2 is realized as a low-falling tone [21], conditioned by voiceless initials in smooth syllables. Tone 21 found in this continuous speech study is similar to that in Standard Thai. This Central Thai accent is spoken in five study areas of Central Thai, i.e., Ban Phraek, Wang Noi, and Bang Sai, Phra Nakhon Si Ayutthaya province and Pranburi and Muang, Prachuap Khiri Khan province.

Accent group II (B123: 31)

The second variant of Central Thai Tone 2 is realized as a mid-falling tone [31], conditioned by voiceless initials in smooth syllables. This Central Thai accent is used in most of the local locations investigated in the study, i.e.,

Sapphaya, Sankhaburi, and Hankha, Chainat province; In Buri, Bang Rachan, and Tha Chang, Sing Buri province; Sawaeng Ha, Wiset Chaichan, and Muang, Ang Thong province; Dan Chang, Sam Chuk, and Song Phi Nong, Suphanburi province; Bo Ploi, Tha Muang, and Tha Maka, Kanchanaburi province; Chom Bung, Damnoen Saduak, and Pak Tho, Ratchaburi province; Bang Khon Thi, Amphawa, and Muang, Samut Songkhram province; and Tha Yang and Cha-am, Phetchaburi province. Note that this accent in Tone 2 yields miscommunication among Central Thai speakers for some time. For example, one time when the interviewers asked Tha Maka Thai speakers in Hua Ro village about their home address: *thi ni "moo* (Tone 2)*" a-rai kha* [ที่นี่ "หมู่" อะไรคะ] *'what is the ordinal number of your village?'*, They said *thi ni "moo* (Tone 5)*" mai dai liang rok* [ที่นี่ "หมู" ไม่ได้เลี้ยงหรอก] *'I do not have any " pigs" here.'* It is possible to say that the speakers perceive Tone 2 as Tone 5 occasionally.

Accent group III (B123: 13)

The last variant of Central Thai Tone 2 is realized as a low-rising tone [(2)13], conditioned by voiceless initials on smooth syllables. This Central Thai accent is used in only one area in Phetchaburi province, namely Ban Laem. Note that this low-rising contour is spoken among elder informants, rarely found in mid and young generations. It is likely that the later generations apply those previous accents in Tone 2 given in Accent group I and II.

Figure 31 illustrates the classification of Central Thai accents based on the tonetic variants realized in column B (B123) in Tone 2.

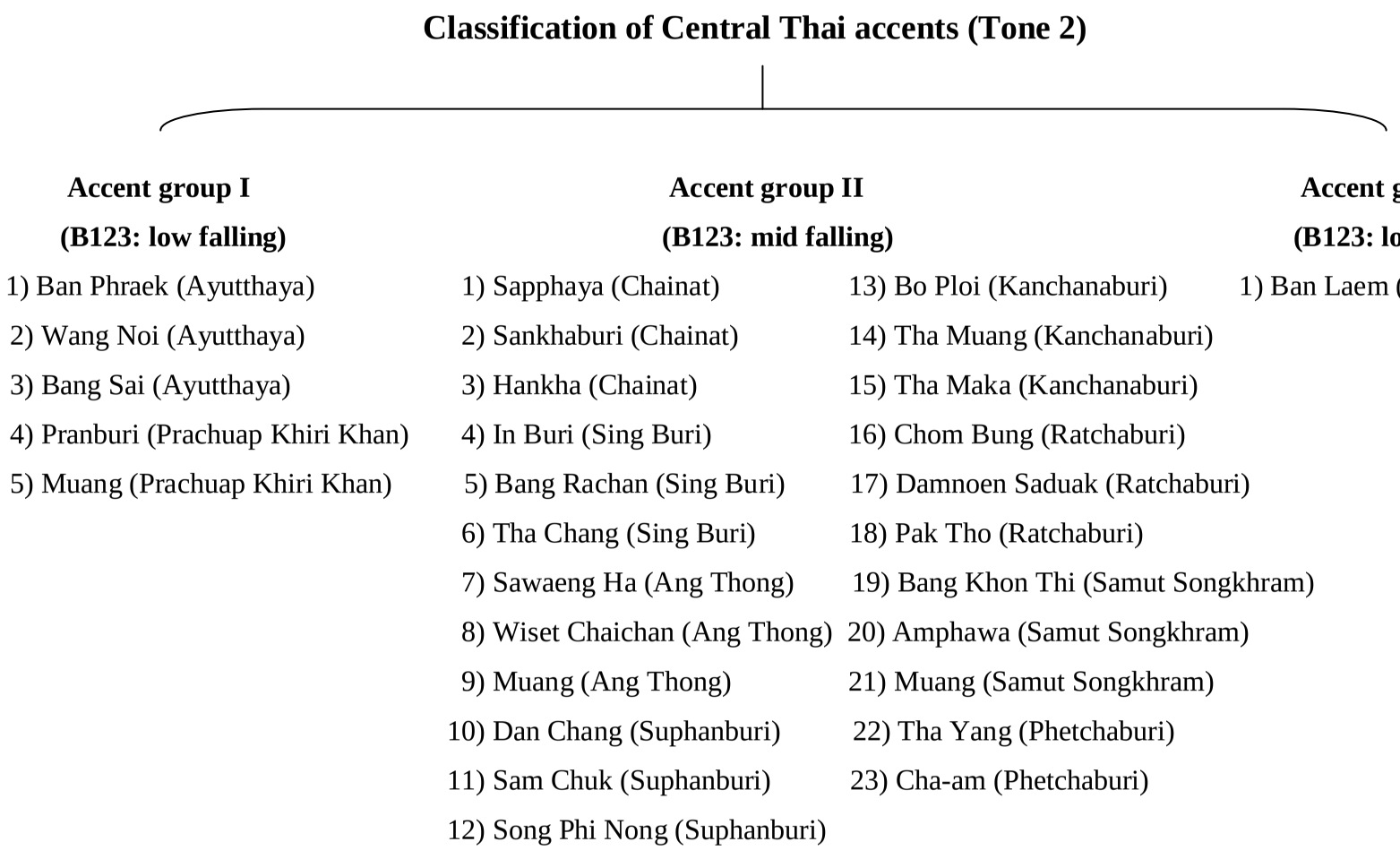


Figure 31: Classification of Central Thai accents according to the distinguishing characteristics of Tone 2

5.2.2.3 Central Thai accent groups: Tone 5 (A1)

The local varieties of Central Thai are classified into four accent groups according to the distinguishing characteristics of tone realized in column A (A1: Tone 5) found similarly in Tone pattern A1-234 and Tone pattern A1-23(-)4 as follows:

Accent group I (A1: 24)

The accent I realized in Tone 5 is rising tone [24] as shown similarly in Standard Thai. According to the tone study, it is spoken in all three areas in Phra Nakhon Si Ayutthaya province, namely Ban Phraek, Wang Noi, and Bang Sai.

Accent group II (A1: 312/412)

The accent group II shown in Tone 5 includes falling-rising tone [312/413]. According to the study, this local accent is spoken in most of the areas of Central Thailand, namely Sapphaya, Sankhaburi, and Hankha, Chainat province; In Buri and Tha Chang, Sing Buri province; Wiset Chaichan and Muang, Ang Thong province; Dan Chang and Song Phi Nong, Suphanburi province; Chom Bung and Pak Tho, Ratchaburi province; Bang Khon Thi, Amphawa, and Muang, Samut Songkhram province; Ban Laem, Tha Yang, and Cha-am, Phetchaburi province; and Pranburi and Muang, Prachuap Khiri Khan province.

Accent group III (A1: 42/131)

The tone variant realized in this accent group is falling or rising-falling contour [42/131]. This accent representing Tone 5 is spoken in Bang Rachan, Sing Buri province; Sawaeng Ha, Ang Thong province; Sam Chuk, Suphanburi province; and Damnoen Saduak, Ratchaburi province.

Accent group IV [A1: (3)413 / (4)524]

The tone variant realized in Accent group IV is rising-falling-rising contour [413/524]. It is found, in this tone study, only in Kanchanaburi province, i.e., Bo Ploi, Tha Muang, and Tha Maka.

Figure 32 presents the classification of Central Thai accents based on the tone variants realized in column A (A1) in Tone 5.

Figure 32: Classification of Central Thai accents according to the distinguishing characteristics of Tone 5

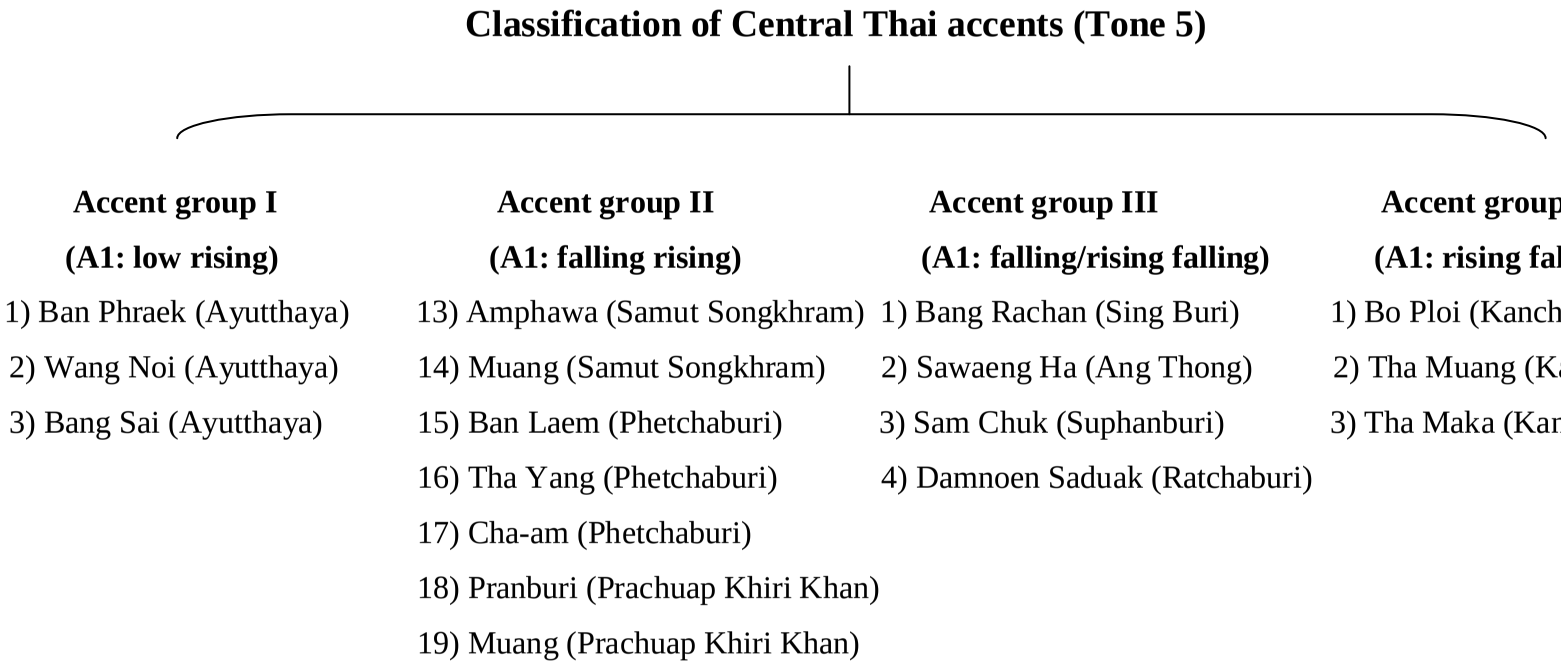


Figure 32: Classification of Central Thai accents according to the distinguishing characteristics of Tone 5 (cont.)

5.3 Tone geography of the provinces in Central Thailand

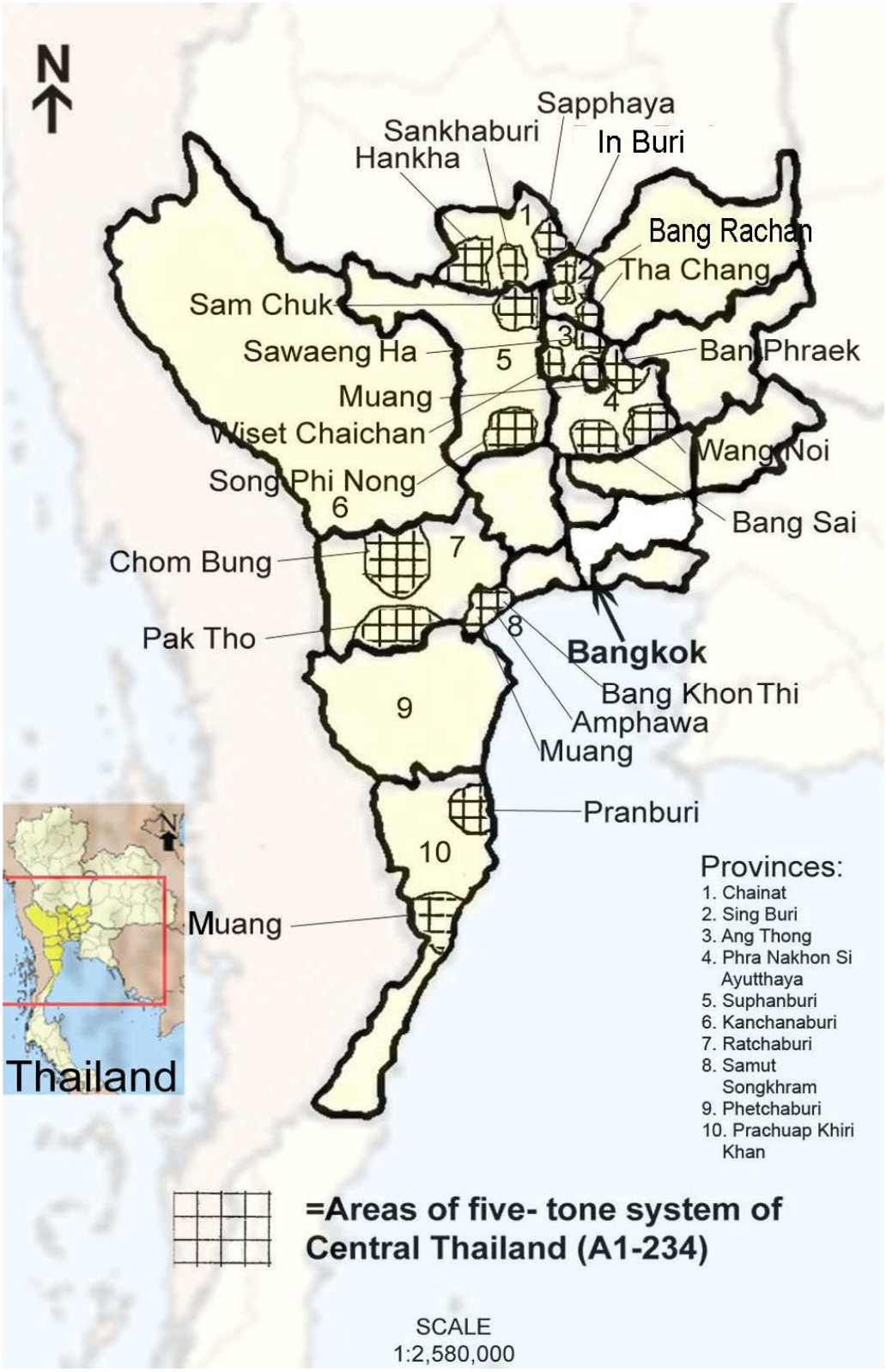
According to Desforges and Jones (2001), in geographies of language, geographers examine the space and place covered by various languages. At the same time, in languages of geographies, dialectologists or linguists work on the constitutive role of languages in the construction of geographical knowledge.

Dialect geography cannot be completed without a linguistic or dialect map. To produce a display of the areas where distinctive sub-dialects or different accents are used not only gives a clearer picture of the geographical distribution of dialects and/or accents, but also shows the relationship between native speakers, their dialect or accent use, and their areas of speech.

Central Thai Tone system, i.e., tone patterns and characteristics investigated in this study can be drawn graphically on Central Thai dialect maps as shown below.

5.3.1 Geographical distribution of Central Thai subdialects

Based on the tone patterns described above, the two subdialects of Central Thai varieties are geographically distributed in the provinces of Central Thailand as displayed in Map 6 and Map 7.



Map 6: Geographical distribution of Central Thai tone system I (A1-234)

Map 7: Geographical distribution of Central Thai tone system II [A1-23(-)4]

According to the linguistic maps presented above, twenty-one local Central Thai varieties, based on the tone patterns, belong to Tone system I (A1-234). At the same time, eight varieties are categorized in Tone system II [A1-23(-)4]. It is noticeable, in reflecting on the east and west borderline of Central Thailand, shown in Map 7, that the second subdialect is spoken in the western part of Central Thailand.

5.3.2 Geographical distribution of Central Thai tone characteristics

Based on the distinguishing characteristics of Central Thai realized respectively in Tone 4 (C4), Tone 2 (B123), and Tone 5 (A1) in smooth syllables, the geographical distribution of the tonetic variants are drawn in Map 8, Map 9, and Map 10 below.

According to the phonetic variants found consistently in column C (C4) of Tone system II, the two tone-based varieties of Central Thai distributed geographically in the provinces of Central Thailand are displayed in Map 8.

Map 8: Geographical distribution of phonetic variants of Tone 4 (C4) of Central Thai tone system II [A1-23(-)4]

Map 8 shows the shaded areas of two different variants, i.e., rising-falling and falling contour tones. The latter falling tone 31 represents, to certain degree, a V-L (Low tone conditioned by voiced initials) correlation in the system. It should be noted that three Central Thai varieties, namely Tha Muang accent in Kanchanaburi Thai; Damnoen Saduak accent in Ratchaburi Thai; and Tha Yang accent in Phetchaburi Thai appear to be similar to Bang Saphan accent in Prachuap Khiri Khan Thai. Note that this Bang Saphan variety is a hybrid of Central Thai and Southern Thai (See 6.2).

According to the phonetic variants found in column B (B123) of both Tone system I and II, the three tone-based varieties of Central Thai distributed geographically in the provinces of Central Thailand are displayed in Map 9.

Map 9: Geographical distribution of phonetic variants of Tone 2 (B123) of Central Thai tone system I [A1-234] and II [A1-23(-)4]

According to the phonetic variants realized in column A (A1) of both Tone system I and II, the four tone-based varieties of Central Thai distributed geographically in the provinces of Central Thailand are displayed in Map 10.

Map 10: Geographical distribution of phonetic variants of Tone 5 (A1) of Central Thai tone system I [A1-234] and II [A1-23(-)4]

Map 9 and Map 10 show the shaded areas of three and four different variants realized in Tone 2 and Tone 5 respectively. According to the tonetic numeral scales given on the maps, the direction and slope of the main defining variants illustrated in Accent groups II appear to be similar to those of Tone 2 and Tone 5 in Standard Thai. However, their starting points range a little higher than those in Standard Thai. And in Tone 5, the tone curve falls sharply before rising to the middle at the end. As drawn in the maps, most of the Central Thai varieties are classified into the second accent group.

The Central Thai accent group I representing both Tone 2 and Tone 5 is closely similar to Standard Thai. This group of accents realized in Tone 2 and Tone 5 is found in all three areas in Phra Nakhon Si Ayutthaya province, namely Ban Phraek, Wang Noi, and Bang Sai. And in Tone 2, this falling accent [21] is used similarly in two areas in Prachuap Khiri Khan, namely Pranburi and Muang. It should be noted that Tone 2 realized in the third accent group can be rising in Central Thai as spoken in Ban Laem, Phetchaburi province.

In Tone 5, Central Thai variants not only appear to be rising or falling rising, but also falling, rising-falling, or rising-falling-rising as shown in Accent group III and IV. The falling and rising-falling variants realized in Accent group III are found in four areas in four provinces, i.e., Bang Rachan, Sing Buri province; Sawaeng Ha, Ang Thong province; Sam Chuk, Suphanburi province; and Damnoen Saduak, Ratchaburi province. Note that the first three areas are located close together in the northern part of Central Thailand, whereas the last location in Ratchaburi province is located separately in the western part of Central Thailand. In Accent group IV, a tonetic variant seems to constitute two phonetic units [(3)413 / (4)524], namely rising-falling [341/452] and falling-rising [413/524]. These noteworthy tone variants are all found in Kanchanaburi province, namely Bo Ploi, Tha Muang, and Tha Maka.

5.4 Conclusion

In this spontaneous speech study, two primary systems of Central Thai tones based on tone patterns and characteristics are found, i.e., Tone system A1-234 (I) and Tone system A1-23(-)4 (II). The tone patterns and characteristics compared in

the study clearly separate Central Thai varieties into sub-dialects and accent groups respectively. Two main sub-dialects and two to four distinguishing accents are drawn and displayed geographically on the maps. The first Central Thai subdialect is spoken mostly in eastern areas of Central Thailand, whereas the second subdialect is spoken a great deal in the western areas. According to the phonetic characteristics of tones realized differently in Tone 2, Tone 4, and Tone 5, two to four accent groups are classified. In both Tone system I and II, Tone 2 (B123) and Tone 5 (A1) play the important role in establishing particular accents among local varieties of Central Thai. And in Tone system II, the different falling-rising and low variants realized in Tone 4 (C4) can be used, to a certain degree, to claim the existence of Southern Thai characteristics in the central plains of Thailand and to describe overlapping features between Central Thai and Southern Thai.

According to the study of all Central Thai tones based on this samples of continuous speech, Central Thai local varieties are different from Standard Thai. Phra Nakhon Si Ayutthaya Thai is closely similar, however not exactly the same as Standard Thai. Tone 1 [A23(4)] and Tone 3 (C123) realized in the study are seldom different from Standard Thai, except for the low variant (Tone 1/2) realized in A4 in Tone system II. It is possible to assume that the phonetic features realized mostly in Tone 2, Tone 4, and Tone 5 are meaningful criteria to be used to explain differences of tones or accents among Central Thai local varieties, between local and urban Central Thai, and/or between Central Thai and other Thai dialects. It is claimed that the distinguishing features realized in these three tones help describe *“nə”* [เหน่อ] *‘unique characteristic’* speech in Central Thai varieties.

CHAPTER VI
CONCLUSION

This final chapter covers a summary of the geographical tone studies of the provinces in Central Thailand and a discussion of considerable aspects of the tonal and spatial variations, together with tonal comparisons of Central Thai varieties. Suggestions for further studies are proposed.

6.1 A summary

A dialect or speech variety is relatively uniform throughout the area in which it is spoken. According to Renfrew (1987: 99), the spatial variations of speech reflect different dialects and also different patterns of vocabulary, grammar, and pronunciation which accompany social distinctions within a community. To draw most world regional maps, geographers use the principles of contiguity, continentality, and human relatedness for dividing regions [Price and Cooper (2007:116)]. Regional patterns of human speech involve distinguishing cultural traits, such as religious adherence or a common language or dialect in a formal region. It takes account of patterns of trade, communication, and political organization functioning in a particular region. All in all, language or dialect use seems to be a basic characteristic of a geographical region. The term “geographical linguistics” sums up this phenomenon.

This present tone study was based on the traditions of regional dialectology and concentrates on the relationship between Central Thai varieties and the spatial differentiation of local varieties by examining tonal systems in particular districts (Amphoes) in Central Thailand. This empirical tone study was inspired by the work of J. M. Brown (1985), W. J. Gedney (1972), and Somsonge Burusphat (p.c., 2005) on Tai-Thai tonal varieties and their geographical distribution. The purpose of the present tone study is to investigate the tone variation of Central Thai dialects spoken in ten provinces in Central Thailand: Chainat, Ang Thong, Sing Buri, Phra Nakhon Sri

Ayutthaya, Suphanburi, Kanchanaburi, Ratchaburi, Samut Songkhram, Phetchaburi, and Prachuap Khiri Khan. The focus is on tone systems: tone patterns and characteristics, tone classification, and geographical distribution of Central Thai varieties based on tone variation. To give a broader linguistic picture or map of Central Thai dialects, the variety of differences and similarities of tone systems in the provinces of Central Thailand was described in a single piece. And with regard to the mosaic of Central Thai dialects, the relationships among Thai inhabitants, their varieties of speech, and historic-geographic distribution are similarly concerned.

Continuous speech data were spontaneously elicited and recorded for later instrumental analysis from ninety Central Thai native speakers living in thirty districts (Amphoes) in the central plains of Thailand. Three speakers having similar socio-economic background and living in three districts where "birthright" Central Thai natives reside were selected to represent each district and province respectively. To obtain the speech data, conversational and questioning methods were applied to adaptations of the Gedney (1972) and Akharawatthanakun (2003) wordlists. The data analysis was carried out with both auditory stimuli – the Tone box method devised by Gedney (1972) - and speech analysis instruments (Computer software programs: Cool Edit Pro, PRAAT 4.5.08, and Microsoft Excel Version 2003). The auditory and instrumental judgments were used to identify Central Thai tone patterns and phonetic characteristics.

The findings revealed that the Central Thai varieties can be categorized at two levels: subdialect and accent or ideolects. According to the study, there are two Central Thai subdialects with regard to the patterns of tone splits, coalescence, and complementary distribution in column A proceeded by the tone box method proposed by Gedney (1972): subdialect A1-234 (Tone system I) and subdialect A1-23(-)4 (Tone system II). Most of their distribution patterns on linguistic maps show that Central Thai varieties can be classified into eastern and western groups. Two to four accents or idiolects with regard to phonetic characteristics based on the variation of pitch heights and contours were found in the western groups.

According to phonetic realizations, Central Thai varieties can be classified into seven groups, i.e., Group I: Chainat Thai, Sing Buri Thai, Ang Thong Thai, and Samut Songkhram Thai; Group II: Phra Nakhon Si Ayutthaya Thai; Group III:

Suphanburi Thai; Group IV: Kanchanburi Thai; Group V: Ratchaburi Thai; Group VI: Phetchaburi Thai; and Group VII: Prachuap Khiri Khan Thai.

In both Tone system I and II, the meaningful tone variants derived from Tone 2 (B123) and Tone 5 (A1) were primarily used for establishing particular accents among local varieties of Central Thai. Three and four accent groups established with regard to the distinguishing variants of Tone 2 and Tone 5 respectively. Tone 2 distinguishing variants classifying the three accent groups include low falling, mid falling, and low rising. The first accent group constitutes Phra Nakhon Si Ayutthaya Thai and Prachuap Khiri Khan Thai. The second accent group was widely used in most of the Central Thai areas, except in Ban Laem district in Phetchaburi province in which the third accent group was applied. Tone 5 distinguishing variants dividing the four accent groups consist of low rising, falling rising, falling or rising falling, and rising-falling rising. The first accent group represents Phra Nakhon Si Ayutthaya Thai. The second accent group includes Chainat Thai, Samut Songkhram Thai, Phetchaburi Thai, and Phrachuap Khiri Khan Thai and some Central Thai varieties in Sing Buri, Ang Thong, Suphanburi, and Ratchaburi provinces. The third accent group includes Bang Rachan Thai in Sing Buri province, Sawaeng Ha Thai in Ang Thong province, Sam Chuk Thai in Suphanburi province, and Damnoen Saduak Thai in Ratchaburi province. And the last accent group constitutes merely Kanchanaburi Thai.

In addition, the different falling-rising and low variants realized in Tone 4 (C4) separate subdialect A1-23(-)4 (Tone system II) found in the western areas of Central Thailand into two accent groups: group of low-rising falling applied in Dan Chang Thai in Suphanburi province, Bo Ploi Thai in Kanchanaburi province, Tha Maka Thai in Kanchanaburi province, Ban Laem Thai in Phetchaburi province, and Cha-am Thai in Phetchaburi province and group of mid falling found in Tha Muang Thai in Kanchanaburi province, Damnoen Saduak Thai in Ratchaburi province, and Tha Yang Thai in Phetchaburi province.

According to the Central Thai dialect geography, as mentioned above, two main variety groups in Central Thailand are proposed, i.e., eastern and western. The eastern group (A1-234) represents Chainat Thai, Sing Buri Thai, Ang Thong Thai, Phra Nakhon Si Ayutthaya Thai, and Sam Chuk Thai and Song Phi Nong Thai in Suphanburi province. The western group [A1-23(-)4] constitutes Kanchanaburi Thai,

Phetchaburi Thai, Dan Chang Thai in Suphanburi province, and Damnoen Saduak Thai in Ratchaburi province. Note that seven varieties spoken in western areas, i.e., Bang Khonthi Thai, Amphawa Thai, and Muang Thai in Samut Songkhram provinces, Chom Bung Thai and Pak Tho Thai in Ratchaburi province and Pranburi Thai and Muang Thai in Prachuap Khiri Khan province, with regard to their tone system, belong to the eastern variety group.

Moreover, in the western group, two accent or idiolect groups, according to the tonetic variants, namely low-rising falling and mid falling realized in Tone 4 (C4), are recorded respectively. The first group consists of Dan Chang Thai in Suphanburi province, Bo Ploi Thai and Tha Maka Thai in Kanchanaburi province, and Ban Laem Thai and Cha-am Thai in Phetchaburi province. The second group includes Tha Muang Thai in Kanchanaburi province, Damnoen Saduak Thai in Ratchaburi province, and Tha Yang in Phetchaburi province. It should be noted that Bang Saphan Thai in Prachuap Khiri Khan province, a Central-Southern Thai hybrid variety, is similarly classified, with regard to tone realization in Tone 4, into this second accent group.

According to the tone comparison of Standard Thai and Central Thai in smooth syllables, the direction or shape form of Tone 1 [A234/A23(-)4] and Tone 3 (B4 and C123) realized in most of the Central Thai varieties is somewhat similar to those in Standard Thai: mid level or mid falling and high falling or low-rising falling. On the other hand, Tone 2 (B123), Tone 4 (C4), and Tone 5 (A1) drawn in the study are low falling or high-rising falling, mid rising, mid falling, or low-rising falling, and low rising or low-rising falling respectively. That is to say, some directions and shapes of Central Thai tonetic variants realized in the last three tones derived from the continuous speech appear to be different both phonologically and phonetically from those recorded in Standard Thai, namely low falling, mid rising, and low rising. And according to the study, there are a few overlapping of these three tones and those realized in Tone 3 (B4 and C123). In other words, Tone 2, Tone 4, and Tone 5 can be realized similarly as rising falling contours. In this respect, Tone 4's form realized in Dan Chang Thai in Suphanburi province, Bo Ploi Thai and Tha Maka Thai in Kanchanaburi province, Ban Laem Thai and Cha-am Thai in Phetchaburi province and Tone 5's form realized in Bang Rachan Thai in Sing Buri province, Sawaeng Ha Thai

in Ang Thong province, Sam Chuk Thai in Suphanburi province, and Damnoen Saduak Thai in Ratchaburi province are the valid evidence showing the overlapping phenomena. Altogether, the Central Thai tonetic variants used in the eastern part of Central Thailand appear to be similar to Standard Thai than those applied in the western part, which are variously different in terms of the rising and falling contours.

6.2 Discussion

In studying the tonal geography of the provinces of Central Thailand, a great number of historic and linguistic phenomena need to be clarified and discussed: the linguistic legacy of this tonal study, tonal comparison in the provinces of Central Thailand with previous tone studies, the relationships between Central Thai tone geography and areal distribution of inhabitants speaking the varieties, and the problems arising in the tone study.

6.2.1 Tonal study of the provinces of Central Thailand

In reflecting on this linguistic investigation of Central Thai tones, several claims, with regard to the hypotheses given in chapter I, can be made as follows:

1. Tones derived from citation forms cannot be used systematically or exclusively to generalize and classify the Central Thai varieties. According to the study, they were not consistent and perfectly matched with the local varieties and Standard Thai.

2. Based on the casual conversational speech data of stressed syllables, the relative phonological or phonetic difference of the tone distinctions obtained from monosyllabic utterances demonstrates that contrast between all five lexical tones is meaningfully maintained. According to the acoustic measurements, the rising and falling contours do not neutralize to level tones and even appear occasionally to become shorter along time lines. Moreover, in spite of some contextual co-articulation effects, especially carry-over, most of the tones display consistent directions and movements and can be used systematically to classify the Central Thai

varieties. It should be noted that to identify a distinctive lexical tone derived from spontaneous speech, all tone characteristics drawn on line graphs have to be taken into account, i.e., height, direction, and shape from starting point to peak and end point. Differing from Abramson (1975:2), in this study, both relative fundamental-frequency heights and shapes of the contours can contribute to the tonal information. In addition, based only on a mora on a line graph, the tone contrast or identification is not sufficiently described.

3. The number of tones was not the main criterion of the Central tone classification. As illustrated in chapter IV, the two subdialects, i.e., Tone system I (A1-234) and II [A1-23(-)4] have five lexical tones. However, in the Tone system II, it is likely that the tone realized in A4 column could stand alone as the sixth tone of Central Thai due to the systematically different pitch levels. But it is perhaps safer to assume that the likely sixth tone is one of the tonetic variants of Tone 1, namely Tone 1/2 in the Central Thai varieties, because no minimal pairs can be found and because of the similar tone direction (falling), but different tone ranges (21 and 32), between Tone 1/1 and Tone 1/2 (See Figure 28 in chapter V). Further studies of Central Thai tones should shed light on Tone 1 characteristics in the A column; it may constitute only one contrastive tone or develop into another lexical tone.

4. The criterion used for the classification of tones has to be based on both phonological patterns and phonetic characteristics. According to the patterns of tones derived from tone splits, coalescences, and complementary distribution, the pitch variants in column A can be used to separate Central Thai subdialects into two: Tone system I (A1-234) and Tone system II [A123(-)4]. Whereas the tone characteristics, i.e., heights, directions, and/or shapes of tones realized in column A and C can be used for identifying Central Thai accents. Based on a great number of tonetic variants realized in this study, the Central Thai varieties were divided into various accent or idiolect groups, which can be used to classify the local areas of Central Thailand, where the tones were applied.

5. Three distinctive tones, namely Tone 2 (low falling or high-rising falling), Tone 4 (mid rising, mid falling, or low-rising falling), Tone 5 (low rising or low-rising falling) play a significant role in generalizing and classifying Central Thai varieties. It is claimed that the distinguishing features realized in these three tones help describe *"nə"* [/nəː/ เหน่อ] *'unique characteristic'* speech in Central Thai varieties. This *"nə"* [/nəː/ เหน่อ] speech symbolizes the local Central Thai varieties, which appears to be different from Standard Thai.

6. Based on the spontaneous continuous speech data, the Central Thai local variations include a great number of tonetic contours, of which their tone realization is different from that of Standard Thai, the official variety of Thailand and a variety of Central Thailand, as shown in chapter IV. Similarly, it is most likely to assume that the variation in tonal realizations among the local Central Thai, Standard Thai, and Bangkok Thai - the native speech variety of the Bangkok-Thonburi area where the social groups are extremely diverse - is not the same to some degree as well.

7. Based on this tone study, Bang Saphan Thai spoken in the southern most area of Prachuap Khiri Khan province appears to be a hybrid variety of Central Thai and Southern Thai. That is to say, Bang Saphan Thai, with regard to its tone pattern, is a variety of Central Thai (B4=C123=DL4) and Southern Thai (A1=A2) [See page 54 in chapter III and Brown (1985: 192-210)]. On the contrary, it is, according to its tone characteristics, a variety of Southern Thai. In other words, Bang Saphan Thai represents a Central Thai/Southern Thai subdialect with a Southern Thai accent or idiolect based on phonetic details. The pattern and characteristic of Bang Saphan Thai tones are illustrated as follows:

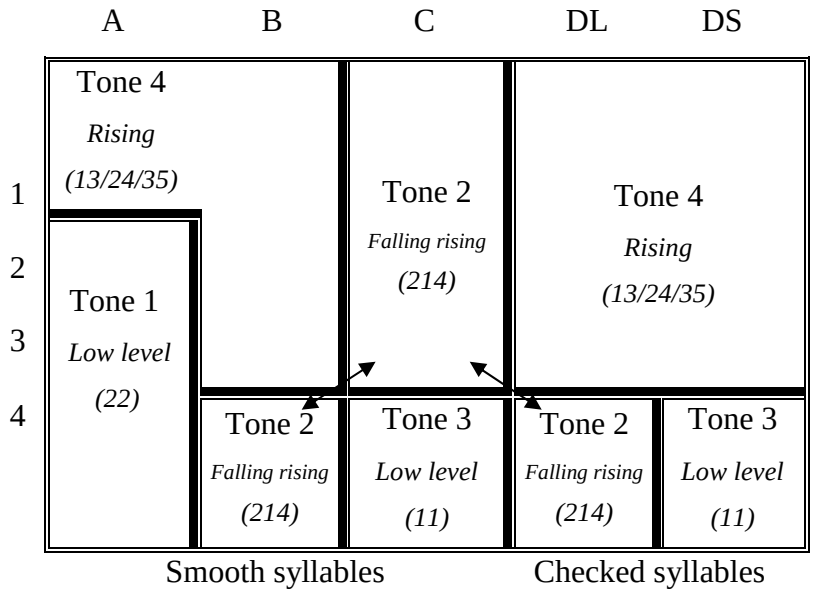


Diagram 12: Tone pattern and characteristic of Bang Saphan Thai in Prachuap Khiri Khan province

According to the tone system presented above, there are four contrastive tones in Bang Saphan Thai: low level (22), rising, falling rising, and low level (11). Tone 4, namely rising contour is realized similarly in A1 and B123 columns, which symbolizes Southern Thai dialect. At the same time, Tone 2, namely falling rising contour is apparently merged in B4, C123, and DL4 columns, which constitutes Central Thai dialect. In comparison with Brown (1985: 193), the pattern of tones illustrated above is somewhat similar to that of Southern variety spoken in Chumphon province, i.e., A1=B12(3) and A2=A3(4). Note that this tone pattern is different from other Southern Thai varieties generalized by Brown (1985), of which there are three-way splits of tones in column A (A1-2-3). It is possible that Bang Saphan Thai had been one of Southern Thai varieties; Central Thai dialect may influence Bang Saphan Thai in some linguistic ways. Thus, in this modern period, Bang Saphan Thai becomes a Central-Southern Thai hybrid variety preserving the Southern accent. This discovery, in turn, raises the question of dialect boundaries. Can we draw with certainty where one dialect ends, i.e., Central Thai and another begins, i.e., Southern Thai? Or is the so-called boundary a band where variants will abound?

Is there something in the geography or history of this “sixth tone” enclave that would shed light on the proliferation of tonetic manifestations or perturbations?

It should be noted also that according to the fieldwork, there are two groups of native speakers living in Bang Saphan district. The first group includes Central-Southern Thai bidialectals, while the second group consists of Central-Southern Thai hybrid monodialectals. That is to say, the former adopts two dialects separately; they use Southern Thai among the natives in the same group, but Central Thai to communicate with the outsiders speaking Central Thai as the interviewers. All in all, this tone study focuses on the monodialectal variety only.

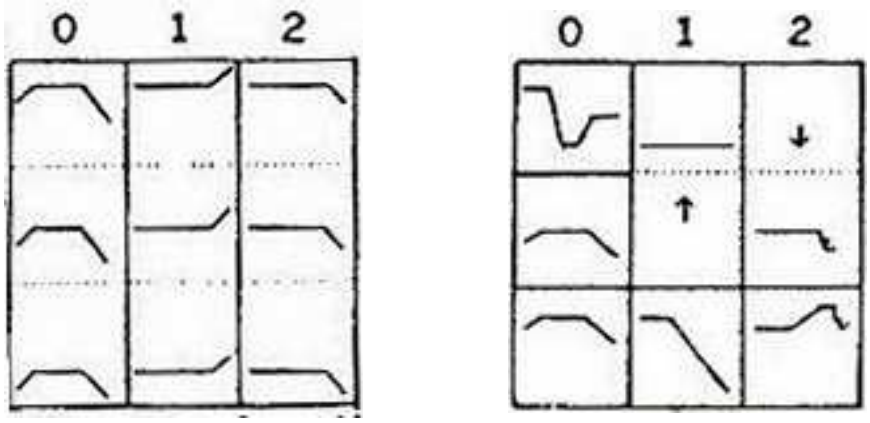
According to Debavalya (1983 AD; เกศมณี 2526 BE) work on the tonal borderline between Central Thai and Southern Thai, the dialect boundary between Central Thai and Southern Thai can be lined within Thap Sakae and Khao Lan sub-districts (Tambons) in Prachuap Khiri Khan province. Based on Debavalya’s tone study, three to five distinctive tones are found in Thap Sakae, Khao Lan, and Bang Saphan districts (Amphoes). The pattern of tones in column A and B drawn by Debavalya appear to be the same as that in this Central Thai tone study and Brown (1985)’s Chumphon variety, i.e., A1=B123 and A2=A3=A4. Three and five tones of Bang Saphan varieties were generalized by Debavalya, while in this study, four lexical tones were realized. In addition, Bang Saphan tones realized in B4 and C123 by Debavalya are not merged together as those in this Central Thai tone study. In case they are, the variants in C4 would be similar to those in B4, C123, DL4, and DS4 columns as shown in Chong Chang village in Kamnoet Nophakhun sub-district. In this respect, not only tones in B column appear to be the same as those in DL column, but in DS column as well. Altogether, Bang Saphan variety investigated in this study is similar to or affected by Central Thai more than that shown in Debavalya.

As claimed by Tingsabadh (1980: 21-22) and Debavalya (1983 AD: x; เกศมณี 2526 BE: ช), based on the tone variation, the Central Thai and Southern Thai’s boundary would be aligned differently from that on administrative maps determined by political boundaries, which covers some southern areas in Central Thailand.

6.2.2 Tonal comparison of the provinces of Central Thailand

As reviewed in chapter II, a great number of the primary works on tones in many areas in the central plains of Thailand contribute several intellectual premises to this Central Thai tone study. The outcomes and evidence of those tone studies convinced me that further investigation would yield interesting findings. And one linguistic fact that emerged from previous studies that led to this work and may yield more investigations on tones is that Central Thai speech varieties are interestingly diverse, particularly if their tones are counted. In this respect, tonal comparison among the Central Thai varieties based on tone variations may be applicable not only in figuring out tone similarities and/or differences to be used for classifying the Central Thai varieties, but also in seeing a mosaic of tonal diversity within seeming regional unity. Moreover, some common facts of Central Thai tones may solidify.

As mentioned in chapter II, one of the main phonological criteria to be used for classifying the local varieties of Central Thailand is Brown (1985) 's High (H)-Mid (M)-Low (L) terminology. That is to say, V-L variety can be used to represent Sukhothai-Southern Thai dialect, while V-H variety can be applied to symbolize Ayutthaya-Central Thai dialect as drawn in two diagrams as follows:



Sukhothai 1400 AD (V-L) Ayutthaya 1400 (V-H)

Diagram 13: Sukhothai and Ayutthaya tones (1400 AD), after Brown (1985: 14)

According to Brown's (1985) H-M-L approach (see page 30 in chapter II), it is very interesting to note that with regard to H-M-L location of tone characteristics realized in the tone box (See Table 9), two Central Thai variety groups, in accord with the two subdialects in Tone system I and II, were highlighted. That is to say, in subdialect A1-234, the relative ranges of tone variants realized in smooth syllables are at low, mid, and high levels respectively as drawn vertically in the tone box. On the contrary, in subdialect A1-23(-)4, the tone ranges pinpoint orderly at high, mid, and low level. It can be assumed, according to the mismatch of tones just mentioned, that the first group of Central Thai varieties constitutes V-H characteristic representing Ayutthaya-Central Thai dialect. At the same time, the second group symbolizes Sukhothai-Southern Thai dialect as it accommodates the V-L feature. The same is true in the Bang Saphan variety spoken in Prachuap Khiri Khan province: V-L pitch ranges in A4, B4, and C4 were generalized on scales (see Diagram 12). As a result, Bang Saphan Thai belongs to Sukhothai-Southern Thai dialect as well.

Again, of Brown's (1985) sixty-three charts, only five belong to or are related to Central Thai, namely Sukhothai (1250 AD), Ayutthaya (1650 AD), U-Thong, Bangkok, and Khorat. In comparison to these varieties, subdialect A1-234 found in this study is related to some degrees to Ayutthaya, Bangkok, and Khorat varieties due to the V-H realization. While subdialect A1-23(-)4 correlates with Sukhothai variety more than U-Thong variety with regard to the V-L representation (see Figure 1-8 in chapter II).

In addition, a comparison among the previous studies of Central Thai tones, in which most of the speech data were elicited from citation forms and/or two to five connected speech, with this Central Thai tone study based on spontaneous conversational speech, some significant characteristics of Central Thai tones can be posited, according to Table 10, as follows:

Table 10: Comparison of Central Thai tone characteristics between the present tone study and other previous studies, adapted from Worawong (2000: 29)

Central Thai subdialects	**Tone 1**	**Tone 2**	**Tone 3**	**Tone 4**	**Tone 5**	**Tone 6**
SubdialectA1-234 **SubdialectA1-23(-)4** (Canilao, 2010)	**33** **21(/32)**	**21** **452**	**41** **242**	**35** **232/31**	**24** **131**	**–** **(32)**
Kanchanaburi (Worawong, 2000)	222,231, 242,322	31,32, 332,41	453,452, 351,342	13, 254, 252,233	312,313, 412,325	–
Phetchaburi (Pornsib, 1994)	322,23	43,33,443	441,454	335,45	435,35	323,214
Prachuap Khiri Khan (Banditkul, 1993) (Debavalya, 1983)	21,311 334,35,25 343	31,42 11,22,21 33,22,21	351,441 442,452 452	243 33,35 33,35	412,214 325,215 325,215	25,23 – 115,113
Suphanburi (Tingsabadh,1993) (Tingsabadh,1980)	33 24,33	442 32	343 44,454	34 33,35	551 51,534	32 113,223
Ratchaburi (Ratanadilok Na Phuket, 1983)	33	21	41,441	33	15	–
Ang Thong (Malaichalern, 1988)	33,34	43,443	44	35,45	325,423	–
Phra Nakhon Si Ayutthaya (Malaichalern, 1988)	33,34, 343	43,443, 32,21	452?	35,45	325	–

With regard to the tone information presented in Table 10, the numbers of Central Thai tones drawn in each tone study, do not play an important role in tone classification, except that in Debavalya's work on tones in Prachuap Khiri Khan, the southern most province in Central Thailand and Chumphon, the northern most province in Southern Thailand. However, tones appearing among the Central Thai varieties consist equally of five-tone and six-tone systems. The local varieties representing the five-tone system are Kanchanaburi Thai (Worawong, 2000), Prachuap Khiri Khan Thai (Debavalya, 1983), Ratchaburi Thai (Ratanadilok Na Phuket, 1983), Ang Thong Thai and Phra Nakhon Si Ayutthaya Thai (Malaichalern, 1988), and those illustrated in the two subdialects of this tone study. Meanwhile, the varieties constituting the six-tone system include Phetchaburi Thai (Pornsib, 1994), Prachuap Khiri Khan Thai (Banditkul, 1993), and Suphanburi Thai (Tingsabadh, 1980 and 1993). Note that the six-tone system is concerned in this spontaneous tone study as well, as it is likely to occur in Kanchanaburi Thai, Phetchaburi Thai, Dan Chang Thai in Suphanburi province, and Damnoen Saduak Thai in Ratchaburi province. Based on the tone systems of all Central Thai varieties, it is safe to assume that tone pattern of splits and mergers realized in column A accounts for the systematic tone classification among Central Thai varieties.

As for the comparison of the tone characteristics illustrated in Table 10, the different levels of tone ranges play the most important role in showing the differences of the tone features realized between this continuous tone study and the previous research on Central Thai tones based on monosyllabic isolated words or citation forms. The significant concern is laid particularly between the tones analyzed in subdialect A1-23(-)4 and those shown in other tone work. That is to say, in this study, most of the tone ranges scaled at the starting point of line graphs appear to be at lower level compared to those illustrated in the previous tone studies. In addition, tones realized in Tone 2, Tone 4, and Tone 5 move up and down differently compared to those presented in the other studies. In other words, with regard to the tone directions outlined in this study, Central Thai tones were realized as high-rising falling in Tone 2, mid falling in Tone 4, and low-rising falling in Tone 5. While in previous tone studies, they were mostly generalized as low/mid/high falling, mid level or mid/high rising, and low/mid rising or mid/high falling rising in Tone 2, Tone 4, and Tone 5

respectively. Note that the directions and shapes of tones formed in this study are somewhat similar to those proposed in the other studies.

Note that the likely sixth tone (32) found in the western areas of Central Thailand appears to be exactly the same as that in Tingsabadh's research on Suphanburi Thai connected speech.

All in all, Central Thai dialect regional unity can be described according to the most similar forms of patterns of tone splits, coalescences, and complementary distributions recorded in the Central Thai tone local varieties. And Central Thai tone diversity can be identified by the different characteristics of Central Thai tones, except those of Bang Saphan Thai tones in Prachuap Khiri Khan province.

6.2.3 Central Thai tone geography and history of the areas and people

Based on the tone geography of Central Thai varieties, the subdialect and/or accent boundary seems to be impractical due to mixed-widespread areal distribution of the different subdialect and/or accent groups. As shown in chapter V, only one borderline drawn between the eastern and western areas of Central Thailand with regard to the two different systems of tones applied separately in two different parts of the region. In fact, as mentioned by Tingsabadh (2001: 216), the study of linguistic borderlines contributes to tonal geography at the main dialect level among Central Thai, Northern Thai, Northeastern Thai (Isan Thai), and Southern Thai dialects.

As stated in chapter III, three districts in each province were investigated. In this study, the areal distribution based on tone systems differs to a greater or lesser degree from administrative maps. That is to say, the two tone systems with two accents or idiolects can be found in one province among the western provinces, Suphanburi, Kanchanaburi, Ratchaburi, Phetchaburi, and Prachuap Khiri Khan. And some varieties appear to be similar to others in other provinces. For example, in Tone 4, Tha Muang Thai spoken in Kanchanaburi has an accent in common with Damnoen Saduak Thai and Tha Yang Thai spoken respectively in Ratchaburi and Phetchaburi provinces. Nevertheless, the unity between tone and provincial distribution is possible in most of eastern areas of Central Thailand: Chainat, Sing Buri, Ang Thong, Pra

Nakhon Si Ayutthaya, and Samut Songkhram. In each of these provinces, the native speakers living in the three areas have a tone system with common features.

Even though the subdialect and/or accent boundary of Central Thai varieties seems to have no vivid borderline, the fact that their tone variations are distributed identically or differently in the areas of Central Thailand can help explain, hypothesize, or connect the language background of Central Thai natives to the Central Thai areal history.

With regard to the different tone variations in the two subdialects applied in eastern and western parts of the central plains of Thailand and two tonetic groups of accents realized in C4 constituting Tone 4 in Tone system II, Central Thai native speakers can be classified similarly into two groups. The former living in the eastern sites of Central Thailand speak the varieties which are related closely to Standard Thai. The latter living in the western areas have more unique accents or tone characteristics, which seems to be slightly different from Standard Thai and the eastern varieties of Central Thai. It is worth wondering that how, when, and where the western group of people, especially those representing Tha Muang Thai in Kanchanaburi province, Damnoen Saduak Thai in Ratchaburi province, and Tha Yang Thai in Phetchaburi province adopted those particular tonetic variants.

Based on the H-M-L approach proposed by Brown (1985), these western varieties belong to V-L tone range group. The speakers practise low level or falling contour at a low pitch range, realized in the fourth row in Gedney (1972) 's tone box, i.e., A4, B4, and C4. In this respect, it is possible to assume that the western varieties of Central Thai must have some tone characteristics in common with those in Southern Thai dialect as in Bang Saphan Thai variety. And these varieties belong, no doubt, to Sukhothai-Southern Thai dialectal branch, not to Ayutthaya-Central Thai (Chiang Saen) branch as those eastern and Standard Thai varieties do. It might be reasonable to say, if Brown's (1985) hypothesis on the northern-southern movement of Sukhothai inhabitants is true, that not all of the people moving from Sukhothai region relocated in southern areas of Thailand. They might stop somewhere along the way down south in some western areas they passed through.

Tone change is possible from the ancient to modern period of time. However, it is conceivable that the primary change is related to the (neighboring)

varieties in the same dialect or language family more than to those classified into different linguistic family. With regard to Worawong's (2000) claim on the linguistic family relationships between Thai and Lao, Kanchanaburi Thai might have Phu Tai, Tai dam, or Lao Song as language ancestry due to their similar patterns of tones she found: A4=B123. It is, in fact, possible that Thai and Lao dialects can connect or influence each other in some linguistic ways as both are categorized as Tai (Li, 1977). However, according to this continuous tone study, tone variants in A4, namely Tone 1 contrast with tone variants in B123, namely Tone 2. As a result, Worawong's (2000) hypothesis on the relationships between Kanchanaburi Thai and Phu Tai Lao is not supported in this tone study.

Each split or divergence came about when groups of people occupying a language territory divided, with at least one part of them going off to seek a new home (Renfrew 1987: 102). According to some interesting claims made by Wongthet (2008 AD; สุจิตต์ 2551 BE) on the Central Thai unique accent in western provinces of Thailand, the speech accents of people living in the Sukhothai region (Yom river) connecting to western areas of Chao Phraya river such as Suphanburi, Ratchaburi, and Phetchaburi seems to be very similar to those spoken in Luang Phrabang (Lan Chang). According to Chit Phumsak, cited in Wongthet (2008, 57-58), this unique (*nə /nəː/ เหน่อ*) accent is used similarly in Kanchanaburi and Nakhon Pathom, which is similar to Northern Lao from Luang Phrabang to Sam Noe (Hua Phan), but not to Lao dialects used in Thailand: Phu Tai and Phuan. It is because among Phu Tai or Tai Dam and Phuan groups, people do not speak Thai with a Lao accent like the natives living in the western provinces, but have used their Lao mother tongue within their groups until today. As for the relationships between Thai and Lao, since the Dhavaravadi and Lavo age, many Tai-Lao groups had moved from two sides of Khong river areas going down along Nan river to the western part of Chao Phraya river from Suphanburi to Nakhon Si Thammarat in Southern Thai region today. According to the archaeological evidence, sticky rice artifacts symbolizing Lao culture were found in large areas of western Thailand. Finally, Wongthet (2008) assumes that the unique accent spoken by the natives of these areas is the speech characteristic used in the ancient Krung Si Ayutthaya, as proved by the traditional musical play, namely Khon. In this respect,

based on the tone range outcomes shown in this tone study, the western Thai accents in this modern age are related to Central Thai-Ayutthaya branch, but similar to those of the ancient Sukhothai (1239? AD-1438 AD) more than the ancient Krung Si Ayutthaya (1351 AD-1767 AD) in terms of Brown (1985)'s H-M-L approach.

Moreover, with regard to short history of Thailand (Wongthet, 2008; Wyatt, 2003; Wongthet, 2006; สุจิตต์ 2549), a great number of common background and events took place within the western areas of Thailand. For example, around 10,000 years ago, these areas were covered by the sea (the Gulf of Thailand) from Nakhon Pathom up north to Chainat and some part of Nakhon Sawan. Many groups of people had resided in these areas around 4,000 years ago since the sea level had been much lower than it was in the past. Many rivers were formed after Chao Phraya river such as Mae Klong and Tha Chin, which made these sites become the land of trades (a part of the ancient Suvarnabhumi areas). In addition, a lot of wars and military bases were waged and located in between these areas, in which various groups of people resided and passed by for trades and warfare. These ethnic groups were addressed as Sian or Siamese later by Chinese. On the whole, there must be the prosperous place with a great hub of many diverse ethnic groups in the western sites of Thailand today. It is convincing that the natives residing in these areas nowadays must have some of those Tai groups as their ancestors.

6.2.4 Problems of the tone study of the provinces of Central Thailand

The difficulties encounters in this tone study emerged mostly in the fieldwork conducted in wide areas of Central Thailand.

As mentioned in chapter I and III, to select the areas of the study, the layered-color criterion proposed in the *Ethnolinguistic maps of Thailand* (Premsrirat et al., 2004 AD; สุวิไล และคณะ 2547 BE) was used for the most part. According to the maps, the dark green areas of Central Thailand represent the most Central Thai speaking part of each province without or with merely a few speakers of other Thai dialects and/or minority languages. However, a few extra sites were similarly investigated with regard to the native speakers' recommendation since some green areas observed were not of Central Thai dialect.

And, to select the Central Thai native informants, the help-yourself method was used, as many times it took longer waiting for some help from the villagers representing the community or village. And a lot of the speakers recommended by them were not right on the target, but the fieldworkers still had to interview them to avoid any intimidating or embarrassing situations. However, to record the authentic speech of the informants and save time, it would be better if there were someone inside their group to participate the conversation. In my fieldwork, some speakers would not use their real accent or idiolect with people they do not know or with anyone who is outside of their group. Thus, another local assistant, who can be the first informant from the same site, is needed to help smooth the path to obtain the real speech accent.

In addition, since the speech elicitation techniques used in this study are the questioning and conversational methods, it consumed very much time in each interview. Also, the interviews and communications were commonly interrupted by the environments surrounding the interviews: family members of the speakers, pets, neighbors, weather, vehicles, and/or village fairs or special events.

Besides, one last thing that caused difficulties during the fieldwork is native people's attitudes towards their own speech variety. In some areas observed, the speakers were not Thai or Central Thai, but Lao or Isan Thai and Southern Thai, i.e., Saraburi, Lopburi, Nakhon Nayok, or some areas in Central Thailand, however they assured me that they were and tried to communicate in Standard Thai. They felt embarrassed to show who they are, where they are from, or what their mother tongue is. Several times, while the interviews and recording were going on, the fieldworkers soon found out the speakers were from Isan or Laos, as they spoke the Isan or language or dialect to their neighbors who passed or dropped by. Similarly, in Bang Saphan district in Prachuap Khiri Khan province, some bidialectals preferred to speak Central Thai with their Southern accent rather than their native Southern speech. Moreover, some Central Thai local speakers insisted they did not have a local accent, but Standard Thai or Bangkok Thai like people living in other areas or provinces had.

In fact, everyone has an accent. According to Esling (1998: 169), accent or idiolect defines who we are; it is the map which listeners perceive through their ears rather than through their eyes to read where the speaker was born and raised. Even

Standard Thai speakers have an accent. As mentioned by Burusphat (2000) and Esling (1998), national standards have their roots in language or local varieties that already exist in distinct social groups and their institutions.

6.3 Suggestions for further studies

Beyond this continuous tone work, more related studies on Central Thai tone varieties and variations need to follow.

6.3.1 The tone study based on spontaneous conversational speech data should be carried out in wider areas covering all the rest where native speakers are Central Thai monodialectals. In this respect, a mosaic of Central Thai tones distributed geographically on a map will be completed.

6.3.2 The tonal geography of the western provinces of Central Thailand, namely Suphanburi, Kanchanaburi, Ratchaburi, and Phetchaburi should be carried out in one piece in every districts or sub-districts, based on spontaneous conversational speech data.

6.3.3 The perceptual tests on Central Thai tones should be investigated in order to prove the tones realized by auditory and instrumental impressions are, indeed, lexically distinctive from each other.

6.3.4 Bangkok Thai variety should be observed with regard to the methods promoted in urban or social dialectology in terms of all phonological units: consonant, vowel, and tone systems.

6.3.5 Tonal comparison of Central Thai and different Lao varieties should be explored in case their linguistic relationships may help describe the unique or particular tones in Central Thai.

6.3.6 Thai dialectal or variety attitude should be scrutinized according to the methods of perceptual dialectology.

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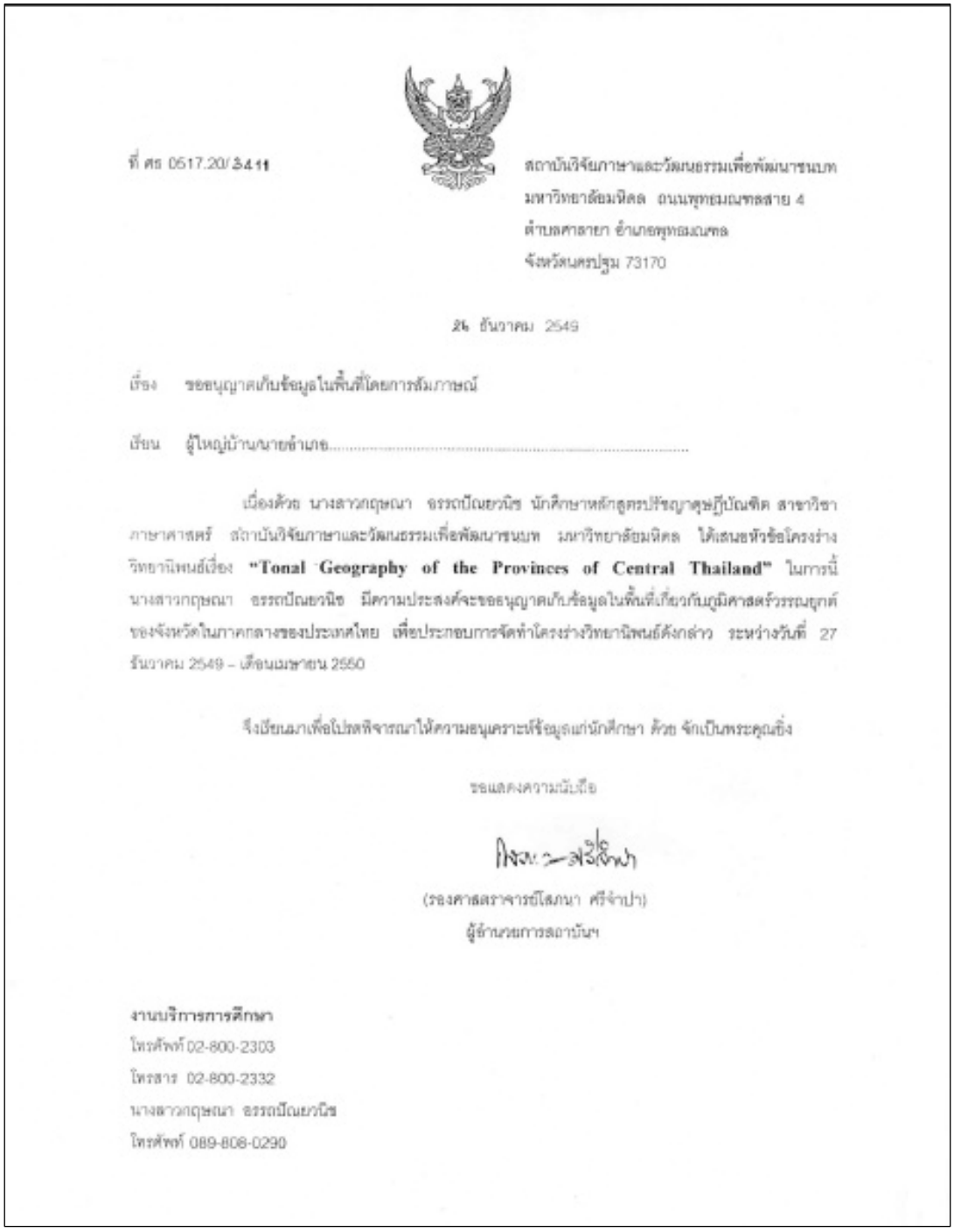
APPENDICES

APPENDIX A
LETTER OF PERMIT OF FIELDWORK CONDUCTION



ที่ ศธ 0617.20/3411

สถาบันวิจัยภาษาและวัฒนธรรมเพื่อพัฒนาชนบท
มหาวิทยาลัยมหิดล ถนนพุทธมณฑลสาย 4
ตำบลศาลายา อำเภอพุทธมณฑล
จังหวัดนครปฐม 73170

26 ธันวาคม 2549

เรื่อง ขออนุญาตเก็บข้อมูลในพื้นที่โดยการสัมภาษณ์

เรียน ผู้ใหญ่บ้าน/นายอำเภอ.....

เนื่องด้วย นางสาวกฤษณา อรรถปัณยวนิช นักศึกษาหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาภาษาศาสตร์ สถาบันวิจัยภาษาและวัฒนธรรมเพื่อพัฒนาชนบท มหาวิทยาลัยมหิดล ได้เสนอหัวข้อโครงร่างวิทยานิพนธ์เรื่อง **"Tonal Geography of the Provinces of Central Thailand"** ในการนี้ นางสาวกฤษณา อรรถปัณยวนิช มีความประสงค์จะขออนุญาตเก็บข้อมูลในพื้นที่เกี่ยวกับภูมิศาสตร์วรรณยุกต์ของจังหวัดในภาคกลางของประเทศไทย เพื่อประกอบการจัดทำโครงร่างวิทยานิพนธ์ดังกล่าว ระหว่างวันที่ 27 ธันวาคม 2549 – เดือนเมษายน 2550

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ข้อมูลแก่นักศึกษา ด้วย จักเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(รองศาสตราจารย์โสภนา ศรีจำปา)
ผู้อำนวยการสถาบันฯ

งานบริการการศึกษา
โทรศัพท์ 02-800-2303
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APPENDIX B
QUESTIONNAIRE

แบบสอบถาม

การเก็บข้อมูลวรรณยุกต์ภาษาไทยถิ่นกลาง

วิทยานิพนธ์เรื่อง “ภูมิศาสตร์วรรณยุกต์ของจังหวัดในภาคกลางของประเทศไทย”
‘Tonal Geography of the Provinces of Central Thailand’

บันทึกเสียง ณ. .....
วันที่..... เดือน.....พ.ศ. ..... เวลา ..... น.

ประวัติส่วนตัวโดยสังเขปของผู้บอกภาษา

ชื่อ ..... นามสกุล..... อายุ ..... ปี เพศ .....
สถานภาพ: ..... โสด ..... สมรสแล้ว ..... หย่า
การศึกษา ..... อาชีพ ..... หมายเลขโทรศัพท์ .....
ภูมิลำเนา: บ้านเลขที่ ..... หมู่ ..... ถนน ..... ตำบล.....
อำเภอ ..... จังหวัด ..... รหัสไปรษณีย์ .....
ปัจจุบันท่านยังคงอยู่ภูมิลำเนาเดิมใช่หรือไม่ ..... ใช่ ..... ไม่ใช่
ถ้าท่านย้ายภูมิลำเนาหรือย้ายที่อยู่อาศัย โปรดกรอกรายละเอียดต่อไปนี้
ระยะเวลาที่อาศัยอยู่ภูมิลำเนาเดิมหรือบ้านหลังเดิม ..... ปี
ที่อยู่อาศัยปัจจุบัน: บ้านเลขที่ ..... หมู่ ..... ถนน ..... ตำบล .....
อำเภอ ..... จังหวัด ..... รหัสไปรษณีย์ .....
ระยะเวลาที่อาศัยอยู่ที่อยู่ปัจจุบัน ..... ปี
ความสามารถทางภาษา (พูด): ท่านพูดได้ ..... ภาษา ได้แก่ .....
ภาษาแม่คือ ..... ภาษาที่ใช้ในปัจจุบันคือ .....
ภูมิลำเนาของบิดาคือ .....
ภาษาแม่ของบิดาคือ ..... ภาษาที่บิดาใช้สื่อสารกับผู้บอกภาษาคือ .....
ภูมิลำเนาของมารดาคือ .....
ภาษาแม่ของมารดาคือ ..... ภาษาที่มารดาใช้สื่อสารกับผู้บอกภาษาคือ .....
ท่านยังคงอาศัยอยู่บ้านหลังเดียวกับบิดา และ/หรือมารดาใช่หรือไม่ ..... ใช่ ..... ไม่ใช่

ภูมิลำเนาของคู่สมรสคือ (กรณีผู้บอกภาษาสมรสแล้ว) .....

ปัจจุบันท่านอาศัยอยู่กับคู่สมรสใช่หรือไม่ ..... ใช่ ..... ไม่ใช่

ภาษาแม่ของคู่สมรสคือ ..... ภาษาที่คู่สมรสใช้ในปัจจุบันคือ .....

ภาษาที่คู่สมรสใช้สื่อสารกับผู้บอกภาษาคือ .....

ปัจจุบันท่านมีบุตร ..... คน บุตรี ..... คน ภาษาที่บุตร/บุตรีใช้ในปัจจุบันคือ .....

ภาษาที่บุตร/บุตรีใช้สื่อสารกับผู้บอกภาษาคือ .....

ภาษาที่ใช้ในท้องถิ่นของผู้บอกภาษาได้แก่ .....

หมายเหตุ .....

[Adapted from Phinnarat Akharawatthanakun (Lecture notes: 2006)]

APPENDIX C
TEMPLATE OF TONE PATTERN ANALYSIS

Tone pattern of Central Thai varieties

Tambon: _____ Amphoe: _____

Province: _____

Informant: _____

A	B	C	DL	DS

Number of tones: _____

Tone split pattern: _____

Complementary distribution: _____

Tone characteristic remarks:_____

_____

Other speech feature remarks: _____

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PUBLICATION /PRESENTATION

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SEALS conference held by Thammasat University Bangkok, Thailand
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Title: *Cohesive Devices in Narrative Songs of Jaran Manopetch*

1st World Congress on the Power of Language, Bangkok, Thailand
(22-25 May 2006)
Title: *A Tonal Comparison of Kanchanaburi Thai Dialects*

2nd International Conference on Lao Studies, Arizona State University Tempe, Arizona, USA. (3-5 May 2007)
Title: *A Tonal Study of Lao Dialects in Kanchanaburi Province*

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National University of Singapore, Bukit Timah Campus, Singapore (29 July 2008)
Title: *Tonal Geography of the Provinces of Central Thailand*